M62535_003528
MCAS TUSTIN, CA
SSIC 5000-33a

FINAL PRELIMINARY ASSESSMENT/SITE INSPECTION REPORT BASEWIDE INVESTIGATION OF PER- AND POLYFLUOROALKYL SUBSTANCES

12/20/2021

MULTI-MAC, JOINT VENTURE

Approved for public release: distribution unlimited.

Naval Facilities Engineering Systems Command Southwest
Base Realignment and Closure
Program Management Office West
San Diego, CA

Final

Preliminary Assessment/Site Inspection Report

Basewide Investigation of Per- and Polyfluoroalkyl Substances

Former Marine Corps Air Station Tustin
Tustin, California

December 2021

Approved for public release; distribution is unlimited.

Naval Facilities Engineering Systems Command Southwest
Base Realignment and Closure
Program Management Office West
San Diego, CA

Final

Preliminary Assessment/Site Inspection Report

Basewide Investigation of Per- and Polyfluoroalkyl Substances

Former Marine Corps Air Station Tustin
Tustin, California

December 2021

DCN: MMAC-4010-4022-0081

Prepared for:

United States Department of the Navy
Naval Facilities Engineering Systems Command Southwest
Base Realignment and Closure Program Management Office West
33000 Nixie Way
Building 50, Suite 207
San Diego, CA 92147

Prepared by:

Multi-MAC Joint Venture
1851 W. 24th Street
Yuma, AZ 85364
(928) 344-8374
Contract Number: N62470-19-D-4010; Task Order No. N6247320F4022

FINAL

PRELIMINARY ASSESSMENT/SITE INSPECTION REPORT
BASEWIDE INVESTIGATION OF PER- AND POLYFLUOROALKYL SUBSTANCES
FORMER MARINE CORPS AIR STATION TUSTIN
TUSTIN, CALIFORNIA

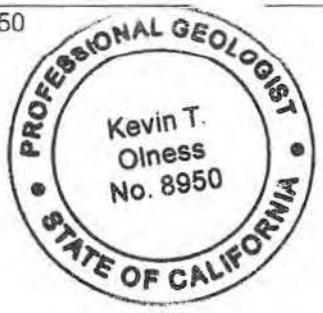
December 2021

Prepared for
United States Department of the Navy
Naval Facilities Engineering Systems Command Southwest
Base Realignment and Closure Program Management Office West
San Diego, California

REVIEW AND APPROVAL

Project Manager: _____ 12/20/21

Kevin Olness, P.G. No. 8950 Date
Multi-MAC JV



This page is intentionally blank.

Table of Contents

Table of Contents (continued)

Table of Contents (continued)

Page

List of Appendices

List of Figures

Table of Contents (continued)

Page

List of Tables

Acronyms and Abbreviations

µg/L ..... microgram(s) per liter

AEJV ..... AECOM-Energy Solutions Joint Venture
AFFF ..... aqueous film-forming foam
AMS ..... air photo, miscellaneous, stain, possible spill
AOC ..... Area of Concern
AOI ..... Area of Interest
APTIM ..... Aptim Federal Services, LLC
Army ..... United States Department of the Army
ARF ..... Administrative Record File
AST ..... aboveground storage tank

Basin Plan ..... Water Quality Control Plan, Santa Ana River Basin
BCT ..... Base Realignment and Closure Cleanup Team
BEI ..... Bechtel Environmental, Inc.
bgs ..... below ground surface
BNI ..... Bechtel National, Inc.
BRAC ..... Base Realignment and Closure

CERCLA ..... Comprehensive Environmental Response, Compensation, and Liability Act
CERFA ..... Community Environmental Response Facilitation Act of 1992
CFR ..... Crash Fire Response
City ..... City of Tustin
CO ..... Carve-Out
CSWRCB ..... California State Water Resources Control Board

D ..... dilution
DDD ..... dichlorodiphenyldichloroethane
DDE ..... dichlorodiphenyldichloroethylene
DDT ..... dichlorodiphenyltrichloroethane
DDW ..... Division of Drinking Water
DERP ..... Defense Environmental Restoration Program
DSD ..... disposal storm drain
DoD ..... United States Department of Defense
DON ..... United States Department of the Navy
DOT ..... United States Department of Transportation
DTSC ..... California Environmental Protection Agency, Department of Toxic Substances Control

EBS ..... Environmental Baseline Survey

Acronyms and Abbreviations (continued)

GAC ..... granular activated carbon
GSE ..... ground support equipment
GWMZ ..... Groundwater Management Zone

H&S ..... health and safety
HMH ..... Heavy Medium Helicopter
HMM ..... Marine Medium Helicopter Squadron

IAS ..... Initial Assessment Study
IRP ..... Installation Restoration Program
IRWD ..... Irvine Ranch Water District
ITRC ..... Interstate Technology & Regulatory Council

J ..... result estimated
JP-5 ..... jet propellant, grade 5

LHA ..... Lifetime Health Advisory

MAE ..... miscellaneous air emissions
MAG ..... Marine Aircraft Group
MALS ..... Marine Aviation Logistics Squadron
MATCS ..... Marine Air Traffic Control Squadron
Marine Corps ..... United States Marine Corps
MCAS ..... Marine Corps Air Station
MCI ..... Marine Corps Installations
MEK ..... methyl ethyl ketone
mg/kg ..... milligram(s) per kilogram
MMEC Group ..... Multi-Media Environmental Compliance Group
mogas ..... motor gasoline
MUN ..... municipal and domestic supply beneficial use
MW ..... monitoring well
MWA ..... miscellaneous, wash area
MWR ..... Morale, Welfare, and Recreation
MWSS ..... Marine Wing Support Squadron

NA ..... not applicable
NAVFAC SW ..... Naval Facilities Engineering Systems Command Southwest
NFA ..... no further action
NIRIS ..... Naval Installation Restoration Information Solution

Acronyms and Abbreviations (continued)

OCHCA ..... Orange County Health Care Agency
OU ..... Operable Unit
O/W SEP ..... oil/water separator

PA ..... Preliminary Assessment
PAH ..... polycyclic aromatic hydrocarbon
PCB ..... polychlorinated biphenyl
PFAS ..... per- and polyfluoroalkyl substances
PFBS ..... perfluorobutanesulfonic acid
PFC ..... perfluorinated compound
PFOA ..... perfluorooctanoic acid
PFOS ..... perfluorooctane sulfonate
PMO ..... Program Management Office
POL ..... petroleum, oil, and lubricant
PR ..... preliminary review

RAB ..... Restoration Advisory Board
RAC ..... remedial action contract
RCRA ..... Resource Conservation and Recovery Act
RFA ..... Resource Conservation and Recovery Act Facility Assessment
RfD ..... reference dose
RI ..... Remedial Investigation
ROD ..... Record of Decision
RSL ..... regional screening level
RWQCB ..... California Regional Water Quality Control Board, Santa Ana Region

SAP ..... Sampling and Analysis Plan
SCAQMD ..... South Coast Air Quality Management District
SI ..... Site Inspection
SNUR ..... Significant New Use Rule
ST ..... storage, temporary
Station ..... Former Marine Corps Air Station Tustin
SVOC ..... semivolatile organic compound

TCE ..... trichloroethene
TCP ..... trichloropropane
TOW ..... treatment, oil/water separator
TPH ..... total petroleum hydrocarbons
TRPH ..... total recoverable petroleum hydrocarbons

Acronyms and Abbreviations (continued)

TW ..... temporary well

U ..... not detected at or above the laboratory limit of quantitation
USDA ..... United States Department of Agriculture
U.S. EPA ..... United States Environmental Protection Agency
USGS ..... United States Geological Survey
UST ..... underground storage tank

VOC ..... volatile organic compound
VSI ..... visual site inspection

WBZ ..... water-bearing zone

1.0 Introduction

This Preliminary Assessment (PA)/Site Inspection (SI) Report for the basewide investigation of per- and polyfluoroalkyl substances (PFAS) at Former Marine Corps Air Station (MCAS) Tustin (the "Station"), in Tustin, California (Figure 1), has been prepared by Multi-MAC JV, a joint venture comprising Wood Environment & Infrastructure Solutions, Inc., and Nicklaus Engineering, Inc., on behalf of Naval Facilities Engineering Systems Command Southwest (NAVFAC SW), Base Realignment and Closure (BRAC) Program Management Office (PMO) West under Contract Number N62470-19-D-4010, Task Order Number N6247320F4022. Research and groundwater and surface water sampling have been conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Sections 104 and 121; Executive Order 12580; and the National Oil and Hazardous Substances Pollution Contingency Plan. This PA/SI Report provides (1) findings from research conducted to identify potential Areas of Interest (AOIs) at the Station where materials containing PFAS were stored, handled, discharged, disposed of, or used and their potential for release to the environment, and (2) results from the investigation of PFAS in groundwater and surface water at or associated with Installation Restoration Program (IRP) Sites 1, 3, 5, 6, 11, and 13.

1.1 General PFAS Background

1.1.1 Origin and Use

PFAS are a complex family of several thousand manmade fluorinated organic chemicals that have been produced since the mid-20th century (Interstate Technology & Regulatory Council [ITRC], 2020). PFAS possess chemical structures that give them unique properties, including thermal stability, friction reduction, and the ability to repel both water and oil. PFAS are characterized by carbon chains of varying lengths containing carbon-fluorine bonds. The strong electronegative force of the carbon-fluorine bond requires a large amount of energy to break, which makes PFAS extremely resistant to biodegradation, photo-oxidation, direct photolysis, and hydrolysis. For decades, PFAS were used in a wide range of consumer and industrial products. They have been used to impart water, grease, and stain resistance to carpeting, apparel, upholstery, food paper wrappings, and paper and cardboard packaging products. PFAS have also been used as processing aids in the manufacture of fluoropolymers such as nonstick coatings on cookware. They have applications in metal plating, aerospace, photographic imaging, semiconductor, automotive, construction, electronics, and aviation industries and are used in some firefighting foams. Some fire-resistant

hydraulic fluids and pesticides are also known to contain PFAS (United Environmental Protection Agency [U.S. EPA], 2016c; ITRC, 2020).

PFAS were initially invented in the 1930s with the creation of polytetrafluoroethylene. Initial production of PFAS began in the late 1940s with the production of perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) (ITRC, 2020). PFOS was used in stain- and water-resistant products, and PFOA was used for protective coatings. The use of these compounds (mostly PFOS) in firefighting foam began in the 1960s and they were put into routine use by the early 1970s. Perfluorobutanesulfonic acid (PFBS), developed in approximately 2003 to replace PFOS, has been manufactured for use in paints, cleaning agents, and water-impermeable products.

Production and use of PFOA and PFOS, along with other long-chain PFAS, have been reduced over the past 20 years. In 2000, the 3M Company announced a voluntary phase-out of perfluorooctanyl chemistries, which included PFOA, PFOS, perfluorohexane sulfonate, and related precursors. In 2006, U.S. EPA initiated the global PFOA Stewardship Program: eight major manufacturing companies of PFOA and other longer-chain perfluorinated carboxylates committed to achieving a 95 percent reduction in both facility emissions and product content levels by 2010 and elimination by 2015. All companies met the established goals (U.S. EPA, 2017b).

Also, since 2000, U.S. EPA has issued additional regulations, Significant New Use Rules (SNURs) that require manufacturers and processors of identified chemicals to notify U.S. EPA of new uses of these chemicals before they are commercialized. In October 2017, U.S. EPA finalized a SNUR on 183 PFAS believed to be no longer manufactured in or imported into the United States. Furthermore, in February 2020, U.S. EPA (2020) released a pre-publication notice of a SNUR proposal to eliminate the exemption for long-chain perfluoroalkyl carboxylates as part of surface coatings in a variety of articles.

1.1.2 Environmental Screening Levels

1.1.2.1 United States Environmental Protection Agency

PFAS have been identified by U.S. EPA (2017c) as “emerging contaminants” and are of environmental concern because of their persistence in the environment and in organisms, migration potential in aqueous systems (e.g., groundwater), historically ubiquitous use in commercial products, and possible adverse health effects at low levels of exposure. At this time, only three PFAS have U.S. EPA-derived toxicity values available to help understand potential health effects from exposure: PFOA, PFOS, and PFBS. In 2016, U.S. EPA issued a drinking water lifetime health advisory (LHA) of 0.07 microgram per liter (µg/L) for PFOA and PFOS. When both PFOA and PFOS are

found in drinking water, the combined concentrations of PFOA and PFOS should also be compared with the 0.07 µg/L LHA because of the similarity in the noncancer health effects of PFOS and PFOA (U.S. EPA, 2016a, 2016b, 2016c). Although not legally enforceable, the LHA has been a driving force for investigation and remediation efforts.

On December 19, 2019, U.S. EPA published a guidance document with interim recommendations for addressing groundwater contaminated with PFOA and/or PFOS. The guidance document recommends that screening of sites be based on a target hazard quotient of 0.1 for PFOA or PFOS individually, which is currently 0.04 µg/L (i.e., site groundwater concentrations should be compared with one-tenth of the calculated tap water regional screening level [RSL] of 0.4 µg/L for PFOS or PFOA, which works out to 0.04 µg/L). The reason for selecting a target hazard quotient of 0.1 (i.e., one-tenth the acceptable concentration for noncancer effects) is to protect against the possible co-occurrence in groundwater of multiple PFAS and other chemicals with similar or additive health effects. In addition, it recommends that the U.S. EPA LHA of 0.07 µg/L be used as the preliminary remediation goal for groundwater that is a current or potential source of drinking water where no state or tribal maximum contaminant level or other applicable or relevant or appropriate requirements are available or sufficiently protective (U.S. EPA, 2019).

Currently, PFBS is the only PFAS listed in the May 2021 U.S. EPA RSLs. The generic RSL tables provide noncancer reference doses (RfDs; 0.0003 milligram per kilogram [mg/kg] per day), screening levels for residential soil (19 mg/kg), industrial soil (250 mg/kg), and tap water (6.0 µg/L), and soil screening levels for protection of groundwater (0.0019 mg/kg) for PFBS only using a hazard quotient of 1 (U.S. EPA, 2021b).

1.1.2.2 State of California

In June 2018, the California State Water Resources Control Board (CSWRCB) Division of Drinking Water (DDW) introduced notification levels for PFOA and PFOS. On July 13, 2018, the CSWRCB released guidelines for testing and reporting of PFOA and PFOS based on DDW recommendations. Notification levels are nonregulatory, health-based advisory levels established by the DDW for chemicals in drinking water that lack enforceable regulatory standards called maximum contaminant levels. The interim notification levels were 0.014 µg/L for PFOA and 0.013 µg/L for PFOS. In addition to setting interim notification levels for PFOA and PFOS, the CSWRCB also included an interim response level of 0.07 µg/L for PFOA and PFOS combined, consistent with the drinking water LHA issued by U.S. EPA in 2016; if the combined level is exceeded, the state recommended that the water system remove the source from service. The guidelines did not require public water systems to test for PFOA and PFOS but did

require water systems that voluntarily opted to test to report the results if the notification levels were exceeded.

On July 31, 2019, the California Legislature passed Assembly Bill 756, authorizing the CSWRCB to require public water systems to test for PFAS. If any monitoring undertaken pursuant to a CSWRCB order results in a confirmed PFAS detection, the water system must report that detection in its annual consumer confidence report. For PFAS with notification levels, water systems are also required to report the response levels. When a detection exceeds the response level, the water system must take the water source out of use or provide public notification within 30 days of the confirmed detection. On August 23, 2019, the CSWRCB announced it had lowered its notification levels for PFOA and PFOS to 0.0051 and 0.0065 µg/L, respectively. Furthermore, on February 6, 2020, the CSWRCB (2020a) also lowered the response levels to 0.01 µg/L for PFOA and 0.04 µg/L for PFOS.

1.1.2.3 United States Department of Defense

On October 15, 2019, the United States Department of Defense (DoD, 2019a) issued a memorandum addressing PFAS in soil and groundwater within the Defense Environmental Restoration Program under CERCLA. Screening levels for PFOS and PFOA in soil and groundwater were calculated by the DoD using the U.S. EPA online RSL calculator on April 6, 2018, and identified as part of the memorandum (DoD, 2019a). The screening level identified for PFOA and PFOS in residential soil is 0.13 mg/kg and the screening level identified for PFOA and PFOS in groundwater (tap water default) is 0.04 µg/L.

DoD (2019a) also included screening levels for PFBS in soil and groundwater; however, on April 8, 2021, U.S. EPA (2021a) released an updated toxicity assessment for PFBS with a new chronic RfD of 0.0003 mg/kg per day. Based on the new PFBS chronic RfD, the U.S. EPA RSLs were updated for PFBS in May 2021 (U.S. EPA, 2021b). The updated U.S. EPA RSL for PFBS based on a hazard quotient of 0.1 for soil (residential default) and groundwater (tap water default) are 1.9 mg/kg and 0.60 µg/L, respectively. Based on the updated RSLs, the DoD has identified these values as the new screening levels for PFBS in residential soil and groundwater. These values supersede the corresponding values for PFBS in the DoD (2019a) memorandum. To be proactive, the U.S. Department of the Navy (DON) is incorporating these updated screening levels for PFBS into all PFAS projects moving forward for comparison with investigation-derived data and site management decisions.

For the purposes of this PA/SI and further evaluation of PFAS at DoD BRAC installations, a screening level of 0.13 mg/kg for PFOA and PFOS is used to evaluate impacts on residential soil, and a screening level of 0.04 µg/L for PFOA and PFOS is

used to evaluate impacts on groundwater per DoD (2019a) guidance. In addition, a screening level of 1.9 mg/kg is used to evaluate PFBS impacts on residential soil, and a screening level of 0.60 µg/L is used to evaluate PFBS impacts on groundwater per the U.S. EPA (2021b) RSL. All screening levels are based on a target hazard quotient of 0.1. The current DoD screening levels for residential soil and groundwater are summarized in Table 1-1 (DoD, 2019a; U.S. EPA, 2021b).

Table 1-1: Current Federal Screening Levels for PFOA, PFOS, and PFBS

Chemical	Groundwater[1,2] (µg/L)	Residential Soil[1,2] (mg/kg)
PFOA	0.04	0.13
PFOS	0.04	0.13
PFBS	0.60	1.9

Acronyms:
µg/L = microgram(s) per liter; DoD = United States Department of Defense; mg/kg = milligrams per kilogram; PFBS = perfluorobutanesulfonic acid; PFOA = perfluorooctanoic acid; PFOS = perfluorooctane sulfonate

Sources:
1. DoD. 2019a. *Memorandum on Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program*. October 15.
2. U.S. EPA. 2021b. *Regional Screening Levels*. May. Available at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables

1.2 DON Use of PFAS-Containing Materials

Although PFAS have been used in a variety of applications such as metal plating operations and photographic imaging as described in Section 1.1, the most prevalent application of PFAS at DON installations has been in some formulas for aqueous film-forming foam (AFFF) for firefighting. In terms of mass/concentration at DON installations, AFFF is considered to have the greatest potential for release of PFAS to the environment. Evidence showing the initial use of PFAS-containing AFFF at DON installations includes the Military Specification for AFFF (MIL-F-24385) issued in 1969 and the DON Qualified Products List from 1970 that included the 3M Company's AFFF formulation.

Legacy PFOS-containing AFFF was manufactured exclusively by 3M Company and branded as "Lightwater" from the late 1960s until 2002. This formulation of AFFF contained PFOS and perfluoroalkane sulfonates, such as perfluorohexane sulfonate. Legacy fluorotelomer AFFF was manufactured and sold from the 1970s until 2016 and encompasses all brands of AFFF other than 3M Company Lightwater. The formulation of legacy fluorotelomer AFFF included polyfluorinated precursors, which are known to degrade to perfluorinated carboxylic acids, including PFOA. The legacy AFFF formulations are long-chained (C8) fluorosurfactants (ITRC, 2020).

In response to the PFOA Stewardship Program, modern fluorotelomer AFFF contains only short-chain (C6) fluorotelomer-based fluorosurfactants, which do not break down to PFOS or PFOA in the environment. Typical breakdown products of modern fluorotelomer AFFF include perfluorohexanoic acid, perfluoro-n-pentanoic acid, and 5:3 fluorotelomer carboxylic acid (ITRC, 2020).

The DON has used AFFF formulas containing PFAS in fire training exercises, suppression of aircraft and other vehicle fires, and aircraft hangar fire suppression systems at many of its installations across the United States. Despite industry efforts to reduce the use of PFAS, some PFAS are still required as an integral component of AFFF by the current Military Specification. However, for the purposes of this PA/SI, use and any potential subsequent release would have ceased by DON following closure of the Station in 1999.

The potential release mechanisms of PFAS to the environment at DON facilities could have historically included AFFF use as part of the following activities:

- Fire training exercises at burn pits or structures
- Crash crew training exercises
- Hangar fire suppression system operations, testing, and accidental releases
- Firefighting and crash response vehicle testing
- Emergency response actions, such as at aircraft and vehicle crash sites
- Responses to Class B or fuel fires
- Improper filling and leakage from storage tanks, firefighting trucks, or crash response vehicles

Class A fires are associated with materials such as cloth, wood, and paper. Suitable firefighting agents for Class A fires penetrate the burning material to extinguish the fire, such as water. Class B fires have combustible liquid or gas as a fuel. Firefighting agents used on Class B fires will either inhibit the chemical reactions, such as dry chemical or Halon, or will smother the fire using carbon dioxide gas or foam (United States Fire Administration, 2017). PFAS-containing AFFF foams are intended only for Class B fires.

Other potential release mechanisms of PFAS could have included release from oil/water separators (O/W SEPs) and landfills where PFAS-containing materials or waste were discharged or disposed of; leaching from sludge generated at wastewater treatment plants that received influent containing PFAS; or use of PFAS in vapor suppression systems associated with metal plating operations (DON, 2016). PFAS can also be found

at ordnance burn areas in some instances where fire control was determined to be necessary.

1.3 Objectives

The primary objectives of this PA/SI Report are as follows:

- Identify AOIs at the Station where materials containing PFAS may have been released to the environment because of past activities.
- Report the results of the analysis of more than 200 groundwater and 4 surface water samples collected from key locations across the Station for PFAS.

This PA/SI Report identifies AOIs where further investigation may be warranted to determine or further assess the presence of PFAS. Additionally, it identifies the AOIs where no PFAS release is suspected to have occurred and, therefore, warrant no further action (NFA). Another objective of this PA/SI Report is to identify land uses and drinking water sources surrounding the Station.

This PA/SI Report accomplishes these objectives by identifying AOIs where materials containing PFAS were potentially stored, handled, discharged, disposed of, or used at the Station and evaluating, primarily via desktop analysis and limited groundwater and surface water sampling, whether PFAS may have been released into the environment because of those activities. For AOIs that have a potential for a PFAS release to the environment, further investigation may be warranted to determine the presence, nature, and extent of PFAS based on an initial assessment of potential migration pathways. This PA/SI Report includes findings from research conducted to identify potential AOIs where releases to the environment may have occurred at the Station and is limited to the area within the Station boundaries.

1.4 Scope

To achieve the objectives of this PA/SI, Multi-MAC JV used the following research sources: (1) online records on the use and storage of PFAS-containing materials within the Station boundaries, (2) archival records and historical documents, and (3) interviews of Station personnel and other knowledgeable individuals. Research was conducted to find information on use and storage of PFAS at the Station from 1942 to the present.

The DON proactively conducted multiple phases of groundwater investigation before bringing PFAS into the CERCLA program (see Section 5.0). These investigations resulted in the collection and analysis of groundwater and surface water samples to assess not only the presence, but also the nature and initial extent of PFAS impacts on groundwater and surface water across the Station. The groundwater samples were

collected and analyzed for PFAS based on a review of existing IRP sites to identify those with the potential for historical use, storage, or disposal of PFAS. Therefore, the groundwater sampling locations were selected before additional PFAS AOIs were identified by the PA. Consequently, the scope of the groundwater SI portion of this PA/SI is limited to those sites where PFAS sampling in groundwater has already been conducted. For surface water, the DON voluntarily augmented its quinquennial monitoring program for Peters Canyon Channel after having discovered PFAS impacts to groundwater at adjacent IRP Site 1.

2.0 Installation Description

The Station is in the City of Tustin (City) in the County of Orange, California, approximately 40 miles south of downtown Los Angeles and more than 100 miles north of the California-Mexico border (Figure 1). Former MCAS Tustin covers approximately 1,595 acres. Land use around the Station includes commercial, light industrial, and residential.

2.1 Historical Background

The facility was first commissioned in 1942 as a DON base for lighter-than-air vehicles to support observation blimps and personnel conducting anti-submarine patrols off the coast of southern California during World War II. It operated in that capacity until 1949, when all activities ceased, and the facility was decommissioned. In 1951, the facility was reactivated for helicopter operations supporting United States efforts during the Korean War. From 1951 through 1996, MCAS Tustin was a major center for United States Marine Corps (Marine Corps) helicopter aviation on the Pacific coast and a sub-element of the Commander Marine Corps Air Bases, Western Area at MCAS El Toro. In 1996, MCAS Tustin helicopter operations were transferred to MCAS El Toro. As part of DON realignment and consolidation, both facilities closed in July 1999, and helicopter operations were transferred to MCAS Miramar.

The Station was initially included on the BRAC II list in 1991; further realignment and complete closure was ordered for MCAS Tustin under the BRAC III list (1993). To facilitate the closure and environmental restoration processes, the DON organized a BRAC Cleanup Team (BCT) in 1993. The BCT is composed of representatives of the DON, California Environmental Protection Agency, Department of Toxic Substances Control (DTSC), and California Regional Water Quality Control Board, Santa Ana Region (RWQCB). (U.S. EPA was a previous BCT member but, because of funding constraints, left the role in 2019.) The BCT has been collectively managing and coordinating cleanup and closure activities at the Station since its inception.

MCAS Tustin was closed on July 2, 1999. A Federal Facility Site Remediation Agreement between the DON and DTSC was signed in August 1999. This legal agreement defines the DON’s corrective action and response action obligations under CERCLA and the Resource Conservation and Recovery Act (RCRA) for 16 IRP sites and 288 Areas of Concern (AOCs) that have been identified at the Station. A site management plan is used to establish schedules and deadlines for remaining environmental restoration activities and reports (Bechtel National, Inc. [BNI], 2001b).

2.2 Land Use and Ownership

2.2.1 Historical

The Station contained more than 200 structures and various facilities to support its mission. These facilities included two timber-frame blimp hangars, a 3,000-foot runway, aircraft parking aprons, and numerous aircraft maintenance shops. All of the Station was developed, except for 674 acres that were formerly leased for commercial farming and maintenance activities (Multi-Media Environmental Compliance Group [MMEC Group], 2016). MCAS Tustin provided operational training facilities and support to operate helicopter confined area landing sites in and around the Santa Ana Mountains; provided operation, logistics, and administrative support; operated an air traffic control facility; provided weather support to tenants and assigned units; and planned adequate shore facilities and services for assigned activities. Historical operations and practices at the Station that included aircraft maintenance and repair, paint stripping, degreasing, vehicle and aircraft washing, and waste disposal were sources of primarily volatile organic compounds (VOCs) that contributed to soil and groundwater contamination (BNI, 2001a).

2.2.2 Current

Figure 2 depicts current DON-owned property at the Station and also includes parcel numbers for reference. Carve-Outs (COs) 5 and 6 are currently owned by the DON. Former DON-owned COs 2 and 9 were transferred to the City on September 28, 2021, after the activities described in this report. Therefore, COs 2 and 9 are not shown on Figure 2; however, they are shown in later figures, but carry the designation as “former” COs. Additionally, older COs that were transferred prior to activities described in this report are not shown on figures.

2.2.2.1 DON-Owned Property

The DON owns COs 5 and 6. The parcels in both CO-5 and CO-6 have been leased to the City under two Leases in Furtherance of Conveyance in 2002 and 2004, except parcels 2A, 2B, and 18 (MMEC Group, 2018a). CO-5 and CO-6 comprise 236.37 acres and contain the following parcels (or portions thereof): 1A, 1B, 2A, 2B, 16 (portion), 16A, 16B, 16C, 17A, 18, 19A, 19B, 22A, 22B, 40 (portion), 40A, and 40B (Figure 2). CO-6 is a portion of Parcel 16, and CO-5 contains a portion of Parcel 40, which is the right-of-way. Parcels 1A, 22A, 19A and 22B in the northern part of CO-5 are currently recreational fields. Parcel 2A consists of 8.48 acres in the west-central portion of CO-5 and currently contains abandoned Buildings 13, 49, and 509 and Structures 11, 12, 230, and 240. Parcel 2B consists of approximately 1.5 acres in the west-central portion of

CO-5 and currently contains abandoned Building 185. Parcel 18 consists of approximately 84.5 acres in the central portion of CO-5 and contains 54 buildings, all of which are currently abandoned. The land surrounding the buildings in CO-5 is bare ground or currently under development.

CO-6 is a portion of Parcel 16 that still contains Hangar 2. The land surrounding Hangar 2 is currently under development.

2.2.2.2 Formerly DON-Owned Property

On May 13, 2002, the DON approved the conveyance of 1,153 acres of the Station (Parcels 23, 29, 34, 35, and 36, and portions of Parcels 1, 16, 17, 24, 27, 28, 40, and 41) to the City, recognized as the Local Redevelopment Authority. Following the agreement between the City and the DON, the City approved conveyances to other public agencies, including the County of Orange, Tustin Unified School District, Irvine Unified School District, Rancho Santiago Community College District, and South Orange County College District (City, 2017). Parcel 9 was conveyed to the United States Department of the Army (Army, 2002) by letter dated December 4, 2002, for its Armed Forces Reserve Center that serves as the Tustin Temporary Emergency Shelter to serve homeless persons of the City after an exchange agreement between the Army and the City for a new Reserve facility elsewhere on Station.

On September 28, 2021, the DON conveyed CO-2 and CO-9 to the City. Former CO-2 consists of approximately 6 acres in the southern portion of the Station and no longer contains buildings or structures related to the Station. It currently consists of commercial development, including parking lots, streets, and minor landscaping (Enviro Compliance Solutions, Inc., 2017). Former CO-9 consists of approximately 2 acres of undeveloped and developed property in the southern portion of the Station that includes portions of Tustin Ranch Road and Park Avenue and associated sidewalks and landscaping.

2.2.3 Future

According to the City Specific Plan/Reuse Plan (City, 2017), the Station will be redeveloped to serve a number of functions. Figure 3 shows the future land use plans developed by the City as part of its Tustin Legacy redevelopment; the neighborhoods described in this section are shown on Figure 3 to help clarify the following reuse plans. Neighborhood A consists of Parcels 1, 2, 3, 19, 20, 21, and 22 (Figure 3). The primary functions of this neighborhood are to provide education, training, recreation, and specific social functions. Neighborhood B consists of Parcels 23, 24, and 25 and has already been developed for residential and commercial purposes. Neighborhood C consists of Parcel 18 and may be developed into the Urban Regional Park to promote open space conservation, recreation, and historic preservation. Neighborhood D

consists of Parcels 8, 13, 14, 15, 16, 17, and 27 (portion) and will be used for recreational- and entertainment-based development with retail and housing. Neighborhood E consists of Parcels 4, 5, 6, and 7 and will be developed for professional office, research and development, and commercial business use. Neighborhood F consists of Parcels 9, 10, 11, and 12 and has already been developed for commercial purposes. Neighborhood G consists of Parcel 26 and portions of Parcels 27, 28, 29, 30, 31, 32, 33, 34, 35, and 36. Portions of Neighborhood G have already been developed for residential use, with the remainder of the neighborhood planned for residential development. Neighborhood H consists of Parcels 29, 37, and 38 and has already been developed into residential and educational uses (City, 2017).

2.3 Environmental Setting

Sections 2.3.1 through 2.3.7 describe the environmental characteristics of the Station.

2.3.1 Topography and Climate

The land surface at the Station is relatively flat, with a mean surface elevation of approximately 54 feet above mean sea level. The ground surface slopes gradually, approximately 20 feet per mile, from a maximum elevation of approximately 75 feet above mean sea level in the northern portion of the Station to approximately 40 to 45 feet above mean sea level in the southern portion. The Station receives an average of approximately 13.3 inches of annual rainfall (National Oceanic and Atmospheric Administration, National Weather Service, 2020).

2.3.2 Soils

The Station soils were classified into types within the Chino and Omni series in a soil survey conducted by the United States Department of Agriculture (USDA, 1978). Typically, Chino series soils from the surface to approximately 24 inches below ground surface (bgs) are gray, silty clay loam. Light gray, sandy clay loam then extends to a depth of at least 60 inches bgs. The soil is moderately alkaline and calcareous. Chino series soils are moderately slowly permeable, with 9.5 to 13.0 inches of water capacity (USDA, 1978).

Omni series soils are typically gray clay that extends from the surface to 17 inches bgs. Then, light gray clay with olive-brown mottles extends to 50 inches bgs. Finally, dark gray, mottled clay extends to a depth of at least 60 inches bgs. Omni series soils are moderately alkaline, calcareous, and slowly permeable (USDA, 1978).

2.3.3 Geology

The Station is in the central region of the Tustin Plain. Subsurface lithology consists of outwash sediments from the Santa Ana Mountains. The underlying stratigraphy consists of the Holocene alluvium (approximately 30 feet thick); Pleistocene stream terrace and older alluvium (approximately 250 feet thick); Pleistocene San Pedro Formation of semi-consolidated sand, gravel, silts, and clays containing limestone interbeds of lagoon or shallow marine origin (approximately 100 feet thick); semi-consolidated-to-consolidated tertiary sedimentary rocks (approximately 2,500 feet thick); and Mesozoic and older igneous and metamorphic bedrock. The Tertiary, Holocene, and Pleistocene deposits are considered water-bearing units (DON, 1994).

The Shady Canyon, Pelican Hill, Newport-Inglewood, Whittier-Elsinore, and San Andreas faults are seismically active faults near the Station. The Shady Canyon, Pelican Hill, and Newport-Inglewood faults are 2, 5, and 9 miles southwest of the Station, respectively. The Whitter-Elsinore and San Andreas faults are 13 and 30 miles north of the Station, respectively (DON, 1994).

The Newport-Inglewood Fault has the potential to produce an earthquake of magnitude 7.5 on the Richter scale (DON, 1994). In the event of an earthquake, some potential ground failure, including liquefaction, may be expected at the Station, considering the soil and shallow groundwater conditions (DON, 1994).

Based on investigations conducted at the Station, sediments from the ground surface to approximately 90 to 150 feet bgs predominantly consist of massive silt, clayey silt, clay, and silty clay deposits, with laterally discontinuous lenses of sand and gravel (BNI, 2000b). A continuous layer of stiff clay, approximately 10 to 30 feet thick, is present across the Station at the bottom of the third water-bearing zone (WBZ) (see Section 2.3.4), which ranges in depth from approximately 90 feet to 120 feet bgs (Bechtel Environmental, Inc. [BEI], 2008; DON, 2010).

2.3.4 Groundwater

The Station is within the Irvine Forebay Pressure subbasin within the San Diego Creek/Newport Bay Watershed and the Irvine Groundwater Management Zone (GWMZ; Figure 4) (RWQCB, 2019a). In this area, the coastal plain overlies approximately 1,300 feet of unconsolidated sediments.

Collectively, the permeable water-bearing sediments within the upper 90 to 150 feet bgs constitute the shallow aquifer. Underlying the shallow aquifer is a highly permeable sand zone, beginning at approximately 150 feet bgs, which constitutes the top of the

regional aquifer (BNI, 2000b). Three WBZs of lower permeability than the regional aquifer have been identified within the shallow aquifer beneath the Station (Figure 5):

- First WBZ – from approximately 5 to 30 feet bgs
- Second WBZ – from approximately 30 to 60 feet bgs
- Third WBZ – from approximately 60 to between 90 and 120 feet bgs

The depth and thickness of the WBZs vary from location to location beneath the Station, reflecting the heterogeneity of the interbedded alluvial sediments. Figure 5 depicts the conceptual hydrogeologic model for the three WBZs and regional aquifer underlying the Station. Overall, the shallow aquifer consists primarily of fine-grained floodplain deposits, including massive silts and clays with discontinuous lenses of sands and gravels (BNI, 1996a). The first WBZ is separated from the second WBZ by a locally continuous clay aquitard. Field data indicate that the first and second WBZs are hydraulically interconnected, and the third WBZ is usually separated hydraulically from the second WBZ (DON, 2004a, 2004b, 2004c). The third WBZ is a transitional zone between the shallow aquifer and the underlying regional aquifer and consists of minor sand lenses embedded within the clay aquitard between the shallow and regional aquifers (BNI, 1996a). There is little flow between the shallow and regional aquifers because of the clay aquitard (BNI, 1996a). Hydraulic testing indicated that groundwater in the shallow WBZ is present under semi-confined conditions (DON, 2004a, 2004b, 2004c).

Groundwater in the first WBZ intercepts the land surface at Peters Canyon, Barranca, and Santa Ana-Santa Fe Channels, and Peters Canyon Channel is a major discharge zone for shallow groundwater (BNI, 1996a). Discharge into these channels controls shallow groundwater flow patterns in these areas (BNI, 1996a). At IRP Site 1 (Operable Unit [OU] 3), located adjacent to Peters Canyon Channel, a concrete-containment wall present along the western side of the channel and installed through the first WBZ prevents seepage of groundwater into the channel and locally affects groundwater flow in the first WBZ (BNI, 1996a; MMEC Group, 2017a). This containment wall and an associated French drain and sump system are part of the final remedy for OU-3 (DON, 2001b).

Recent groundwater monitoring data collected in 2019 for OU-1A/1B North and OU-1B South indicate that the prevailing groundwater flow direction in the first and second WBZs was generally toward the south to southwest in the central portion of the Station, with flow deviations toward extraction wells within the hydraulic containment areas associated with the OU-1 remedy (Aptim Federal Services, LLC [APTIM], 2020b). Capture zone maps depicting the effects of the groundwater extraction systems, including cones of depression in groundwater elevations around the extraction wells,

are provided in the *Final 2019 Annual Performance Evaluation Report* (APTIM, 2020b). Toward the eastern boundary of the Station, basewide groundwater elevation maps indicate that the groundwater flow direction is generally southeast toward Peters Canyon Channel (BNI, 1996a; DON, 2010). Groundwater in the third WBZ and regional aquifer flows southwesterly toward the Pacific Ocean (MMEC Group, 2018c).

The *Water Quality Control Plan, Santa Ana River Basin* (Basin Plan; RWQCB, 2019a) lists the following existing or potential beneficial use designations for the Irvine GWMZ in the Lower Santa Ana River Basin, which includes groundwater underlying the Station:

- Municipal and domestic supply (MUN; including drinking water supply)
- Agricultural supply
- Industrial service supply
- Industrial process supply

The Basin Plan does not differentiate groundwater beneficial uses on the basis of depth (the Irvine GWMZ does not explicitly exclude the shallow aquifer), nor does the Basin Plan indicate that the Irvine GWMZ includes an exception for MUN beneficial use (RWQCB, 2019a). However, according to a Fact Sheet in Attachment F of Order No. R8-2019-0061, *General Waste Discharge Requirements for Groundwater Discharges to Surface Waters Within the Newport Bay Watershed*, "generally the shallow aquifer water quality has been altered by anthropogenic activities (including irrigated agriculture) beginning in the early part of the 20th century and therefore is not used for drinking water supply" (RWQCB, 2019b). The Irvine GWMZ consists of the deep regional aquifer and excludes the "shallow perched aquifer," and states that "this shallow groundwater zone is not designated as MUN and is poorly connected to the Irvine GWMZ" (RWQCB, 2019b). To date, the Basin Plan has not been updated to distinguish the shallow aquifer from the Irvine GWMZ or revise its beneficial uses.

2.3.5 Surface Water

Surface waters consist of small streams, flood channels, and water storage reservoirs. Three channels bound the Station: Barranca Channel to the south, Santa Ana-Santa Fe Channel to the north, and Peters Canyon Channel to the east. These lined and unlined channels are incised approximately 10 to 20 feet below the surrounding land surface and permit flow between groundwater and surface water, except adjacent to OU-3, where the remedy includes a containment wall and a French drain and sump system that was designed specifically to prevent groundwater discharge to a portion of Peters Canyon Channel (MMEC Group, 2020b). Groundwater flow in the first WBZ is altered because of this containment wall, but it has been documented to flow around the wall at

a slow rate with travel times estimated at more than 60 years (BNI, 1996a; MMEC Group, 2017a). Data obtained during the Remedial Investigation (RI) at OU-3 indicate that both Barranca Channel and Peters Canyon Channel are “gaining” streams in the reach of the Station, and Santa Ana-Santa Fe Channel loses water in its western reach and gains water in its eastern reach (BNI, 1996b). As a result, these channels typically contain water year-round because of discharge of shallow groundwater to the channels and urban runoff and nearby water district facility discharges.

Generally, surface water flows south and southwest, away from the Station. However, the Santa Ana-Santa Fe Channel and Barranca Channel carry flow southeast along the edges of the Station boundary. The Santa Ana-Santa Fe Channel discharges into Peters Canyon Channel near the eastern corner of the Station. Short ditches running along the Santa Fe Railroad tracks and along Warner Avenue and a culvert beneath Edinger Avenue also carry flow to Peters Canyon Channel. Peters Canyon Channel merges with San Diego Creek approximately ⅓ mile southwest of the Station. Barranca Channel turns southwest off-Station and discharges into San Diego Creek approximately 1 mile southwest of the Station. San Diego Creek empties into upper Newport Bay approximately 5 miles southwest of the Station (MMEC Group, 2016). Surface drainage at the Station is controlled by local topography and by various man-made drainages. As a result, the Station does not receive surface runoff from off-Station sources. Surface runoff as excess precipitation leaves the Station through underground storm drainage systems or open ditches and channels that eventually drain to surface waters/flood control channels (e.g., Peters Canyon Channel, Barranca Channel, or Santa Ana-Santa Fe Channel).

2.3.6 Drinking Water Supply

Groundwater in the Irvine GWMZ has designated MUN beneficial use, and the shallow groundwater is not excepted from this use in the Basin Plan (RWQCB, 2019a). However, only groundwater in the regional aquifer in the Irvine GWMZ below a depth of approximately 150 feet bgs is used for drinking water supply and other potential beneficial uses. Shallow groundwater in the first three WBZs is not used as a drinking water source because of limitations such as high total dissolved solids content and selenium and nitrate impacts from natural and/or agricultural activities that render it unsuitable as a potential source of drinking water according to state and federal water quality criteria (DON, 2010). Shallow groundwater in the first three WBZs is not effectively hydraulically connected to the regional aquifer because of the clay aquitard (refer to Section 2.3.4).

The Groundwater Ambient Monitoring and Assessment Program (CSWRCB, 2020b) and United States Geological Survey (USGS, 2020) websites were checked to identify

possible supply wells near the Station. These databases contain data from current and historical wells. Multiple wells were identified within a 1-mile radius (Figure 6). A total of 24 wells were identified within the Station that were all classified as “Water Supply, Other.” Of those wells, 20 of them were near IRP Site 1 and were grouped into clusters containing two to three wells. The wells identified on the CSWRCB website all appear to be USGS wells with recorded monitoring data from 1983 through 1985. None appear to be supply wells, but the type and status of the wells identified via the online search are uncertain. The *Final Record of Decision* (ROD)*/Remedial Action Plan for OU-4B* (DON, 2010) indicated that “Osumi Farms operated the only on-Station production well, designated as OSUM-T. This well, used exclusively for agricultural purposes, was in the southern portion of the station. OSUM-T was shut down in December 2000 and destroyed in March 2003.” A well search for public and private water supply wells within a 3-mile radius of the Station was conducted; no downgradient domestic use wells were identified within this radius (Trevet, Inc., 2016).

Irvine Ranch Water District (IRWD) currently supplies domestic water to the areas around the Station through a north-south, 16-inch-diameter pipeline. It also supplies reclaimed (nonpotable) water to the areas around the Station through a 16-inch-diameter pipeline beneath Barranca Parkway (City, 2017).

2.3.7 Biological Resources

Originally, the natural landscape habitat of the Station consisted of grassland and sage scrub. Typical sage scrub habitat consists of shrubs under 3 feet high, with the predominant species being the coastal California sagebrush *(Artemisia californicas)*. The native vegetation in this region is typical of the semi-desert grassland community. Three types of plants have adapted to this kind of environment: annuals, succulents, and desert shrubs. Native fauna includes various birds, rodents, small game animals, and predators (DON, 1994).

At the Station, native plants of the coastal sage scrub community are generally absent with the exception of tarragon *(Artemisia dracunculus)*, nightshade *(Solanum douglasii)*, and morning glory *(Calystegia macrostegia)*. Of the remaining species of plants identified, 78 percent were non-native weeds or ornamental plants, associated with landscaping or agriculture (DON, 1999). Field surveys conducted during the RI at OU-1 and OU-2 documented the lack of significant wildlife and the degraded habitat at most of the Station, but did identify the potential for ecological receptors at the drainage ditches at IRP Site 5 (DON, 2010). Birds and mammals that could occur are typical of open grassland communities and suburban neighborhoods in southern California. Animals sighted included rabbits, squirrels, gophers, mice, and coyotes. A total of 48

species of birds were sighted, including herons, egrets, swans, geese, ducks, vultures, hawks, sandpipers, gulls, hummingbirds, swallows, and crows (DON, 1999).

An American peregrine falcon *(Falco peregrinus anatum)* was observed in March 1993. Focused surveys conducted in April and May 1993 concluded that the Station does not constitute habitat for the American peregrine falcon. The falcon observed was found to be an occasional transitory migrant (Tierra Madre Consultants, 1993a, 1993b).

Biological surveys concluded that no vernal pools exist at the Station. Therefore, there is no suitable habitat for the endangered species San Diego fairy shrimp *(Branchinecta sandiegogenensis)* or Riverside fairy shrimp *(Streptocelaphus woottoni)* (Tierra Madre Consultants, 1993b).

The southwestern pond turtle *(Clemmys marmorata pallidaem)* is considered a “species of special concern.” One turtle was sighted in San Joaquin Channel in 1993. A focused study was conducted in September and October 1998, and three turtles were sighted. A total of 26 turtles were trapped during construction of Jamboree Road in 1991 (Tierra Madre Consultants, 1999). To build nests, the turtles must climb out of the San Joaquin Channel to use adjacent habitat. The adjacent habitat consists of disturbed field with compacted soil. Therefore, no appropriate nesting habitat for the turtles is found at the Station (DON, 1999).

Loggerhead shrikes (*Lanius ludovicianus*) are considered a “species of special concern,” and four were observed at the Station. During field surveys, the loggerhead shrikes were presumed to be nesting in shrubs and trees and foraging in agricultural fields (Tierra Madre Consultants, 1993a).

Although burrowing owls *(Speotyto cunicularia)* are identified as a “species of special concern,” a biological survey conducted in July 1998 found that no owls or suitable habitat exist at the Station (DON, 1998). The silty clay loam and loam soil found at the Station do not contain enough sand content for the burrowing owl (DON, 1999).

2.3.8 Potential Receptors

Potential receptors at the Station are unique to each AOI but could include current and future residents, commercial/industrial users, construction workers, and recreational visitors, depending on current and future land use. The potential ecological receptors discussed in Section 2.3.7 include terrestrial plants, invertebrates, birds, and mammals, and aquatic plants, invertebrates, birds, and reptiles. Potential exposure pathways identified for these receptors include soil, surface water, and groundwater.

3.0 PFAS Investigations Conducted by Others

As discussed in Section 1.4, the DON proactively conducted multiple phases of groundwater investigation before bringing PFAS into the CERCLA program and initiating this basewide PA/SI. Groundwater sampling and analysis were completed before the PA identified AOIs based on previously conducted research into potential source areas (Section 4.2) and PFAS detections in groundwater (Table 5-2).

In 2013 and 2014 as part of compliance with the third U.S. EPA Unregulated Contaminant Monitoring Rule, IRWD collected water samples within its potable water distribution systems and analyzed them for six PFAS (including PFOS, PFOA, and PFBS) using U.S. EPA Method 537 (U.S. EPA, 2016d). There were no PFAS detections, and method reporting limits were less than the current DoD screening levels for PFOA and PFOS (0.04 µg/L) and U.S. EPA (2021b) screening level for PFBS (0.60 µg/L). These data confirmed that potable water supplied to residents in the vicinity of the Station did not contain PFAS at concentrations above then-current relevant screening levels. Unregulated Contaminant Monitoring Rule data are publicly available for download (U.S. EPA, 2017a).

This page is intentionally blank.

4.0 Preliminary Assessment Methodology and Findings

This section presents the PA methodology and findings.

4.1 Methodology

To satisfy the objective of the PA portion of this PA/SI (Section 1.3), research was conducted to assess the potential release of PFAS from the use and storage of PFAS-containing materials at the Station from 1940 to the present. Research conducted to document PFAS use at the Station included:

(1) Online research for materials documenting the use and storage of PFAS-containing materials within the Station boundaries such as historical images and drawings, technical reports, property records, and news articles for documentation of any crash sites or aircraft fires

(2) Archival records research and historical document review (i.e., Naval Installation Restoration Information Solution [NIRIS], NAVFAC SW Administrative Record) of military operations and site activities

(3) Interviews of Station personnel and other knowledgeable individuals

(4) Review of documents pertaining to DON-owned property at the Station during operation to closure in 1999 and currently owned DON property

Interview Logs are provided in Appendix A, and Research Logs from relevant documents that were reviewed are provided in Appendix B.

4.1.1 Areas of Interest

AOIs where there is potential for materials known to contain PFAS include the following:

- Crash sites/locations of aircraft fires
- Firefighting training areas
- Hangar fire suppression system operations, testing, and accidental releases
- Metal plating operations
- Storage vessels/containers (underground storage tanks [USTs], aboveground storage tanks [ASTs], drums, buckets, and other miscellaneous containers) where AFFF concentrate or spent AFFF foam and water and materials known to contain PFAS were stored with or without secondary containment

- Areas where use or release of AFFF or materials known to contain PFAS was documented via interviews, environmental reports, or electronic or print media
- Areas where materials known to contain PFAS were handled, used, or released

4.1.2 Assessment Guidelines

During the research, IRP sites and other potential AOIs were identified and evaluated on the basis of how the area was used. The following guidelines were used to assess each location.

Storage Area: An area where materials known to contain PFAS were stored in bulk. Identified storage containers/areas had to have contained one or more of the following materials:

- Materials known to contain PFAS
- AFFF concentrate
- Foam solution (foam and water mixtures)
- Spent AFFF and water mixtures (i.e., spent firewater after use and release)

Usage/Spilled Area: An area where materials known to contain PFAS were discharged intentionally or unintentionally. Discharges include the following circumstances:

- Materials known to contain PFAS were discharged intentionally (fire training exercises, metal plating operations, equipment testing, or firefighting activities).
- Materials known to contain PFAS were released unintentionally (e.g., accidental discharges from fire suppression systems due to equipment failures or spills).
- Materials known to contain PFAS were released through transport mechanisms (aircraft wash rack wastewater or overland flow to perennial or ephemeral surface water features, drainage ditches/channels, or adjacent canyons).

Disposal Area: An area where materials known to contain PFAS were disposed of intentionally or unintentionally. Disposal areas include the following:

- Wastewater treatment plants (i.e., evaporation ponds, sludge beds, landfarming areas where biosolids were disposed)
- Landfills
- Disposal trenches

4.1.3 Online Research and Records Review

Prior to the PA, the DON proactively searched certain internal databases to identify potential sites or locations at the Station that could have released PFAS to the environment. The databases were searched for the following key words: “fire,” “hangar,” “AFFF,” “burn,” “crash crew,” “plating,” and “foam.” Based on the results (Section 4.2.1), 26 AOIs were identified as potential PFAS source areas.

As part of the PA, Multi-MAC JV conducted a comprehensive records review to obtain available information such as historical images and drawings, technical reports, property records, news articles, and other data to help identify AOIs where materials containing PFAS were potentially stored, handled, discharged, disposed of, or used at or associated with the Station. The records review included searches of the internet, the NIRIS and Administrative Record databases, and available historical documentation. Online resources were searched using the following keywords: “crash,” “fire,” “as-built,” “master plan,” “real property,” “mishap,” “PFAS,” “perfluorinated compound (PFC),” and “AFFF.” All research was documented on Research Logs (Appendix B). To ensure that research activities were conducted sufficiently to fulfill the PA objective (Section 1.3), PFAS Research Checklists (Appendix C) were used as a data quality tool.

The following online and/or records review resources were accessed for information:

- NIRIS – environmental documents and historical site and material use
- NAVFAC SW Administrative Record – environmental site documents and historical site and material use
- BRAC PMO Information Repository – environmental site documents, closure history, and property transfer summary (https://www.bracpmo.navy.mil/brac_bases/)
- CSWRCB GeoTracker Database – environmental site documents
- DTSC EnviroStor Database – environmental site documents
- DTSC Hazardous Waste Tracking – hazardous and nonhazardous material handling
- California Department of Water Resources – water supply well logs and information
- California Water Science Center – water supply well, Groundwater Ambient Monitoring and Assessment Program (CSWRCB, 2020b), and water quality and groundwater elevation information

- USGS – water supply well, water quality, and groundwater elevation information
- U.S. EPA – water quality information
- Aviation Safety Network – plane crash records
- California Office of Emergency Services – hazardous spills and releases
- California Department of Resources Recycling and Recovery – disposal (landfill) facility information

The NIRIS database was a primary source of information because it includes most, if not all, environmental documents for the Station. NIRIS was searched for the following key words: “AFFF,” “electroplating,” “wastewater treatment/sludge area (pond),” “firefighting training area,” “landfill,” “oil/water separator,” “vehicle wash station,” “drum or soil storage,” “fire suppression system,” “airfield,” “crash,” and “fire.”

The information obtained during research was evaluated to identify areas at the Station where materials known to contain PFAS were potentially stored, handled, discharged, disposed of, or used. Some fire-resistant aviation hydraulic fluids, photographic agents, and pesticides are known to contain PFAS. Areas where hydraulic fluid, photographic agents, and pesticides have been stored, used, spilled, or disposed of have been documented; however, the specific hydraulic fluid, photography agent, or pesticide that was documented at each area could not be verified to contain PFAS. Therefore, these AOIs are recommended for NFA at this time.

4.1.4 Interviews

According to the DON (2020), historical documentation of AFFF use and releases is often incomplete because records were historically not required. Therefore, in addition to document reviews, interviews are important for understanding past practices and identifying the potential for environmental releases.

A list of potential interviewees who were considered knowledgeable about the use of AFFF and other potential PFAS-containing materials at the Station was provided by the DON. Interviews were initiated by providing a PFAS general information questionnaire by email to these individuals. For most interviewees, a teleconference was held to discuss responses to the questionnaire questions. Other leads provided by interviewees were contacted where possible.

4.2 Findings

This section describes the 36 AOIs (9 IRP sites, AOIs 1 through 22, 24, 161, 162, 163, and 172) that were identified by online records research and interviews with key persons as described below.

4.2.1 Online Research and Records Review

Based on the initial online research and records review, 30 AOIs (grouped by area) were initially identified as potential PFAS source areas. For most AOIs where an existing IRP site already existed, new identification numbers were not assigned, and the original site designation has been retained for consistency. IRP Site 6 is the exception, and the rationale for assigning an AOI identification number is explained below. The following PFAS AOIs were identified:

- **AOI 1 –** IRP Site 6 and Building 250 (known as Marine Aircraft Group [MAG] 16 Supply) and the associated drainage ditch are one AOI because of their association, prior uses (including an O/W SEP and annual testing of an AFFF-based fire suppression system), and the presence of PFOA and PFOS in groundwater at concentrations above current DoD (2019a) screening levels (see Table 5-2). This AOI is part of former CO-2.
- **15 AOIs Within CO-5 –** These 15 AOIs have been grouped into three AOCs (Crash Crew AOC, Fire/Rescue Station AOC, and Warehouse AOC) and Hangar 1 as follows:
    - **Crash Crew AOC (9 AOIs) –** Buildings 103 (AOI 2), 183 (AOI 3), and 259 (AOI 4); disposal storm drain DSD-04 (AOI 5); miscellaneous crash drill site MCD-02 (AOI 6); miscellaneous disposal area MDA-09 (AOI 7); miscellaneous wash area MWA-14 (AOI 8); and two treatment/oil water separators, TOW-13 (AOI 9) and TOW-14 (AOI 10), are located southeast of Hangar 1 and considered AOIs based on prior uses (fire station, AFFF storage, AFFF transfer and test discharge, crash crew storage, firefighter training, wash areas, and O/W SEPs), and PFOA, PFOS, and/or PFBS have been detected in groundwater at concentrations above current/relevant DoD (2019a) and U.S. EPA (2021b) screening levels (see Table 5-2).

- **Fire/Rescue Station AOC (4 AOIs) –** Buildings 13 (AOI 11) and 49 (AOI 12), miscellaneous disposal area MDA-05 (AOI 13), and miscellaneous wash area MWA-15 (AOI 14) are in the western portion of OU-1A and are considered AOIs based on prior uses (AFFF storage and transfer, test discharge, truck washing, disposal and washing), and PFOA, PFOS, and/or PFBS have been detected in groundwater at concentrations above current/relevant DoD (2019a) and U.S. EPA (2021b) screening levels (see Table 5-2).
- **Warehouse AOC (AOI 15) –** Building 71H (AOI 15) is in the central portion of CO-5 and is considered an AOI based on prior uses (fire department storage), and PFOA, PFOS, and/or PFBS have been detected in groundwater at concentrations above current/relevant DoD (2019a) and U.S. EPA (2021b) screening levels (see Table 5-2).
- **Hangar 1 (AOI 16) –** Hangar 1 (Building 28) is in the central portion of CO-5 and is an AOI because it was equipped with an AFFF-based fire suppression system that was tested annually.

- **Hangar 2 (AOI 17) –** Hangar 2 (Building 29) is in the center of CO-6. An AFFF-based fire suppression system present at Hangar 2 was tested annually.
- **Building 273 (AOI 172) –** This building was identified as containing a helicopter engine test cell potentially equipped with an AFFF-based fire suppression system
- **3 AOIs in Parcel 1 –** Two hangars reportedly constructed in 1988 and the associated O/W SEP were located near what is now Warner Avenue, just east of Red Hill Avenue.
  - **MAG-16 Hangar (AOI 162) (Building 524) –** This MAG-16 Helicopter Hangar was located in the area currently occupied by the United States Army Reserve and is an AOI because it was equipped with an AFFF-based fire suppression system. Refer to Section 4.2.2.5 for additional information.
  - **MAG-16 Hangar (AOI 163) (Building 525) –** This MAG-16 Helicopter Hangar was located in the area currently developed as Warner Avenue and is an AOI because it was equipped with an AFFF-based fire suppression system. Refer to Section 4.2.2.5 for additional information.
  - **TOW-3 (AOI 19) –** This O/W SEP treated wastewater generated from the MAG-16 hangars in Buildings 524 and 525. It is considered an AOI because wastewater from the hangars may have contained AFFF.

- **IRP Site 1 –** The Moffett Trenches site is a former landfill that is now partially beneath Jamboree Road. The site is on either side of and beneath Jamboree Road and is adjacent to Peters Canyon Channel. The Moffett Trenches received inert municipal solid waste, trash, and industrial chemicals from the auto hobby shop, metal shop, electrical shop, photo shop, and various Marine squadrons from 1950 to the mid-1970s. Crash Crew pits (including two shallow surface pits and a later third pit) were constructed in the shape of a "Z." The Z-shaped pits were reportedly used for practicing use of hand-held fire extinguishers. PFOA, PFOS, and/or PFBS have been detected in groundwater at concentrations above current/relevant DoD (2019a) and U.S. EPA (2021b) screening levels (see Table 5-2).
- **IRP Site 3 (OU-1B South) –** This site is adjacent to Hangar 2 on the northeastern side of CO-6 and is an AOI because of its prior uses (paint shop, dip tank, paint stripping, and waste discharge), and PFOA, PFOS, and/or PFBS have been detected in groundwater at concentrations above current/relevant DoD (2019a) and U.S. EPA (2021b) screening levels (see Table 5-2).
- **Drainage Area No. 1, Ditch 5 North (IRP Site 5N) –** This site was an unlined drainage ditch northeast of Building 29 (Hangar 2) in former CO-7 that may have received a variety of wastes disposed of in floor drains in Buildings 28 (Hangar 1) and 29 (Hangar 2) (BNI, 2001a). These buildings contained AFFF-based fire suppression systems and were exposed to runoff from other potential contaminant source areas. Based on interviews, the AFFF-based fire suppression systems were tested annually in Hangars 1 and 2.
- **Drainage Area No. 1, Ditch 5A South (IRP Site 5S(a)) –** This site was an unlined drainage ditch in former CO-9 that may have received a variety of wastes disposed of in floor drains in Buildings 28 (Hangar 1) and 29 (Hangar 2). These buildings contained AFFF-based fire suppression systems and were exposed to runoff from other potential contaminant source areas. Based on interviews, the AFFF-based fire suppression systems were tested annually in Hangars 1 and 2. PFOA, PFOS, and/or PFBS have been detected in groundwater at concentrations above current/relevant DoD (2019a) and U.S. EPA (2021b) screening levels (see Table 5-2).
- **Drainage Area No. 1, Ditch 5B South (IRP Site 5S(b)) –** This site was an unlined drainage ditch and is an AOI because it may have received a variety of wastes disposed of in floor drains from Hangar 1 (Building 28) and Hangar 2 (Building 29) (BNI, 2001a), which both were equipped with AFFF-based fire suppression systems that were tested annually.

- **IRP Site 9 –** IRP Site 9, Hangar 1 Line Shacks and Apron 1, included IRP Sites 9a and 9b. From about 1971 to 1982, 75 percent of the oil and hydraulic fluid changes for aircraft were performed in the line shack area (Brown and Caldwell, 1985). This area is an AOI because the wash-down of spilled oil and hydraulic fluids that potentially contained AFFF could have been a PFAS source. PFOA and PFOS detected in groundwater downgradient from IRP Site 9 exceeded current DoD (2019a) screening levels.
- **Parcel 24 (3 AOIs) –** Parcel 24 (including early transfer Parcels 24-1A and 24-1B) is approximately 50 acres in size and is in the northern portion of the Station. Its western edge is included in CO-5. This area has three AOIs, collectively referred to as Drum Storage Area No. 3, that are upgradient of CO-5, which has had PFOA, PFOS, and/or PFBS detected in groundwater at concentrations above current/relevant DoD (2019a) and U.S. EPA (2021b) screening levels (see Table 5-2).
    - **IRP Site 13E** – Drum Storage Area No. 3 (eastern area) is one of three parts of Drum Storage Area No. 3 and is an AOI because of prior uses (drum storage), and PFOA, PFOS, and/or PFBS have been detected in groundwater at concentrations above current/relevant DoD (2019a) and U.S. EPA (2021b) screening levels (see Table 5-2).
    - **IRP Site 13S** – Drum Storage Area No. 3 (southern area) is one of three parts of Drum Storage Area No. 3 and consists of two AOCs, MWA-18 and temporary storage area ST-72B. The site is partially within CO-5 and is an AOI because of prior uses (drum storage, wash areas, and a lubrication facility), and PFOA, PFOS, and/or PFBS have been detected in groundwater at concentrations above current/relevant DoD (2019a) and U.S. EPA (2021b) screening levels (see Table 5-2).
    - **IRP Site 13W** – Drum Storage Area No. 3 (western area) is one of three parts of Drum Storage Area No. 3 that is partially within CO-5 and is an AOI because of prior uses, and PFOA, PFOS, and/or PFBS have been detected in groundwater at concentrations above current/relevant DoD (2019a) and U.S. EPA (2021b) screening levels (see Table 5-2).

Once the interviews were conducted and additional information was provided, additional AOIs were added to the list, as described in Section 4.2.2.

4.2.2 Interviews

Completed interview questionnaires are included in Appendix A. Certain interviews helped confirm or corroborate the potential for PFAS presence at the AOIs presented in Section 4.2.1. Interviews were conducted with the following individuals:

- A former health and safety (H&S) director
- A former Commanding Officer
- A former pilot
- A former/current environmental consultant to the DON
- A former site manager
- A current employee of Marine Corps Installations (MCI) West Aviation
- A then-current Restoration Advisory Board (RAB) member (since resigned)

A summary of each interview follows. Table 4-1 summarizes the individuals interviewed, their roles, and the sites for which they provided information. Duplicate sites are listed only once.

4.2.2.1 Former H&S Director

This individual identified five potential AOIs:

- Firefighter training was allegedly conducted outside Building 543 (AOI 20), and PFAS-containing materials may have been used or stored nearby. The training area was near the southwestern edge of the Station, between Armstrong Avenue and Legacy Road.
- A land-farming site allegedly existed north of Building 577 where contaminated soils and sludges potentially containing PFAS may have been incorporated into soil (AOI 21).
- A wastewater treatment plant (Building 610) may have been used to dispose of PFAS-containing materials (AOI 22). Building 610 was approximately 800 square feet (BNI, 2001a) and was at the intersection of Armstrong Avenue and Barranca Parkway.
- AFFF-based fire suppression systems, which usually require annual testing, were allegedly located in the following buildings:

- Building 250 – MAG-16 Supply (also contains an O/W SEP). Building 250 was approximately 67,000 square feet (BNI, 2001a) and was along Park Avenue near the southern corner of the Station. Building 250 will be further investigated as part of AOI 1.
- Building 520 (also contains an O/W SEP) (AOI 18). Building 520 was approximately 63,000 square feet (BNI, 2001a) and was near the intersection of Tustin Ranch Road and Park Avenue.

The former H&S director also corroborated the locations of the following three potential AOIs, which were identified during records research or other interviews:

- Crash Crew Fire Training Pits (IRP Site 1)
- Hangar 1 (Building 28) (AOI 16)
- Hangar 2 (Building 29) (AOI 17)

The former H&S director identified three fire stations, where common practices included AFFF storage, transfer into fire trucks, and test discharging. Truck washing also allegedly occurred. However, there was no available supporting documentation that the buildings identified were ever used as fire stations:

- Building 207 was identified as a fire station with an adjacent pit that was used for dumping excess AFFF. However, this information does not align with documentation that identifies Building 207 as a Line Shack (BNI, 2001a).
- Building 93 was identified as a fire station. However, this information does not align with documentation that identifies Building 93 as Bachelor Officer's Quarters (BNI, 2001a).
- Building 171 was identified as a fire station. However, this information does not align with documentation that identifies Building 171 as the Air Operations Building (BNI, 2001a).

The former H&S director also identified two areas at which AFFF was allegedly stored. However, there was no supporting documentation to indicate that spills or a release of AFFF had occurred at these areas:

- Treatment, storage, and disposal facility at Building 248.
- Warehouse (Building 568) near Building 250 in former CO-2.

4.2.2.2 Former Commanding Officer

The former Commanding Officer corroborated the location of the following AOI, which was also identified during records research or other interviews:

- Near Crash Fire Rescue (CFR). Review of documentation identifies this area as Building 183 (AOI 3; BNI, 2001b).

The former Commanding Officer also identified a potential crash area near Valencia Avenue (AOI 23). However, a follow-up interview was conducted to clarify the location of the crash area, and the interviewee indicated that his response had been misinterpreted – he was unaware of any crash occurring near Valencia Avenue. Therefore, no known use of AFFF had occurred in association with Valencia Avenue.

The former Commanding Officer also identified two potential AFFF storage areas. However, the interviewee could not locate the areas on a site map, the locations were not corroborated by any other available information, and there was no documentation to indicate that spills or a release of AFFF occurred at these areas:

- Log cabin area near main entrance
- Marine Aircraft Wing Main Building

A log cabin near the “main entrance” could not be corroborated; however, a log cabin does exist on the eastern side of Hangar 1 in proximity to several other AOIs. Because the exact location of the alleged log cabin has been speculated and because the site of the known log cabin is in an area that contains AOIs that will be investigated as potential source areas for PFAS during a basewide RI, the log cabin is not considered an AOI. Additional information regarding the location of the Marine Aircraft Wing Main Building was requested from the interviewee but was not available at the time of preparation of this report.

4.2.2.3 Former Pilot

The former pilot corroborated the locations of the following three AOIs, which were also identified during records research or other interviews:

- Landfills – in the area also known as IRP Site 1 (Crash Crew Fire Training Pits)
- Electroplating areas at the following locations:
    - Southern side of Hangar 2 (AOI 17)
    - Hangar 53. The former pilot, in follow-up correspondence, clarified that Hangar 53 in the interview notes is in reference to Building 520 (also identified by the former H&S director; AOI 18)

The former pilot could not recall the exact locations of the fire stations but indicated that they may have been near Base Operations (based on documentation, known as Building 183 [AOI 3]) and Mainside by base housing (based on documentation, known as Building 13 [AOI 11]). The former pilot indicated that every morning the CFR team would check its hoses and systems; however, an exact location was not provided for these potential releases.

4.2.2.4 Former/Current Environmental Consultant to the DON

The former/current consultant corroborated one potential AOI, which was also identified during records research:

- IRP Site 1, including the Moffett Trenches and Crash Crew Training Pits, which were shallow landfill trenches and pits constructed to burn flammable liquids for firefighter training exercises.

4.2.2.5 Former Site Manager

The former site manager identified two fire stations where common practices included AFFF storage, transfer into fire trucks, and test discharging. Truck washing also allegedly occurred:

- Fire Station: Building 183 (directly east of Hangar 1 [Building 28]). Building 183 (AOI 3) is approximately 150 feet southeast of Hangar 1 and is approximately 6,800 square feet in size (BNI, 2001a).
- Fire Station: Building 13, closer to Headquarters west of Hangar 1 (Building 28). Building 13 (AOI 11) was approximately 3,300 square feet (BNI, 2001a).

The former site manager also corroborated five potential AOIs, which were also identified during records research or by other interviewees:

- The CFR area adjacent to Hangar 1 (Building 28), a concrete-lined site used for firefighting training. Review of documentation identifies this area as MCD-02 (AOI 6; BNI, 2001b).
- Potential burial pits at the Moffett Trenches (IRP Site 1).
- Building 520 is a former hangar (previously identified as AOI 18).
- Building 524 is a former helicopter maintenance hangar (AOI 162) identified by the former site manager as being equipped with an AFFF-based fire suppression system.

- Building 525 is a former helicopter maintenance hangar (AOI 163) identified by the former site manager as being equipped with an AFFF-based fire suppression system.

The former site manager also indicated that building 190 (AOI 161), in addition to those identified during records research and by other interviewees, had an AFFF-based fire suppression system.

4.2.2.6 Current Employee of MCI West Aviation

The following location was listed by the current employee of MCI West Aviation as having the potential for storage, release, or disposal of AFFF or materials known to contain PFAS. The interviewee could not locate the area on a site map, but subsequent investigation of historical aerial photos and accounts of the fiery crash of two helicopters allowed the general location to be identified:

- Site of an aircraft crash into the corn fields southeast of Mooring Mat 5 (airship pavement) at the Station boundary south of Hangar 2 (AOI 24).

The current employee of MCI West Aviation also identified two potential AOIs, which were identified during records research or other interviews:

- Fire pit/fire station used for CFR training near Hangar 1. Review of documentation identifies this area as MCD-02 (AOI 6; BNI, 2001b).
- Marine Aircraft Wing Hangar used for electroplating. Other interviewees identified Building 520 as a hangar where electroplating allegedly occurred (AOI 18).

4.2.2.7 Current RAB Member

The then-current, now-former RAB member referred the project team to the *Final Basewide Environmental Baseline Survey* (BNI, 2001a) and did not identify any specific locations in the questionnaire or on any map.

4.2.2.8 Summary

Based on the findings from the interviews, Multi-MAC JV identified or confirmed the following areas with potential PFAS presence and/or usage:

- IRP Site 1: Moffett Trenches/Crash Crew Fire Training Pits
- AOI 1: Building 250 (also contains O/W SEP) fire suppression system
- AOI 3: Fire Station (Building 183)
- AOI 6: Burn Pit (MCD-2)

- AOI 11: Fire Station (Building 13)
- AOI 16: Hangar 1 (Building 28) fire suppression system
- AOI 17: Hangar 2 (Building 29) fire suppression system
- AOI 18: Building 520 Hangar (also contains O/W SEP and possible electroplating) with fire suppression system
- AOI 20: Firefighter training conducted outside of Building 543
- AOI 21: Land-farming site north of Building 577
- AOI 22: Wastewater treatment plant (Building 610)
- AOI 24: Aircraft crash – Mat 5
- AOI 161: Building 190 fire suppression system
- AOI 162: MAG-16 Hangar (Building 524)
- AOI 163: MAG-16 Hangar (Building 525)

Table 4-1: Interview Summary

Interviewee	Area(s) of Interest Identified or Confirmed
Former H&S Director	• IRP Site 1: Moffett Trenches/Crash Crew Fire Training Pits • AOI 1: Building 250 (also contains O/W SEP) fire suppression system • AOI 16: Hangar 1 (Building 28) fire suppression system • AOI 17: Hangar 2 (Building 29) fire suppression system • AOI 18: Building 520 Hangar (also contains O/W SEP) fire suppression system • AOI 20: Firefighter training conducted outside of Building 543 • AOI 21: Land-farming site north of Building 577 • AOI 22: Wastewater treatment plant (Building 610)
Former Commanding Officer	• AOI 3: Fire Station (Building 183) • AOI 6: Burn Pit (MCD-2)
Former Pilot	• AOI 11: Fire Station (Building 13)
Former/Current Consultant	• NA
Former Site Manager	• AOI 161: Building 190 fire suppression system • AOI 162: MAG-16 Hangar (Building 524) fire suppression system • AOI 163: MAG-16 Hangar (Building 525) fire suppression system
Current Employee of MCI West Aviation	• AOI 24: Aircraft crash – Mat 5
Then-Current RAB Member	• NA

Notes:

AOIs identified in more than one interview are listed only once.

Acronyms:

AFFF = aqueous film-forming foam; AOI = Area of Interest; H&S = health and safety; IRP = Installation Restoration Program; MCI = Marine Corps Installation; NA = not applicable; O/W SEP = oil/water separator; PFAS = per- and polyfluoroalkyl substances; RAB = Restoration Advisory Board

5.0 Site Inspection Methodology and Findings

This section describes the methodology used and the findings from PFAS groundwater and surface water sampling conducted by the DON. The data collected during these previous investigations form the basis for the SI findings reported in this PA/SI Report (Section 5.3). The sites sampled for PFAS represent a subset of the AOIs identified in the PA.

5.1 Methodology

Sampling for the SI occurred over multiple events conducted from July 2017 through December 2020. All procedures were agreed upon by the regulatory agencies prior to the start of fieldwork. No soil samples were collected during any of the sampling events.

The PFAS sampling methodology and results are documented in the following reports:

- *Final Summary Report for Per- and Polyfluoroalkyl Substances Sampling for Groundwater Remedial Action at OU-3, IRP Site 1* (MMEC Group, 2017b)
- *Final Summary Report for November 2017 Per- and Polyfluoroalkyl Substances Sampling at OU-3, IRP Site 1* (MMEC Group, 2018b)
- *Final Summary Report for Per- and Polyfluoroalkyl Substances Presence/Absence Sampling in Groundwater in Carve-Outs 5 and 6* (MMEC Group, 2018c)
- *Final 2019 Annual Performance Evaluation Report, Groundwater Remedy at Operable Units 1A (IRP-13S) and 1B (IRP-3 and -12)* (APTIM, 2020b)
- *Final 2020 Annual Performance Evaluation Report, Groundwater Remedy at Operable Units 1A (IRP-13S) and 1B (IRP-3 and -12)* (APTIM, 2021a)
- *Final Summary Report, Per- and Polyfluoroalkyl Substances Baseline Groundwater Sampling, Operable Unit 4B, Installation Restoration Program Site 5S(a)* (AEJV, 2021)
- *Final Summary Report, Per- And Polyfluoroalkyl Substances Groundwater Sampling at Monitoring Wells I001BC50S and I001MW52S, Operable Unit 3, Installation Restoration Program Site 1* (APTIM, 2020c)
- *Final Summary Report, Additional Assessment of Per- and Polyfluoroalkyl Substances in Groundwater in Carve-Outs 2, 5, 6, and 9 and Groundwater and Surface Water Near Operable Unit 3 (Phase 1)* (MMEC Group, 2020a)

- *Final Summary Report, Additional Assessment of Per- and Polyfluoroalkyl Substances in Groundwater in Carve-Outs 2, 5, 6, and 9 and Groundwater and Surface Water Near Operable Unit 3 (Phase 2)* (MMEC Group, 2020b)
- *Final 2020 Annual Long-Term Monitoring Report, Operable Unit 3, Installation Restoration Program Site 1* (APTIM, 2021b)

The following subsections provide a brief summary of the general methods used and specific field activities associated each event; additional details are provided in the original reports, which are available in the Administrative Record File for the Station (NAVFAC SW, 2021).

5.1.1 Groundwater Sampling

A total of 208 primary and 21 duplicate groundwater samples were collected from 113 different locations at former COs 2 and 9, COs 5 and 6, OU-1A/1B North, OU-3, and OU-4B. The wells associated with each site and the screened intervals associated with each sample are summarized in Table 5-1.

5.1.1.1 Conventional Monitoring Wells

Conventional groundwater monitoring wells were purged and sampled using low-flow methods, with details on exact sampling methodology and any deviations documented in the respective technical reports (MMEC Group, 2017b, 2018b, 2018c, 2020a, 2020b; APTIM, 2020a, 2020b, 2021a, 2021b; AEJV, 2021). In general, low-flow methods were completed and all reusable sampling and field equipment were decontaminated prior to sampling at each monitoring well. During purging, water quality parameters, including pH, temperature, specific conductivity, dissolved oxygen, oxidation-reduction potential, and turbidity, were measured at routine intervals using calibrated field instruments and recorded. Well details are included in Table 5-1.

5.1.1.2 Temporary Monitoring Wells

A total of 40 temporary groundwater monitoring wells were installed during the Phase 1 and Phase 2 PFAS investigations (MMEC Group 2020a, 2020b). Temporary well locations were identified using a Global Positioning System unit. The Geoprobe rig advanced a 2¼-inch-diameter boring to the desired total depth of each “shallow” temporary well, which was up to 30 feet bgs. The temporary wells were constructed using ¾-inch-diameter polyvinyl chloride casing with a prepacked section consisting of 10-foot-long, ¾-inch-diameter stainless-steel screened casing (0.010 slot size), clean silica filter sand, and an end cap at the bottom. The temporary well casing was placed inside each borehole using the center opening of the drive casing in accordance with

Standard Operating Procedure Wood-04 (Attachment 5 of the Final Sampling and Analysis Plan [SAP] Addendum #2; MMEC Group, 2020a), and the drive rods were retracted to expose the screen interval to allow groundwater to enter the temporary wells for sample collection.

For the "deeper" temporary wells, a 2¼-inch-diameter boring was advanced to the desired groundwater sampling depths from 30 to 60 feet bgs using a Hydropunch sampler system. The Hydropunch system used a stainless-steel screen encased in an alloy steel sampler sheath. An expendable drive point was placed at the bottom end of the sheath while the upper drive head was connected to the Geoprobe drilling rods. O-rings were fastened on the drive head and expendable point to provide a watertight sheath that sealed the upper WBZ as the sampler was driven to the desired depth. At the sampling depth, extension rods equipped with a screen push adapter were inserted down the inside of the probe rods. The tool string was retracted while the screen (4 feet long) was held in place with the extension rods to allow for the insertion of sample tubing. When sampling was completed, a removable plug at the bottom of the screen was dislodged to allow for grouting below the sampler as the tool string was retrieved.

During sampling of the temporary monitoring wells, sufficient quantities of water were not produced to allow for parameter stabilization, or high drawdown was experienced prior to sample collection. Therefore, temporary well groundwater samples were collected as grab samples per SAP Addendum #2 (MMEC Group, 2020a). Well details are included in Table 5-1.

5.1.2 Surface Water Sampling

Surface water samples were collected with a bailer from four locations (ISW03, ISW04, ISW06, and ISW07) within Peters Canyon Channel (Figure 9). Four planned surface water sample could not be collected due to insufficient surface water volume. Samples were collected upstream and downstream of OU-3. PFAS surface water sample were collected in 2020 to determine if PFAS are migrating through Peters Canyon Channel (APTIM, 2021b).

5.1.3 Sample Analysis

All samples were collected in laboratory-provided high-density polyethylene containers in accordance with the contractor's associated standard operating procedures, sealed, labeled, and packed in insulated coolers with bagged ice. Samples were shipped to the respective laboratories and analyzed for PFAS in accordance with U.S. EPA and/or DoD guidelines applicable at the time of collection. The samples were analyzed for PFOA, PFOS, and PFBS using liquid chromatography and tandem mass spectrometry compliant with DoD Quality Systems Manual 5.1 or 5.3 Table B-15 (DoD, 2017, 2019b).

Surface water samples were also analyzed for VOCs by EPA Method 8260C. In addition to PFOA, PFOS, and PFBS, all samples were analyzed for up to 15 additional PFAS from the following list:

- N-ethyl perfluorooctanesulfonamidoacetic acid
- N-methyl perfluorooctanesulfonamidoacetic acid
- Hexafluoropropylene oxide dimer acid
- 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
- 9-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
- 4,8-dioxa-3H-perfluorononanoic acid
- Perfluoroheptanoic acid
- Perfluorohexanesulfonic acid
- Perfluorohexanoic acid
- Perfluorononanoic acid
- Perfluorotetradecanoic acid
- Perfluorotridecanoic acid
- Perfluoroundecanoic acid
- Perfluorodecanoic acid
- Perfluorododecanoic acid

Table 5-1: Former MCAS Tustin Wells Sampled for PFAS

Nearest AOI/AOC	Area	Well ID	Screen (feet bgs)	TOC (msl)	WBZ
AOI 1	Former CO-2	I006MW01S	26–31	50.04	First
AOI 1	Former CO-2	I006MW03SR	5–25	46.62	First
AOI 1	Former CO-2	I006MW05SR	5–25	50.33	First
AOI 1	Former CO-2	I006MW06S	20-30	42.25	First
AOI 1	Former CO-2	I006MW08S	10–25	45.25	First
AOI 1	Former CO-2	TW05S	15–25	NA	First
AOI 1	Former CO-2	TW06S	15–25	NA	First
AOI 1	Former CO-2	TW07S	15–25	NA	First
AOI 1	Former CO-2	TW05D	45–55	NA	Second
AOI 1	Former CO-2	TW06D	45–55	NA	Second
AOI 1	Former CO-2	TW07D	45–55	NA	Second
AOI 15 (Warehouse AOC)	CO-5	TW02S	25–30	NA	First

Table 5-1: Former MCAS Tustin Wells Sampled for PFAS (continued)

Nearest AOI/AOC	Area	Well ID	Screen (feet bgs)	TOC (msl)	WBZ
Upgradient from AOI 15	CO-5	I012MW01SR	30–40	63.47	First
AOI 16	CO-5	I012MW10S	20.35–25.35	58.85	First
AOI 16	CO-5	I012MW11S	15–20	56.68	First
Crossgradient from AOI 16	CO-5	TW10S	15–25	NA	First
Crossgradient from AOI 16	CO-5	TW11S	15–25	NA	First
Crossgradient from AOI 16	CO-5	TW10D	45–55	NA	Second
Crossgradient from AOI 16	CO-5	TW11D	45–55	NA	Second
Upgradient from AOI 16	CO-5	TW14S	15–25	NA	First
Upgradient from AOI 16	CO-5	TW14D	45–55	NA	Second
AOI 17	OU-1B South	I003EW01S	3.92–23.92	48.56	First
AOI 17	OU-1B South	I003EW05S	12.2–22.2	46.63	First
AOI 17	OU-1B South	I003EW07S	NA	NA	First
AOI 17	CO-6	I003MW05S	14.5–24.5	46.15	First
AOI 17	CO-6	I003MW12S	14–24	48.17	First
AOI 17	CO-6	I003MW14S	15–25	47.76	First
AOI 17	CO-6	I003MW15S	16–26	50.09	First
AOI 17	CO-6	TW15S	15–25	NA	First
AOI 17	CO-6	TW16S	15–25	NA	First
AOI 17	CO-6	TW17S	15–25	NA	First
AOI 17	CO-6	TW22S	15–25	NA	First
AOI 17	CO-6	I003MW05D	36.0–41.0	46.02	Second
AOI 17	CO-6	TW15D	45–55	NA	Second
AOI 17	CO-6	TW16D	45–55	NA	Second
AOI 17	CO-6	TW17D	45–55	NA	Second
AOI 17	CO-6	TW22D	45–55	NA	Second
AOI 17/IRP Site 3	OU-1B South	I003EW02S	11.81–21.81	46.96	First
AOI 17/IRP Site 3	CO-6	I003MW01S	13.5–18.5	49.17	First
AOI 17/IRP Site 3	CO-6	I003MW02S	13.1–23.1	49.30	First
AOI 17/IRP Site 3	OU-1B South	I003EW02D	34.92–49.92	46.97	Second
AOI 17/IRP Site 3	CO-6	I003MW01D	27.3–32.3	49.05	Second
AOI 17/IRP Site 3	CO-6	I003MW02D	32.0–42.0	48.78	Second
Crash Crew AOC[a]	OU-1B North	I012EW01S	1.94–21.94	53.81	First
Crash Crew AOC[a]	OU-1B North	I012EW02S	15.15–25.15	53.81	First
Crash Crew AOC[a]	CO-5	I012MW07S	16.81–21.81	55.41	First
Crash Crew AOC[a]	CO-5	I012MW13S	14–24	55.33	First
Crash Crew AOC[a]	CO-5	I012MW15S	16–26	54.76	First
Crash Crew AOC[a]	CO-5	TW27S	15–25	NA	First
Downgradient from Crash Crew AOC[a]	CO-5	TW13S	15–25	NA	First
Downgradient from Crash Crew AOC[a]	CO-5	TW13D	45–55	NA	Second
Down/crossgradient from Crash Crew AOC[a]	CO-5	TW12S	15–25	NA	First
Down/crossgradient from Crash Crew AOC[a]	CO-5	TW12D	45–55	NA	Second
Upgradient from AOI 15 (Warehouse AOC[c])	OU-1B North	I012EW03S	15.06–25.06	59.32	First
Crash Crew AOC/AOI 16	CO-5	TW03S	25–30	NA	First
Crash Crew AOC/AOI 16	CO-5	TW04S	25–30	NA	First

Table 5-1: Former MCAS Tustin Wells Sampled for PFAS (continued)

Nearest AOI/AOC	Area	Well ID	Screen (feet bgs)	TOC (msl)	WBZ
Fire/Rescue Station AOC[b]	CO-5	IS72MW18SR	14–29	60.77	First
Fire/Rescue Station AOC[b]	CO-5	IS72OW02S	25–30	69.04	First
Fire/Rescue Station AOC[b]	CO-5	IS72OW03S	20–30	62.30	First
Fire/Rescue Station AOC[b]	CO-5	IS72OW06S	20–40	61.93	First
Fire/Rescue Station AOC[b]	CO-5	TW01S	25–30	NA	First
Fire/Rescue Station AOC[b]	CO-5	TW08S	15–25	NA	First
Fire/Rescue Station AOC[b]	CO-5	222MW09D	50–60	64.56	Second
Fire/Rescue Station AOC[b]	OU-1A	IS72EX02D	41.39–61.39	61.29	Second
Fire/Rescue Station AOC[b]	OU-1A	IS72EX03D	40.36–60.36	60.57	Second
Fire/Rescue Station AOC[b]	OU-1A	IS72EX05D	36.04–56.04	60.54	Second
Fire/Rescue Station AOC[b]	OU-1A	IS72EX07D	40.94–60.94	59.94	Second
Fire/Rescue Station AOC[b]	OU-1A	IS72EX11D	41.46–51.46	59.84	Second
Fire/Rescue Station AOC[b]	CO-5	IS72MW16DR	36–51	61.37	Second
Fire/Rescue Station AOC[b]	CO-5	IS72OW02D	44–64	62.73	Second
Fire/Rescue Station AOC[b]	CO-5	IS72OW03D	45–55	62.32	Second
Fire/Rescue Station AOC[b]	CO-5	IS72OW06D	44–54	61.99	Second
Fire/Rescue Station AOC[b]	CO-5	TW08D	41–45	NA	Second
Downgradient from Fire/Rescue Station AOC[b]	CO-5	IS72MW15S	13–28	62.54	First
Downgradient from Fire/Rescue Station AOC[b]	CO-5	TW09S	15–25	NA	First
Downgradient from Fire/Rescue Station AOC[b]	CO-5	IS72MW15D	36–51	62.22	Second
Downgradient from Fire/Rescue Station AOC[b]	CO-5	TW09D	45–55	NA	Second
Downgradient from Fire/Rescue Station AOC[b], AOI 21	OU-1A	IS72EX09S	28.04–38.04	60.75	First
IRP Site 13S	OU-1A	IS72EX08S	24.81–34.81	63.88	First
IRP Site 13S	CO-5	IS72MW17S	13–28	64.30	First
IRP Site 13S	OU-1A	IS72EX01D	46.09–61.09	64.89	Second
IRP Site 13S	CO-5	IS72MW17D	43–58	64.18	Second
IRP Sites 13S and 13W	CO-5	I013WMW02SR	23–28	67.25	First
Downgradient from IRP Site 13S	CO-5	222MW02S	25–30	69.04	First
Downgradient from IRP Site 13S	CO-5	A000MW42S	22.19–27.19	69.44	First
IRP Site 3	OU-1B South	I003EW03S	13.65–23.65	47.37	First
IRP Site 3	CO-6	TW23S	15–25	NA	First
IRP Site 3	CO-6	TW24S	15–25	NA	First
IRP Site 3	OU-1B South	I003EW03D	28.14–48.14	47.09	Second
IRP Site 3	CO-6	TW23D	45–55	NA	Second
IRP Site 3	CO-6	TW24D	45–55	NA	Second
IRP Site 5S(a)	Former CO-9	BMW07S	21–31	50.47	First
IRP Site 5S(a)	Former CO-9	I005MW01SR	5–25	53.40	First
IRP Site 5S(a)	OU-4B	I005MW05SR	NA	NA	First
IRP Site 5S(a)	OU-4B	I005MW06SR	NA	NA	First
IRP Site 5S(a)	OU-4B	I005MW09SR	NA	NA	First
IRP Site 5S(a)	Former CO-9	TW25D	45–55	NA	Second
IRP Site 5S(a)	Former CO-9	TW26D	45–55	NA	Second
IRP Site 1	OU-3	I001BC43S	33.45–45.95	52.88	First

Table 5-1: Former MCAS Tustin Wells Sampled for PFAS (continued)

Nearest AOI/AOC	Area	Well ID	Screen (feet bgs)	TOC (msl)	WBZ
IRP Site 1	OU-3	I001BC47S	37.35–47.35	51.70	First
IRP Site 1	OU-3	I001BC49SR	37.45–52.45	55.84	First
IRP Site 1	OU-3	I001BC50S	35.15–50.15	55.63	First
IRP Site 1	OU-3	I001MW52S	36.05–46.05	60.59	First
IRP Site 1	OU-3	TW21S	25–30	NA	First
IRP Site 1	OU-3	I001MW43D	14.35–24.35	52.62	Second
IRP Site 1	OU-3	I001MW47D	18.65–28.65	51.81	Second
IRP Site 1	OU-3	I001MW50D	26.35–31.35	55.49	Second
IRP Site 1	OU-3	I001MW52D	21.05–31.05	60.13	Second
IRP Site 1	OU-3	I001MW53D	27.05–32.05	56.16	Second
IRP Site 1	OU-3	TW21D	36–40	NA	Second
Upgradient from IRP Site 1	OU-3	TW18S	19–24	NA	First
Upgradient from IRP Site 1	OU-3	TW19S	25–30	NA	First
Upgradient from IRP Site 1	OU-3	TW20S	24–29	NA	First

Acronyms:
AOC = Area of Concern; AOI = Area of Interest; bgs = below ground surface; CO = Carve-Out; ID = identification; IRP = Installation Restoration Program; msl = mean sea level; NA = not available; OU = Operable Unit; TOC = top of casing; WBZ = water-bearing zone
Notes:
a. Crash Crew AOC includes AOIs 2 through 10.
b. Fire/Rescue AOC includes AOIs 11 through 14.
c. Warehouse AOC includes AOI 15.
References

AEJV. 2021. *Final Summary Report, Per- and Polyfluoroalkyl Substances Baseline Groundwater Sampling, Operable Unit 4B, Installation Restoration Program Site 5S(a)*. March.

APTIM. 2020b. *Final 2019 Annual Performance Evaluation Report, Groundwater Remedy at Operable Units 1A (IRP-13S) and 1B (IRP-3 and -12)*. October.

APTIM. 2020c. *Final Summary Report, Per- and Polyfluoroalkyl Substances Groundwater Sampling at Monitoring Wells I001BC50S and I001MW52S, Operable Unit 3, Installation Restoration Program Site 1*. November.

APTIM. 2021a. *Final 2020 Annual Performance Evaluation Report, Groundwater Remedy at Operable Units 1A (IRP-13S) and 1B (IRP-3 and -12).* August

APTIM. 2021b. *Final 2020 Annual Long-Term Monitoring Report, Operable Unit 3, Installation Restoration Program Site 1.* August.

MMEC Group. 2017b. *Final Summary Report for Per- and Polyfluoroalkyl Substances Sampling for Groundwater Remedial Action at OU-3, Installation Restoration Program Site 1*. October.

MMEC Group. 2018b. *Final Summary Report for November 2017 Per- and Polyfluoroalkyl Substances Sampling at OU-3, Installation Restoration Program Site 1*. April.

MMEC Group. 2018c. *Final Summary Report for Per- and Polyfluoroalkyl Substances Presence/Absence Sampling in Groundwater in Carve-Outs 5 and 6*. November.

MMEC Group. 2020a. *Final Summary Report, Additional Assessment of Per and Polyfluoroalkyl Substances in Groundwater in Carve-Outs 2, 5, 6, and 9 and Groundwater and Surface Water Near Operable Unit 3 (Phase 1)*. June.

MMEC Group. 2020b. *Final Summary Report, Additional Assessment of Per and Polyfluoroalkyl Substances in Groundwater in Carve-Outs 2, 5, 6, and 9 and Groundwater and Surface Water Near Operable Unit 3 (Phase 2)*. October.

5.2 DON Sampling Events

This section summarizes the DON sampling events documented in detail in previous reports (MMEC Group, 2017b, 2018b, 2018c, 2020a, 2020b; APTIM, 2020a, 2020b, 2021a, 2021b; AEJV, 2021). The previous investigation reports are available by request from the Administrative Record File for the Station (NAVFAC SW, 2021).

5.2.1 Initial Basewide Groundwater Assessment (2017)

In July 2017, the DON completed an initial basewide groundwater assessment to determine the presence or absence of PFAS in groundwater at IRP Site 1/OU-3 (MMEC Group, 2017a, 2017b). The assessment included collection of four groundwater samples from three existing groundwater monitoring wells (I001BC43S, I001BC50S, and I001MW52S) screened in the first WBZ (Figure 7). Results indicated that groundwater associated with IRP Site 1/OU-3 was impacted with PFOA and PFOS at concentrations above the DoD (2019a) screening levels (0.04 µg/L). Additionally, PFBS was detected at concentrations above the U.S. EPA (2021b) screening level (0.60 µg/L). The DON notified the City, regulatory agencies, and other stakeholders regarding the results. Sampling results are shown in Table 5-2 and discussed in Section 5.3.4.

5.2.2 Follow-On Groundwater Assessment at IRP Site 1 (2017)

In November 2017, the DON collected additional groundwater samples from IRP Site 1/OU-3 to gather more information regarding the presence or absence of PFOA, PFOS, and PFBS (MMEC Group, 2018b). Ten groundwater samples (including primary and duplicates) were collected from four existing groundwater monitoring wells screened in the first WBZ (I001BC43S, I001BC47S, I001BC50S, and I001MW52S) and five existing groundwater monitoring wells screened in the second WBZ (I001MW43D, I001MW47D, I001MW50D, I001MW52D, and I001MW53D) (Figures 7 and 8). Results are shown in Table 5-2 and discussed in Section 5.3.6.

5.2.3 Initial Groundwater Assessment at Carve-Outs 5 and 6 (2018)

An investigation was conducted in July 2018 to evaluate the presence or absence of PFAS in groundwater in 13 specific AOCs within CO-5 that were grouped into three general categories: Fire/Rescue Station AOC, Warehouse AOC, and Crash Crew AOC (Figure 7). No general or specific AOCs were identified in CO-6 (Figure 7), but the site was included in this investigation as a conservative measure (MMEC Group, 2018c). As discussed in Section 4.2.1, these AOCs have been identified as AOIs in this PA/SI, and the associations are discussed in this section. All sampling results are presented in Table 5-2.

Four groundwater samples were collected from three existing groundwater monitoring wells (IS72OW02S, IS72OW03S, and IS72OW06S), and one temporary groundwater monitoring well (TW01S) was installed to investigate the Fire/Rescue Station AOC. Four groundwater samples were collected from the first WBZ. The Fire/Rescue Station AOC identified during the initial assessment is associated with AOIs 11 through 14 and those results are discussed in Section 5.3.2.2.

Two existing groundwater monitoring wells (I012MW07S and I012MW13S) were sampled, and two temporary groundwater monitoring wells (TW03S and TW04S) were installed to investigate PFAS at the Crash Crew AOC. Four primary and one duplicate sample were collected from the first WBZ. The Crash Crew AOC identified in the initial assessment is associated with AOIs 2 through 10 and those results are discussed in Section 5.3.2.1.

One temporary groundwater monitoring well (TW02S) was installed to investigate the Warehouse AOC. Two groundwater samples (primary and duplicate) were collected from the first WBZ. The Warehouse AOC identified in the initial assessment is associated with AOI 15 and those results are discussed in Section 5.3.2.3.

The DON also collected four groundwater samples from the influent and effluent streams of the OU-1A/1B North Groundwater Treatment System (North Treatment System) and OU-1B South Groundwater Treatment System (South Treatment System) (Figure 7) to assess the presence or absence of PFOA, PFOS, and PFBS (MMEC Group, 2018c). The treatment systems use liquid-phase granular activated carbon (GAC) to remove VOCs from groundwater and PFAS were successfully shown to be removed by this technology. PFOA and PFOS were detected at concentrations above DoD (2019a) screening levels in the North Treatment System influent sample. PFOA and PFOS were not detected, and PFBS concentrations were below the U.S. EPA (2021b) screening level in the North Treatment System effluent. Groundwater samples collected from the extraction wells associated with the North and South Treatment Systems are discussed in Section 5.3 as they relate to the closest AOI to the point of extraction. The sampling results are listed in Table 5-2 and are presented graphically on Figures 7 and 8 for the first and second WBZs, respectively. PFAS sampling results associated with all DON sampling events are discussed in Section 5.3 based on proximity to AOIs identified in the PA.

5.2.4 OU-1A/1B Extraction/Treatment Systems Assessment (2019)

In July 2019, the DON voluntarily augmented its operation and maintenance program for the North and South Treatment Systems to incorporate quarterly monitoring of the influent, mid-point, and effluent and semiannual monitoring of the operating extraction

wells for PFAS concentrations (APTIM, 2020a). The primary purposes of the augmented operation and maintenance are to assess PFAS treatment efficacy, track concentration trends and GAC sorption-capacity saturation, and ensure appropriate handling and disposal of waste streams.

Analytical results from the first semiannual extraction well sampling event conducted in September 2019 (APTIM, 2020b) indicated PFOS and/or PFOA concentrations up to 510 times the DoD (2019a) screening levels, with the highest concentrations at OU-1B North. Analytical results from the first two quarterly treatment system sampling events conducted in September and November 2019 (APTIM, 2020b) indicated saturation of the GAC sorption capacity, so the DON replaced the GAC in both systems in May 2020. PFBS was detected at concentrations above the U.S EPA (2021b) screening level in the South Treatment System influent and mid-point groundwater samples and in groundwater samples collected from extraction wells I012EW01S, I003EW02S, and I003EW03S (Table 5-2).

5.2.5 Additional Groundwater Assessment at Former Carve-Outs 2 and 9, Carve-Outs 5 and 6, and OU-3 (2020)

In 2020, the DON analyzed groundwater samples collected from existing and newly installed groundwater monitoring wells at former COs 2 and 9, COs 5 and 6, and OU-3 to address data gaps remaining after the previous assessments discussed above. The sampling occurred over two phases (MMEC Group, 2020a, 2020b).

5.2.5.1 Phase 1

Samples for the first phase were collected from February 12 through 19, 2020, and consisted of 47 groundwater samples (including primary and duplicates) from the following locations:

- Four existing wells (I006MW01S, I006MW03SR, I006MW05SR, and I006MW08S) and three newly installed temporary groundwater monitoring wells (TW05S, TW06S, and TW07S) screened in the first WBZ in former CO-2 (this area was not previously sampled and is associated with AOIs 2 though 10).
- Ten existing (222MW02S, A000MW42S, I012MW01SR, I012MW10S, I012MW11S, I012MW15S, I013WMW02SR, IS72MW15S, IS72MW17S, and IS72MW18SR) and seven newly installed temporary groundwater monitoring wells (TW08S through TW14S) screened in the first WBZ and three existing groundwater monitoring wells (IS72OW02D, IS72OW03D, and IS72OW06D) screened in the second WBZ in CO-5 (to provide additional characterization in the first WBZ and initial characterization in the second WBZ).

- Six existing (I002MW01S, I003MW02S, I003MW05S, I003MW12S, I003MW14S, and I003MW15S) and three newly installed temporary groundwater monitoring wells (TW15S, TW16S, and TW17S) screened in the first WBZ in CO-6 (only extraction wells and the South Treatment System were previously characterized).
- Two existing groundwater monitoring wells (BMW07S and I005MW01SR) screened in the first WBZ in former CO-9 (this area was not previously sampled).
- Four newly installed temporary groundwater monitoring wells (TW18S through TW21S) screened in the first WBZ in or upgradient of OU-3 (additional characterization of the first WBZ).

The DON had also planned to collect several surface water samples from Peters Canyon Channel, which is adjacent to OU-3, but had to postpone the sampling because of ongoing construction in the channel by the City and a lack of sufficient surface water. Surface water samples were collected later under a different task order, which are discussed in Section 5.2.7. The sampling results listed shown in Table 5-2 and are discussed in Section 5.3 based on proximity to AOIs identified in the PA.

In June 2020, APTIM (2020c) collected groundwater samples for PFAS analysis from monitoring wells I001BC50S and I001MW52S screened in the first WBZ. The sampling results are listed in Table 5-2 and are discussed in Section 5.3 based on proximity to AOIs identified in the PA.

5.2.5.2 Phase 2

From June 24 through July 9, 2020, Phase 2 sampling was completed, with 38 groundwater samples (including primary and duplicates) collected from existing and temporary wells across former COs 2 and 9, COs 5 and 6, and OU-3 as follows (MMEC Group, 2020b, Figures 7 and 8):

- One existing groundwater monitoring well (I006MW06S) screened in the first WBZ and three temporary groundwater monitoring wells (TW05D through TW07D) screened in the second WBZ in former CO-2.
- One temporary groundwater monitoring well (TW27S) screened in the first WBZ and four existing groundwater monitoring wells (222MW09D, IS72MW15D, IS72MW16DR, and IS72MW17D) and seven temporary groundwater monitoring wells (TW08D through TW14D) screened in the second WBZ in CO-5.
- Three temporary groundwater monitoring wells (TW22S, TW23S, and TW24S) screened in the first WBZ and three existing groundwater monitoring wells (I003MW01D, I003MW02D, and I003MW05D) and six temporary groundwater

monitoring wells (TW15 through TW17D, TW23D, and TW24D) screened in the second WBZ in CO-6.

- Two temporary groundwater monitoring wells (TW25D and TW26D) screened in the second WBZ in former CO-9.
- One temporary groundwater monitoring well (TW21D) screened in the second WBZ in OU-3.

The sampling results are listed in Table 5-2 and are presented graphically on Figures 7 and 8 for the first and second WBZs, respectively. PFAS sampling results associated with all DON sampling events are discussed in Section 5.3 based on proximity to AOIs identified in the PA.

5.2.6 Baseline Groundwater Assessment at OU-4B (2020)

In November 2020, the DON collected samples from three existing groundwater monitoring wells (I005MW05SR, I005MW06SR, and I005MS09SR) in OU-4B screened in the first WBZ (AEJV, 2021). The sampling results are listed in Table 5-2 and are presented graphically on Figures 7 and 8 for the first and second WBZs, respectively. PFAS sampling results associated with DON sampling events are discussed in Section 5.3 based on proximity to AOIs identified in the PA.

5.2.7 Additional Groundwater/Initial Surface Water Assessment at OU-3 (2020)

Sampling of groundwater and surface water for PFAS analysis at OU-3 was conducted in December 2020 as part of the quinquennial sampling event (APTIM, 2021b). Groundwater samples were collected from four existing groundwater monitoring wells (I001BC43S, I001BC47S, I001BC49SR, and I001BC50S) screened the first WBZ and from three existing groundwater monitoring wells (I001MW43D, I001MW47D, and I001MW50D) screened in the second WBZ. Surface water samples were collected from the four locations (ISW03, ISW04, ISW06, and ISW07) shown on Figure 9.

Surface water screening levels are not included in the DoD (2019a) guidance. Therefore, surface water analytical results were compared with applicable DoD (2019a) or U.S. EPA (2021b) groundwater screening levels, with no detections of PFOA, PFOS, or PFBS at concentrations that exceeded these levels at these locations. Also, no VOCs were detected and PFAS concentrations were similar between upgradient and downgradient locations suggesting that the OU-3 groundwater remedy (containment wall) is preventing groundwater in the first WBZ from migrating into Peters Canyon Channel as intended. Results are listed in Table 5-2 and shown graphically on Figure 9.

Table 5-2: Previous Sampling Results – PFOA, PFOS, and PFBS in Groundwater and Surface Water

Location	Sample Date	PFOA (µg/L)		PFOS (µg/L)		PFBS (µg/L)	
DoD Screening Level		0.04[1]		0.04[1]		0.60[2]	
OU-3 Groundwater							
TW18S	2/20/2020	0.0127		0.00430		0.00379	J
TW19S	2/20/2020	0.00509		0.00202	U	0.00573	
TW20S	2/20/2020	0.00814		0.00161	J	0.0116	
TW21S	2/20/2020	1.52		0.136		0.0838	
TW21D	7/7/2020	0.0157		0.00245	J	0.00455	
I001BC43S	7/24/2017	0.397	J	0.0263		0.0624	J
I001BC43S	11/15/2017	0.337		0.0490		0.0659	
I001BC43S	12/10/2020	0.298		0.0497		0.0636	
I001BC47S	11/15/2017	0.315		0.0391		0.0353	
I001BC47S	12/10/2020	0.298		0.0607		0.0221	
I001BC49SR	12/10/2020	2.71		0.529		0.765	
I001BC50S	7/24/2017	6.840	J	1.160		1.070	J
I001BC50S	11/14/2017	7.050		1.480		1.170	
I001BC50S	6/26/2020	5.41		1.44		0.707	
I001BC50S	12/10/2020	4.57		1.37		0.733	
I001BC50S*	12/10/2020	4.89		1.43		0.736	
I001MW43D	12/9/2020	0.0088	U	0.0044	J	0.0040	J
I001MW47D	12/10/2020	0.0091	UJ	0.0049	J	0.0039	J
I001MW50D	12/9/2020	0.0164		0.0084		0.0047	J
I001MW52S	6/26/2020	712		32.9		60.0	
I001MW52S*	6/26/2020	1,010		41.9		83.6	
I001MW52S	12/10/2020	515		14.2		54.8	
I001MW52S*	12/10/2020	484		12.2		59.1	
I001MW52D	12/9/2020	0.166		0.0129		0.0215	
I001MW53D	12/9/2020	0.0822		0.0049	J	0.0154	
I001MW43D	11/15/2017	0.00812	J	0.00539	U	0.00308	J
I001MW47D	11/15/2017	0.00631	J	0.00548	U	0.00280	J
I001MW50D	11/14/2017	0.00884	J	0.00579	U	0.00292	J
I001MW50D*	11/14/2017	0.0101		0.00247	J	0.00387	J
I001MW52S	7/24/2017	743.000	J	26.900	J	66.700	J
I001MW52S*	7/24/2017	637.000	J	18.100	J	61.700	J
I001MW52S	11/13/2017	345.000		11.400		78.300	
I001MW52D	11/14/2017	0.137		0.00573	U	0.0325	
I001MW53D	11/14/2017	0.0575		0.00517	U	0.0115	
OU-3 Surface Water							
ISW03	12/9/2020	0.0275		0.0185		0.0268	
ISW04	12/9/2020	0.0269		0.0174		0.0229	
ISW06	12/9/2020	0.0270		0.0199		0.0473	J

Table 5-2: Previous Sampling Results – PFOA, PFOS, and PFBS in Groundwater and Surface Water (Continued)

Location	Sample Date	PFOA (µg/L)		PFOS (µg/L)		PFBS (µg/L)	
DoD Screening Level		0.04[1]		0.04[1]		0.60[2]	
ISW07	12/9/2020	0.0254		0.0161		0.0134	
North Treatment System							
Influent	7/6/2018	0.630		0.598		0.127	
Influent	9/18/2019	1.02		1.59		0.187	
Influent	11/1/2019	0.407		0.314		0.053	
Influent	1/15/2020	3.29		0.865		0.248	
Influent	4/1/2020	1.31		1.71		0.216	
Influent	7/1/2020	1.31		2.30		0.235	
Influent	10/5/2020	0.898		1.56		0.175	
Mid-Point	9/18/2019	1.70		2.56		0.237	
Mid-Point	11/1/2019	1.03		1.61		0.100	
Mid-Point	1/15/2020	1.71		2.58		0.277	
Mid-Point	4/1/2020	1.93		2.84		0.256	
Mid-Point	7/1/2020	1.20		1.05		0.228	
Mid-Point	10/5/2020	0.812		1.02		0.168	
Effluent	7/6/2018	0.00195	U	0.00195	U	0.00198	J
Effluent	9/18/2019	1.00		0.710		0.196	
Effluent	11/1/2019	0.830		0.716		0.113	
Effluent	1/15/2020	1.09		0.865		0.232	
Effluent	4/1/2020	1.33		1.13		0.231	
Effluent	7/1/2020	0.0112		0.0040	U	0.0040	U
Effluent	10/5/2020	0.0040	U	0.0040	U	0.0040	U
South Treatment System							
Influent	7/6/2018	9.030		3.690		0.769	
Influent	9/18/2019	8.85		2.77		0.783	
Influent	11/1/2019	7.23		2.23		0.743	
Influent	1/15/2020	8.18		2.17		0.675	
Influent	4/1/2020	7.79		2.14		0.603	
Influent	7/1/2020	6.75		1.45		0.591	
Influent	10/5/2020	7.22		1.83		0.574	
Mid-Point	9/18/2019	6.71		0.759		1.48	
Mid-Point	11/1/2019	8.06		1.17		0.830	
Mid-Point	1/15/2020	7.63		1.21		0.770	
Mid-Point	4/1/2020	9.24		1.49		0.790	
Mid-Point	7/1/2020	0.339		0.0054	J	0.377	
Mid-Point	10/5/2020	7.08		1.80		0.555	
Effluent	7/6/2018	0.00191	U	0.00191	U	0.00191	U
Effluent	9/18/2019	0.00423	J	0.00400	U	0.041	
Effluent	11/1/2019	0.0317		0.00380	U	0.148	
Effluent	1/15/2020	0.0912		0.00630	J	0.229	
Effluent	4/1/2020	0.175		0.00400	U	0.276	

Table 5-2: Previous Sampling Results – PFOA, PFOS, and PFBS in Groundwater and Surface Water (Continued)

Location	Sample Date	PFOA (µg/L)		PFOS (µg/L)		PFBS (µg/L)	
DoD Screening Level		0.04[1]		0.04[1]		0.60[2]	
Effluent	7/1/2020	0.00400	U	0.00400	U	0.00400	U
Effluent	10/5/2020	0.00380	U	0.00380	U	0.00380	U
OU-1A							
IS72EX01D	9/16/2019	0.541		0.0832		0.0414	
IS72EX01D	3/26/2020	0.601		0.0735		0.0382	
IS72EX01D	9/29/2020	0.538	J	0.0662		0.0339	
IS72EX02D	9/16/2019	0.664		0.0522		0.0418	
IS72EX02D	3/26/2020	0.766		0.0514		0.0375	
IS72EX02D	9/29/2020	0.557		0.045		0.0302	
IS72EX03D	9/16/2019	0.763		0.0532		0.0376	
IS72EX03D*	9/16/2019	0.748		0.0527		0.0379	
IS72EX03D	3/26/2020	0.832		0.0581		0.0373	
IS72EX03D	9/29/2020	0.632		0.0539		0.0293	
IS72EX05D	9/16/2019	0.657		0.0996		0.0538	
IS72EX05D	3/26/2020	0.644		0.0902		0.0520	
IS72EX05D	9/29/2020	0.553		0.0873		0.0507	
IS72EX07D	9/16/2019	0.256		0.615		0.0638	
IS72EX07D	3/26/2020	0.284		0.700		0.0715	
IS72EX07D	9/29/2020	0.256		0.540		0.0671	
IS72EX08S	9/16/2019	0.856		0.144		0.0863	
IS72EX08S	3/26/2020	0.593		0.150		0.0569	
IS72EX08S	9/29/2020	0.556		0.110		0.0672	
IS72EX09S	9/16/2019	0.478		0.147		0.0555	
IS72EX09S	3/26/2020	0.556		0.158		0.0671	
IS72EX09S	9/29/2020	0.527		0.281		0.115	J
IS72EX11D	9/16/2019	0.593		0.0365		0.0269	
IS72EX11D	3/26/2020	0.594		0.0380		0.0257	
IS72EX11D	9/29/2020	0.486		0.0362		0.0244	J
OU-1B North							
I012EW01S	9/16/2019	9.91		20.4		2.47	
I012EW01S*	9/16/2019	9.42		19.3		2.32	
I012EW01S	3/26/2020	11.8		17.3		2.08	
I012EW01S*	3/26/2020	11.9		18.3		2.07	
I012EW01S	9/29/2020	8.66		17.6		1.96 J	
I012EW02S	9/16/2019	1.23		0.990		0.729	
I012EW02S	3/26/2020	0.981		0.806		0.604	
I012EW02S	9/29/2020	1.10		0.985		0.562	J
I012EW02S*	9/29/2020	1.22		1.03		0.576	
I012EW03S	9/16/2019	0.281		0.062		0.0311	
I012EW03S	3/26/2020	0.322		0.0668		0.0354	
I012EW03S	9/29/2020	0.261		0.0574		0.0288	J

Table 5-2: Previous Sampling Results – PFOA, PFOS, and PFBS in Groundwater and Surface Water (Continued)

Location	Sample Date	PFOA (µg/L)		PFOS (µg/L)		PFBS (µg/L)	
DoD Screening Level		0.04[1]		0.04[1]		0.60[2]	
OU-1B South							
I003EW01S	9/16/2019	5.86		2.48		0.481	
I003EW01S	3/26/2020	5.36		1.78		0.495	
I003EW01S	9/29/2020	4.46		1.73		0.413	J
I003EW02D	9/16/2019	7.76		0.665		0.323	
I003EW02D	3/26/2020	8.04		0.779	J	0.317	
I003EW02D	9/29/2020	5.46		0.635		0.249	J
I003EW02S	9/16/2019	16.1		6.03		1.40	
I003EW02S	3/26/2020	12.9		4.45		1.06	
I003EW02S*	3/26/2020	15.0		4.75		1.28	
I003EW02S	9/29/2020	10.7		3.62		1.01	J
I003EW02S*	9/29/2020	16.6		5.55		1.56	J
I003EW03D	9/16/2019	7.34		1.10		0.395	
I003EW03D	3/26/2020	9.66		1.29		0.513	
I003EW03D	9/29/2020	4.07		0.514		0.263	J
I003EW03S	9/16/2019	17.1		9.81		2.42	
I003EW03S	3/26/2020	18.8		9.79		2.20	
I003EW05S	9/16/2019	5.75		2.10		0.408	
I003EW05S	3/26/2020	6.30		1.85		0.438	
I003EW05S	9/29/2020	4.60		1.45		0.376	J
I003EW07S	9/16/2019	6.31		1.41		0.415	
I003EW07S	3/26/2020	7.15		1.20		0.401	
I003EW07S	9/29/2020	5.46		0.908		0.334	J
OU-4B							
I005MW05SR	11/24/2020	7.43		2.36		0.538	J
I005MW06SR	11/24/2020	6.29		0.954		0.368	
I005MW06SR-FD*	11/24/2020	6.64		1.03		0.374	
I005MW09SR	11/24/2020	4.09		0.321		0.229	
Former CO-2							
I006MW01S	2/12/2020	1.70		0.199		0.217	
I006MW03SR	2/12/2020	0.303		0.00993		0.0513	
I006MW05SR	2/12/2020	0.0464		0.0182		0.0509	
I006MW05SR*	2/12/2020	0.0441		0.0226		0.0556	
I006MW06S	6/24/2020	0.268		0.0906		0.0819	
I006MW06S*	6/24/2020	0.315		0.106		0.0824	
I006MW08S	2/12/2020	0.194		0.779		0.557	
TW05S	2/20/2020	0.194		1.13		0.507	
TW05D	7/2/2020	0.352		0.0172		0.00677	
TW06S	2/20/2020	1.43		3.59		0.471	
TW06D	7/6/2020	0.0390		0.00643		0.00191	U
TW07S	2/20/2020	0.104		0.0931		0.0321	

Table 5-2: Previous Sampling Results – PFOA, PFOS, and PFBS in Groundwater and Surface Water (Continued)

Location	Sample Date	PFOA (µg/L)		PFOS (µg/L)		PFBS (µg/L)	
DoD Screening Level		0.04[1]		0.04[1]		0.60[2]	
TW07D	7/2/2020	0.00616		0.0402		0.00185	U
CO-5							
TW01S	7/13/2018	0.40	J	0.098	J	0.041	J
IS72OW02S	7/12/2018	0.755		0.0320		0.0381	
IS72OW03S	7/12/2018	0.884		0.215		0.0522	
IS72OW06S	7/12/2018	0.801		0.282		0.127	
TW02S	7/13/2018	0.59	J	0.041	J	0.027	J
TW03S	7/13/2018	0.53	J	0.040	J	0.025	J
TW04S	7/13/2018	0.47	J	0.67	J	0.051	J
I012MW07S	7/13/2018	0.60	J	0.65	J	0.078	
I012MW13S	7/13/2018	33	J	13	J	4.8	J
I012MW13S*	7/12/2018	34.400	J	19.700	J	3.660	J
TW01S	7/12/2018	38.400	J	22.500	J	6.430	J
222MW02S	2/12/2020	0.00198	U	0.00624		0.00456	
222MW02S*	2/12/2020	0.00205	U	0.00544		0.00587	
222MW09D	7/1/2020	0.0839		0.0150	J	0.0105	
222MW09D*	7/1/2020	0.0822		0.0154	J	0.0105	
A000MW42S	2/12/2020	0.00366	J	0.00333	J	0.0134	
I012MW01SR	2/13/2020	0.370		0.0740		0.0131	
I012MW10S	2/13/2020	0.591		0.0327		0.0340	
I012MW11S	2/13/2020	1.37		1.72		0.467	
I012MW15S	2/13/2020	0.312		0.109		0.179	
I012MW15S*	2/13/2020	0.306		0.112		0.181	
I013WMW02SR	2/13/2020	0.741		0.0107	J	0.0144	
IS72MW15S	2/12/2020	0.420		1.71		0.0993	
IS72MW15D	7/1/2020	0.167		0.136		0.0191	
IS72MW16DR	7/1/2020	0.167		0.0650		0.0236	
IS72MW17S	2/13/2020	0.881		0.134		0.0644	
IS72MW17D	7/1/2020	0.781		0.0432		0.0262	
IS72MW17D*	7/1/2020	0.755		0.0418		0.0285	
IS72MW18SR	2/12/2020	0.325		0.252		0.0451	
IS72OW02D	2/19/2020	0.446		0.0192		0.0264	
IS72OW03D	2/19/2020	0.540		0.0169		0.0172	
IS72OW06D	2/19/2020	0.500		0.0319		0.0307	
TW08S	2/19/2020	2.23		0.0397	J	0.106	
TW08D	7/6/2020	0.0952		0.0210		0.00874	
TW09S	2/19/2020	0.343		0.114		0.152	
TW09D	7/7/2020	0.463		0.349		0.0693	
TW10S	2/19/2020	0.819		0.246		0.105	
TW10D	7/9/2020	0.854		0.531		0.101	
TW11S	2/19/2020	0.626		0.786		0.131	

Table 5-2: Previous Sampling Results – PFOA, PFOS, and PFBS in Groundwater and Surface Water (Continued)

Location	Sample Date	PFOA (µg/L)		PFOS (µg/L)		PFBS (µg/L)	
DoD Screening Level		0.04[1]		0.04[1]		0.60[2]	
TW11D	7/9/2020	0.184		0.305		0.0407	
TW12S	2/19/2020	1.16		0.640		0.185	
TW12D	7/9/2020	0.570		0.198		0.0982	
TW13S	2/19/2020	10.5		5.60		1.35	
TW13D	7/9/2020	4.22		0.231		0.290	
TW14S	2/21/2020	0.172		0.0250		0.0362	
TW14D	7/9/2020	0.250		0.0233		0.0328	
TW27S	7/9/2020	13.2		12.2		3.14	
CO-6							
I003MW01S	2/13/2020	14.1		7.97		2.11	
I003MW01D	7/1/2020	10.6		3.12		0.982	
I003MW02S	2/13/2020	2.16		0.599		0.360	
I003MW02D	7/1/2020	11.1		0.879		0.364	
I003MW02D*	7/1/2020	11.0		0.972		0.397	
I003MW05S	2/14/2020	2.55		1.57		0.198	
I003MW05D	7/1/2020	0.0109		0.0570		0.00356	J
I003MW12S	2/14/2020	0.402		0.0519		0.0346	
I003MW12S*	2/14/2020	0.403		0.0574		0.0349	
I003MW14S	2/14/2020	4.36		0.601		0.301	
I003MW15S	2/13/2020	4.92		2.42		0.390	
TW15S	2/21/2020	0.721		0.155		0.115	
TW15D	7/10/2020	0.00266	J	0.00226	J	0.00176	U
TW16S	2/21/2020	0.319		0.172		0.0536	
TW16D	7/10/2020	0.00114	J	0.00271	J	0.00142	U
TW17S	2/21/2020	8.92		1.32		0.551	
TW17D	7/8/2020	3.87		0.334 J		0.169 J	
TW22S	7/9/2020	1.42		0.736		0.275	
TW22D	7/7/2020	0.961		0.444		0.209	
TW23S	7/10/2020	18.2		2.98		1.26	
TW23D	7/8/2020	10.8		1.32		0.711	
TW24S	7/10/2020	15.3		1.99		1.29	
TW24D	7/8/2020	1.55		0.0326		0.0448	
Former CO-9							
BMW07S	2/12/2020	6.29		1.10		0.515	
I005MW01SR	2/12/2020	3.76		1.08		0.501	
I005MW01SR*	2/12/2020	4.15		1.11		0.525	
TW25D	7/6/2020	0.437		0.0111		0.0259	
TW26D	7/6/2020	0.00448		0.00179	U	0.00179	U

Notes:
1. Screening levels for PFOA and PFOS in groundwater sampling results follow Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program dated October 15, 2019 (DoD, 2019a).

Table 5-2: Previous Sampling Results – PFOA, PFOS, and PFBS in Groundwater and Surface Water (Continued)

2. Screening level for PFBS in groundwater sampling results is the Regional Screening Level for tap water (U.S. EPA, 2021b). Available at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables.

Bold results are detections.

Bold/orange results are detections above screening levels.

* = duplicate sample.

Acronyms:

µg/L = microgram(s) per liter; CO = Carve-Out; DoD = United States Department of Defense; J = result estimated; PFBS = perfluorobutanesulfonic acid; PFOA = perfluorooctanoic acid; PFOS = perfluorooctane sulfonate; U = not detected above the sample detection limit; UJ = not detected above the sample detection limit, but the limit is approximate

References

AEJV. 2021. *Final Summary Report, Per- and Polyfluoroalkyl Substances Baseline Groundwater Sampling, Operable Unit 4B, Installation Restoration Program Site 5S(a)*. March.

APTIM. 2020b *Final 2019 Annual Performance Evaluation Report, Groundwater Remedy at Operable Units 1A (IRP-13S) and 1B (IRP-3 and -12), Former Marine Corps Air Station Tustin, Tustin, California*. October.

APTIM. 2020c. *Final Summary Report Per- and Polyfluoroalkyl Substances Groundwater Sampling at Monitoring Wells I001BC50S and I001MW52S, Operable Unit 3, Installation Restoration Program Site 1*. November.

APTIM. 2021a. *Final 2020 Annual Performance Evaluation Report, Groundwater Remedy at Operable Units 1A (IRP-13S) and 1B (IRP-3 and -12).* August

APTIM. 2021b. *Final 2020 Annual Long-Term Monitoring Report, Operable Unit 3, Installation Restoration Program Site 1.* August.MMEC Group. 2017b. *Final Summary Report for Per- and Polyfluoroalkyl Substances Sampling for Groundwater Remedial Action at OU-3, Installation Restoration Program Site 1*. October.

MMEC Group. 2018b. *Final Summary Report for November 2017 Per- and Polyfluoroalkyl Substances Sampling at OU-3, Installation Restoration Program Site 1*. April.

MMEC Group. 2018c. *Final Summary Report for Per- and Polyfluoroalkyl Substances Presence/Absence Sampling in Groundwater in Carve-Outs 5 and 6*. November.

MMEC Group. 2020a. *Final Summary Report, Additional Assessment of Per and Polyfluoroalkyl Substances in Groundwater in Carve-Outs 2, 5, 6, and 9 and Groundwater and Surface Water Near Operable Unit 3 (Phase 1).* June.

MMEC Group. 2020b. *Final Summary Report, Additional Assessment of Per and Polyfluoroalkyl Substances in Groundwater in Carve-Outs 2, 5, 6, and 9 and Groundwater and Surface Water Near Operable Unit 3 (Phase 2).* October.

This page is intentionally blank.

5.3 Findings

The results from the previous sampling events described in Section 5.2 were collated and reviewed to assess the extent of detectable PFAS in Station groundwater and specifically determine whether groundwater associated with former COs 2 and 9, current COs 5 and 6, Crash Crew AOC (AOIs 2 through 10), Fire/Rescue Station AOC (AOIs 11 through 14), Warehouse AOC (AOI 15), OU-1A, OU-1B North, OU-1B South, OU-3/IRP Site 1, and OU-4B showed evidence of a PFAS release. The sampling results from the first WBZ are presented on Figure 7, and the results from the second WBZ are presented on Figure 8.

To visualize the extent of groundwater impacts and support PA/SI recommendations, PFOA, PFOS, and PFBS exceedances of the DoD (2019a) or U.S. EPA (2021b) groundwater screening levels were used to estimate the extent of groundwater requiring further investigation for PFAS. The estimated plumes were delineated by dividing the maximum PFOA, PFOS, and PFBS concentrations at each location by their respective DoD (2019a) or U.S. EPA (2021b) screening levels, resulting in a unitless multiple of the screening level for each. The maximum exceedance at each location was then used for plume delineation regardless of when the sample was collected or which compound had the highest exceedance. *Therefore, the interpreted plumes shown on Figures 7 and 8 are not representative of a single PFAS analyte, the total PFAS in groundwater, or a particular sampling event, and the estimated plumes are presented for SI screening purposes only.*

The PFAS sampling discussed in Section 5.2 was intended to determine on-Station PFAS impacts to groundwater and did not specifically target AOIs identified in the PA, and not all of the sites identified in the PA were near groundwater sampling locations. However, many of the wells sampled provide potential insight into potential releases from the AOIs recommended for further evaluation in the PA. The recommendations based on these findings are presented in Section 6.0. Sections 5.3.1 through 5.3.6 present the findings for:

- Former CO-2 (AOI 1),
- CO-5 (Crash Crew AOC [AOIs 2 through 10], Fire/Rescue Station AOC [AOIs 11 through 14], Warehouse AOC [AOI 15], AOI 16, and IRP Sites 9a and 9b),
- CO-6 (IRP Site 3 and AOI 17),
- OU-3 (IRP Site 1),
- IRP Sites 5S(a) and (b), and

- Drum Storage Area No. 3 (IRP Sites 13E, 13S, and 13W)

The remaining AOIs (AOIs 18–22, 24, 161–163, and 172) and IRP Site 5N, which were recommended for further assessment in the PA, are not located near any of the wells sampled for PFAS. Therefore, AOIs 18, 19, 20, 21, 22, 24, 161, 162, 163, and 172 and IRP Site 5N are not discussed in the SI portion of this report. Additionally, potential PFAS impacts to off-Station groundwater have not yet been evaluated.

Summary data for the PFAS investigations to date are presented as follows:

- Table 5-1: Monitoring well information for the wells sampled for PFAS
- Table 5-2: PFOA/PFOS/PFBS sampling results
- Figure 7: PFOA/PFOS/PFBS sampling results and interpreted plumes exceeding DoD (2019a)/U.S. EPA (2021b) screening levels in the first WBZ
- Figure 8: PFOA/PFOS/PFBS sampling results and interpreted plumes exceeding DoD (2019a)/U.S. EPA (2021b) screening levels in the second WBZ
- Figure 9: Surface water sampling results for PFOA/PFOS/PFBS near IRP Site 1 (OU-3)
- Figure 10: Locations of AOIs identified in the PA in relation to the interpreted plumes in the first WBZ.

All AOIs evaluated in the PA/SI are shown on Figure 11.

5.3.1 Former CO-2

Former CO-2 includes AOI 1, which was identified in the PA as IRP Site 6, Building 250, and associated drainage areas. The following areas may have included PFAS storage or use that could have resulted in environmental releases:

- IRP Site 6, which was a paint locker and a drum storage area that operated from 1972 to 1981
- Building 250, which was a receiving and distribution center
- Buildings 267 and 556, which were hazardous/flammable material storage areas.

The IRP Site 6 Paint Locker and Drum Storage Area is in the northern portion of Parcel 11, the southern portion of Parcel 12, and a portion of Parcel 40. An aerial photograph from 1976 showed evidence of AST locations near the northwestern corner of IRP Site 6 and a former drainage ditch that crossed the site in an approximately

northeasterly/southwesterly direction (AEJV, 2018). Subsequent to this area being used for paint and drum storage, Building 250 was constructed and used as a receiving and distribution center for base supplies. Additionally, an O/W SEP was associated with Building 250. Building 250 was approximately 67,000 square feet and was along Park Avenue near the southern corner of the Station. MAG-16 Supply operated Building 250 and was in charge of ordering and storing all materials for aircraft maintenance. Building 250 allegedly had an AFFF-based fire suppression system, and it is likely that annual system testing occurred. Building 267 was constructed at the same time as Building 250 for hazardous/flammable material lockers. Building 556 was built in 1990 and was also used for hazardous/flammable storage. It is common practice for structures used for hazardous/flammable material storage to have AFFF-based fire suppression systems on DON property. The primary potential release at AOI 1 would have been liquids released to surface soil followed by possible infiltration to subsurface soil and groundwater.

Eleven groundwater monitoring wells in the vicinity of former CO-2 were sampled for PFAS from February through July 2020 (MMEC, 2020a, 2020b). PFOA and PFOS concentrations exceeded DoD (2019a) screening levels in all eight wells sampled in the first WBZ. In the second WBZ, PFOA concentrations exceeded the DoD (2019a) screening level in temporary well TW05D, and PFOS concentrations exceeded the DoD (2019a) screening level in temporary well TW07D. PFBS concentrations did not exceed the U.S. EPA (2021b) screening level in this area. The AOI 1 area is located crossgradient from the primary plume that has been tentatively identified at Former MCAS Tustin. As can be seen on Figures 7 and 8, higher concentrations of PFOA and PFOS were detected in the vicinity of temporary well TW05S relative to potentially upgradient and crossgradient sampling locations indicating a possible PFAS release near AOI 1. Concentrations are elevated in both the first and second WBZs relative to the nearest upgradient well (TW16S). Higher PFOA and PFOS concentrations were also detected near monitoring wells I006MW01S and I006MW08S relative to potential upgradient, crossgradient, and downgradient sampling locations; this could indicate a second PFAS release area in the vicinity of these wells, which are downgradient from AOI 161. AOI 161 is located outside of former CO-2 on previously transferred property, and no additional groundwater samples were collected in the immediate vicinity of AOI 161. Additional sampling will be required to determine if AOI 161 is the source of the elevated PFOA and PFOS detections near monitoring wells I006MW01S and I006MW08S.

5.3.2 CO-5

CO-5 includes the Crash Crew AOC (AOIs 2 through 10), the Fire/Rescue Station AOC (AOIs 11 through 14), the Warehouse AOC (AOI 15), Hangar 1 (AOI 16), IRP Sites 9a and 9b, and a portion of IRP Site 13S – Drum Storage Area No. 3. Because portions of IRP Site 13 Drum Storage Area No. 3 are outside CO-5, Drum Storage Area No. 3 is discussed separately in Section 5.3.7. The groundwater plumes associated with OU-1A, OU-1B North, and portions of OU-4B are also in CO-5; the groundwater plumes associated with OU-1A and OU-1B North are being treated by the North Treatment System, and those associated with OU-4B are being treated via in situ bioremediation, monitored natural attenuation, and institutional controls. OU-1A and OU-1B received the designation of Operating Properly and Successfully in 2010 (Enviro Compliance Solutions, Inc., 2010). CO-5 is in the central to northern portion of the Station.

5.3.2.1 Crash Crew AOC (AOIs 2–10) in OU-1B North

Firefighting activities were conducted in the general vicinity of OU-1B North in CO-5 east of Building 28 (Hangar 1); the area was identified as the Crash Crew AOC in the PA. The following AOIs identified in this PA are associated with the Crash Crew AOC:

- **AOI 2**: Building 103 was identified as AOI 2; the building's past use included a training classroom for crash crews.
- **AOI 3**: Buildings 183 and 234 were identified as AOI 3. Building 183 was used as a fire station. Former Building 234 was identified as a former (demolished) wash rack for Building 183 (BNI, 2001b). The nearby 5,000-gallon UST 534A supplied fuel to the burn pit. TOW-14 (AOI 10) was used to separate water and fuel. After firefighting training, the fuel/water mixture was sent to TOW-14 (O/W SEP 534). After separation, wastewater was routed to a 1,500-gallon sump (UST 534C), and waste fuel was routed to a 1,500-gallon fuel tank (534B). Both fluids were reused in the burn pit for training.
- **AOI 4**: AOI 4 consists of Building 259. The building's past use included storage for crash crews, which could have included AFFF storage.

- **AOI 5**: AOI 5 is storm drain DSD-04, which is near the eastern corner of Building 183. The *Final Basewide Environmental Baseline Survey* (BNI, 2001b) describes DSD-04 (also referred to as DSD-4) as a storm drain at the MWA-14 wash area (AOI 8) used by Aircraft Rescue and Firefighting to clean trucks. The drain feeds O/W SEP 183 (TOW-13; AOI 9). From TOW-13, wastewater flows to the sanitary sewer system, and oily waste flows to adjacent UST 183A. In 1991, TOW-13 replaced an older unit that discharged from a sand trap directly to the storm drain system; former discharge would have been to IRP Site 5N, a drainage ditch in former CO-7.
- **AOI 6**: AOI 6 consists of a burn pit near Hangar 1, referred to in the *Final Basewide Environmental Baseline Survey* (BNI, 2001b) as MCD-02 (also written as MCD-2). This area was used for burning of fuels and firefighting training. AFFF may have been used for fire suppression. The site was described as being off the southern corner of Building 183 at the end of Hangar 1 (Building 28). The *Final Basewide Environmental Baseline Survey* (BNI, 2001b) describes MCD-2 as a concrete floor with a collection sump draining into an O/W SEP. The unit was used for crash crew fire training. Controlled fires were started in the pit by igniting a jet propellant 5 (JP-5) fuel fire that the crash crew extinguished. The water and fuel were separated by O/W SEP 534 (TOW-14; AOI 10). A 5,000-gallon UST 534A supplied fuel to the burn pit. After firefighting training, the fuel/water mixture was sent to O/W SEP 534. After separation, wastewater was routed to a 1,500-gallon sump (UST 534C), and waste fuel was routed to a 1,500-gallon fuel tank (534B). Both were reused in the burn pit. The O/W SEP was equipped with an overflow alarm and was removed. The sites received closure from the RWQCB in a letter dated April 21, 2000.
- **AOI 7**: AOI 7 consists of disposal area MDA-09, which was approximately 50 feet south of the corner of Building 183. The *Final Basewide Environmental Baseline Survey* (BNI, 2001b) describes MDA-09 (also referred to as MDA-9) as a circular pit approximately 40 feet in diameter that was used as a crash crew sump pond during the 1960s. This site was off the southern corner of Building 183 at the end of Hangar 1 (Building 28). The site was subsequently paved. Interviews indicated that aviation gas and diesel fuel may have been disposed of in this pond (BNI, 2001b).

- **AOI 8**: AOI 8 consists of wash area MWA-14. The area received closure from the RWQCB in a letter dated April 21, 2020. The *Final Basewide Environmental Baseline Survey* (BNI, 2001b) describes MWA-14 as an inactive wash area north of Building 183 that was operated by the Combined Fire and Rescue Service to clean trucks. The wash area was approximately 20 by 40 feet in area and was constructed directly above an older unit that had been in operation since 1981. The waste generated at this site was discharged to an adjacent O/W SEP 183 (TOW-13; AOI 9), which was installed in 1991 to replace an older O/W SEP.
- **AOI 9**: AOI 9 consists of O/W SEP 183 (TOW-13), which was a 1,000-gallon steel tank along the northern side of Building 183. It was connected to wash area MWA-14 (AOI 8). The *Final Basewide Environmental Baseline Survey* (BNI, 2001b) describes this removed O/W SEP 183 as connected to a 1,000-gallon UST (183A) used for storing separated waste oil prior to offsite disposal. The wastewater was generated at adjacent wash area MWA-14 (AOI 8). The O/W SEP had no alarm to indicate release, but it was monitored every 2 weeks to prevent overflows. Prior to construction of this O/W SEP, an old sand trap type O/W SEP was used, and the wastewater was discharged directly to the storm drain system; former discharge would have been to IRP Site 5N in former CO-7.
- **AOI 10**: AOI 10 consists of TOW-14 (O/W SEP 534), which was a 1,500-gallon fiberglass tank northeast of Building 183, near crash crew burn pit MCD-02 (AOI 6). After firefighting training at the burn pit, the fuel and water mixture was sent to TOW-14. After separating, the water was sent to a 1,500-gallon sump (UST 534C), and the waste fuel was sent to a 1,500-gallon fuel tank (UST 534B). Both fluids were reused in the burn pit for training. USTs 534A, 534B, and 534C were adjacent to TOW-14. The O/W SEP was equipped with an overflow alarm and was removed. The area received closure from the RWQCB in a letter dated April 21, 2000.

Groundwater samples were collected in the general OU-1B North plume area to determine whether groundwater had been impacted by PFAS. Samples were collected from 10 wells in the vicinity of the Crash Crew AOC from July 2018 through September 2020. PFOA, PFOS, and/or PFBS concentrations exceeded relevant DoD (2019a) and U.S. EPA (2021b) screening levels in all wells. The majority of the groundwater samples were collected in the first WBZ, but a sample was collected from the second WBZ at temporary well TW13D. Although the concentrations were lower in the second WBZ, PFOA and PFOS exceeded DoD (2019a) screening levels. PFOA, PFOS, and PFBS concentrations in samples collected downgradient of the Crash Crew AOC are significantly higher than the concentrations in all of the wells that might represent

upgradient conditions. This suggests that PFAS have been released in the vicinity of the Crash Crew AOC. Due to the limited number of samples collected and the close proximity of some of the AOIs, specific AOIs within the AOC that released the PFAS could not be identified. Additionally, AOI 16 (Hangar 1) is located immediately upgradient of the Crash Crew AOC, and no sampling was conducted between AOI 16 and the Crash Crew AOC. Therefore, AOI 16 could also be contributing to the elevated PFOA, PFOS, and PFBS concentrations detected downgradient of the Crash Crew AOC.

5.3.2.2 Fire/Rescue Station AOC (AOIs 11–14)

Firefighting operations were conducted in the general vicinity of OU-1A in CO-5, and the area was identified in the PA as the Fire/Rescue Station AOC. The OU-1A plume is in the northwestern portion of the Station, along Armstrong Avenue and north of Valencia Avenue. VOC-impacted groundwater in OU-1A originates from former source area IRP Site 13S and is being treated by the North Treatment System. AFFF or other PFAS-containing materials may have been used, stored, handled, or disposed of in this area at the following AOIs identified in the PA:

- **AOI 11**: AOI 11 consists of a combination Fire/Rescue Station that was in Building 13, which is in the western portion of OU-1A in CO-5 (BNI, 2001b).
- **AOI 12**: AOI 12 consists of Building 49 north of Building 13 (AOI 11; Fire Station) that was used as a firehouse annex.
- **AOI 13**: AOI 13 consists of a disposal area identified as MDA-05 approximately 350 feet southwest of Building 13, along Armstrong Avenue, between Victory Road and Valencia Avenue in CO-5. The site was identified in the 2001 site management plan as an open area with one or more open pits that were thought to possibly be burn pits or crash crew sump ponds used during the 1960s (BNI, 2001a). According to aerial photographs, the area included a shallow 30- by 30-foot depression.
- **AOI 14**: AOI 14 consists of a wash area identified as MWA-15 southwest of Building 13 in CO-5. It was used by the Fire Department to wash and degrease vehicles. The unit was not connected to an O/W SEP; wastewater drained directly into the surrounding soil through French drains. The overall integrity of the system appeared to be poor (BNI, 2000a).

Groundwater samples were collected from 22 wells in the vicinity of the Fire/Rescue AOC from July 2018 through September 2020. PFOA and PFOS concentrations exceeded DoD (2019a) screening levels in all nine wells in the first WBZ and 7 of the 13

wells in the second WBZ. In the remaining 6 wells in the second WBZ, only PFOA exceeded the DoD (2019a) screening level. PFBS concentrations did not exceed the U.S. EPA (2021b) screening level in this area. PFOA concentrations were higher than PFOS concentrations in most wells, but at monitoring well IS72MW15S, the PFOS concentration was considerably higher than the PFOA concentration. The same was the case for most of the other wells in the vicinity. That could indicate a possible release in the vicinity of monitoring well IS72MW15S, but no source area was identified based on this result. The highest concentration of PFOA in the vicinity of the Fire/Rescue Station AOC was found at temporary well TW08S, which is located near the CO-5 boundary west of the AOC. Because this location is not downgradient of the Fire/Rescue Station AOC, it was not interpreted to indicate a release associated with the AOC. Temporary well TW08S is potentially downgradient from one of the IRP Site 13S locations located within CO-5, but the sampling in this area was too sparse to link the PFOA results with that site. PFOA and PFOS concentrations in groundwater downgradient of the AOIs were slightly higher than in the wells on the upgradient side of the AOC, which indicates that PFAS might have been released in the vicinity of the AOC, but the data collected to date does not indicate a significant source within the Fire/Rescue Station AOC.

5.3.2.3 Warehouse AOC (AOI 15)

The Warehouse AOC identified in the PA consists of a single AOI (AOI 15; Building 71H). Building 71H is approximately 450 feet northwest of Hangar 1 and near the intersection of Valencia Avenue and Armstrong Avenue in CO-5. It is in the OU-4B Mingled Plumes Area in the northwestern portion of the Station immediately west of Building 28. Five former VOC source areas (Disposal Sanitary Sewer 01, Disposal Sanitary Sewer 02, MDA-02, Miscellaneous Major Spill 05, and Temporary Storage Area 67) contributed to one continuous VOC plume in the first WBZ, which became known as the Mingled Plumes Area. Building 71H was identified in the PA as AOI 15 based on its past use a general warehouse for the Fire Department and PFOA and PFOS detections in groundwater. A portion of a collapsed sewage pipeline was discovered via downhole television beneath Building 71H in 1984. A depression inside the building was discovered and presumed to be the location of the collapsed portion of the pipeline (BNI, 2000b), which could be an area susceptible to a PFAS release.

Groundwater samples were collected in September 2018 at temporary well TW02S, which is near the Warehouse AOC. PFOA and PFOS concentrations exceeded DoD (2019a) screening levels. PFBS did not exceed the U.S. EPA (2021b) screening level near AOI 15. However, the exceedances associated with AOI 15 were not significantly different from concentrations measured upgradient of AOI 15.

5.3.2.4 Hangar 1 (AOI 16)

Hangar 1 (Building 28) was identified in the PA as an AOI because it was equipped with an AFFF-based fire suppression system that was tested annually. Hangar doors are located at both ends of the building. Storm drains and drainage ditches are depicted in the *Final Basewide Environmental Baseline Survey* (BNI, 2001b).

Groundwater samples were collected from four wells in the vicinity of AOI 16 and four wells downgradient of AOI 16 from July 2018 through February 2020. PFOA and/or PFOS concentrations exceeded DoD (2019a) screening levels in all wells in both the first and second WBZs. PFBS exceeded the U.S. EPA (2021b) screening level in some of the downgradient wells, but these wells were also downgradient of the Crash Crew AOC, so the PFBS exceedances may not be related to a release from AOI 16. PFOA concentrations near AOI 16 were about three times higher than in upgradient temporary well TW14S, which suggests that PFAS may have been released in the vicinity of AOI 16.

5.3.2.5 IRP Sites 9a and 9b

IRP Site 9 includes IRP Sites 9a and 9b, which are located in the northwestern portion of the Station. IRP Site 9a contained line shacks and temporary hazardous substance storage units; the line shack area was used for approximately 75 percent of the oil and hydraulic fluid changes for helicopters in the Apron 1 area. IRP Site 9b is located along the northwestern margin of Apron 1 and includes a drainage ditch where hydraulic fluids may have been disposed.

IRP Sites 9a and 9b were identified in the PA as potential AFFF release areas based on PFOS detections at monitoring well IS72MW15S and the history of hydraulic fluid use and disposal in the area. Aviation hydraulic fluid sometimes contains PFAS. Monitoring well IS72MW15S was sampled to evaluate the extent of the PFAS plume near the western edge of CO-5. However, the results from this well were higher than other surrounding wells, and PFOS concentrations were higher than PFOA concentrations, which was not typical of other samples collected in the area. Monitoring well IS72MW15S was located downgradient of IRP Site 9, and samples collected upgradient of IRP Site 9 did not have similar elevated PFOS concentrations. This suggests that IRP Site 9 may be the source of the elevated PFAS concentrations detected in groundwater in this area.

5.3.3 CO-6

CO-6 is in the southern portion of the Station and includes IRP Site 3 and AOI 17 (Hangar 2), which were identified in the PA as AOIs for PFAS. CO-6 also includes the South Treatment System, which treats groundwater impacted by VOCs. Although there

have been no documented uses of PFAS-containing materials in CO-6, AFFF may have been used, stored, or handled in these areas. Groundwater sampling results collected in the general CO-6 area are discussed below.

5.3.3.1 IRP Site 3

IRP Site 3 is known as Paint Stripper and Disposal Area No. 1. Wastes were disposed of on the ground north and east of Building 174 from 1978 to 1984. Prior to 1975, battery acids were disposed of north and east of Building 174. A dip tank outside Building 175 was used to strip paint from parts. The parts were dipped in the tank, paint was then stripped off, and the part was rinsed with a hose. The rinse water was discharged directly to the ground. The RI for OU-1 and -2 (BNI, 1997b) described four areas at IRP Site 3 that were used for waste disposal. Waste disposal practices included pouring liquid wastes directly onto the ground near Buildings 174 and 265. The exact locations of the four disposal areas are not known (BNI, 1997b).

Groundwater samples were collected from 12 wells in the vicinity of IRP Site 3. First and second WBZ groundwater samples were collected from September 2019 through September 2020. PFOA and PFOS concentrations exceeded DoD (2019a) screening levels in all wells. PFBS concentrations exceeded the U.S. EPA (2021b) screening level in all first WBZ wells except I003MW02S located southwest of IRP Site 3; PFOA and PFOS concentrations were also lower in this well. The highest concentrations of PFOA, PFOS, and PFBS found in the first WBZ in CO-6 were located within IRP Site 3 at extraction well I003EW03S. The groundwater concentrations in the vicinity of IRP Site 3 were higher than those found in the nearest upgradient well sample (TW13S). Based on the interpretation of these data, it is likely that PFAS releases from IRP Site 3 have impacted Station groundwater.

5.3.3.2 Hangar 2 (AOI 17)

Hangar 2 (AOI 17) (Building 29) is in the center of CO-6/OU-1B South. An AFFF-based fire suppression system in Hangar 2 was tested annually. IRP Site 3 is adjacent to Hangar 2 on the northeastern side and is considered an AOI because of prior uses, and PFOA/PFOS have been detected in groundwater at concentrations above current DoD (2019a) screening levels.

Groundwater samples were collected from 22 wells in the vicinity of AOI 17 from September 2019 through September 2020. PFOA and PFOS concentrations exceeded DoD (2019a) screening levels in all first WBZ wells and most second WBZ wells. PFBS concentrations were below the U.S. EPA (2021b) screening level in all AOI 17 wells except extraction well I003EW02S, which is on the upgradient edge of AOI 17 and

immediately downgradient from IRP Site 3. The only AOI 17 wells where no screening levels were exceeded were TW15D and TW16D, which are on the western edge of CO-6 in the second WBZ. Concentrations upgradient from AOI 17 but downgradient from IRP Site 3 were higher than those measured closest to AOI 17, indicating that IRP Site 3 may be the CO-6 site having the greatest impact on the first WBZ. However, AOI 17 may also be contributing to the PFAS concentrations noted in wells downgradient from the hangar.

5.3.4 OU-3 (IRP Site 1)

OU-3 consists of IRP Site 1, the Moffett Trenches and the Crash Crew Burn Pits, which were in the eastern portion of the Station adjacent to Peters Canyon Channel. The former unlined, shallow landfill trenches and pits were used to burn flammable liquids for firefighter training exercises. The landfill trenches, which reportedly contain approximately 5,000 cubic yards of material, were used from the late 1940s or early 1950s until about 1971. The trenches are suspected to contain a mixture of municipal solid waste and industrial waste from the Station, the latter reportedly composed of paints, oils, solvents, and transformers possibly containing polychlorinated biphenyls (PCBs). According to boring logs and trench logs, landfill materials consist of concrete, gravel, wood, glass, cobbles, metal, asphalt, and minor trash. The Crash Crew Burn Pits were used to burn flammable liquids for firefighting training exercises from about 1971 until 1983. AFFF may have been used to quench the fuel fires. Flammable liquids burned in the Crash Crew Burn Pits consisted primarily of JP-5 and oils, solvents, lacquers, primers, and various chemicals. An estimated 250,000 to 350,000 gallons of liquid wastes were used for firefighting training at the burn pits (DON, 2001b).

The PFAS sampling discussed in Section 5.2 targeted OU-3 (IRP Site 1) because this area was identified by the DON records review discussed in Section 4.1.3. Groundwater samples were collected from 12 wells in the vicinity of IRP Site 1 between July 2017 and December 2020 for PFAS analysis. PFOA and/or PFOS concentrations exceeded DoD (2019a) screening levels in all wells associated with IRP Site 1 except the three upgradient temporary wells. The highest concentrations of PFAS detected at the Station were in well I001MW52S within this area. PFBS concentrations also exceeded the U.S. EPA (2021b) screening level in the locations with the highest PFOA and PFOS concentrations. These sampling results indicate that PFAS released during the fire training activities at OU-3 have impacted shallow groundwater; however, the impacts may be localized. The highest concentration of PFOA in the first WBZ (1,010 µg/L) measured at monitoring well I001MW52S in June 2020 is nearly 4 orders of magnitude higher than the nearest sample collected in the second WBZ.

To determine if PFAS-impacted groundwater was discharging from OU-3 to surface water, four surface water samples were collected from Peters Canyon Channel, which is adjacent to IRP Site 1. Groundwater discharge to the surface is restricted in this area because of the containment remedy implemented for OU-3, which includes a French drain and sump system designed specifically to prevent groundwater discharge to this portion of Peters Canyon Channel (MMEC Group, 2020b). PFOA, PFOS, and PFBS were detected in all surface water samples, including the sample collected upgradient from IRP Site 1, and concentrations were similar in all samples. PFOA, PFOS, and PFBS concentrations in the surface water samples were compared to DoD (2019a) and U.S. EPA (2021b) screening levels based on tap water ingestion, and none exceeded. Surface water sampling results are shown on Figure 9.

5.3.5 IRP Sites 5S(a) and 5S(b)

IRP Sites 5S(a) and 5S(b) were unlined drainage ditches south of CO-6. IRP Site 5S(a) is partially located in former CO-9, which was transferred to the City in 2021, and IRP Site 5S(b) was part of former CO-1, which was transferred to the City in 2006 and is currently owned by Costco Wholesale Corporation. Both ditches were in the southern portion of the Station southeast of Hangar 2 (Building 29); were formerly part of a culvert system that collected surface water runoff from most of the northwestern portion of the Station; and were connected to several existing and former buildings.

5.3.5.1 IRP Site 5S(a)

The *Final Basewide Environmental Baseline Survey* (BNI, 2001b) described IRP Site 5S(a) as an unlined drainage ditch that received a variety of wastes from 1956 to 1983 that were disposed of in floor drains from Hangar 1 (Building 28) and Hangar 2 (Building 29). These buildings contained AFFF-based fire suppression systems and received runoff from other potential contaminant source areas. During the period of Station operations, a variety of contaminants, including fuels, oils, lubricants, and solvents, may have drained into IRP Site 5S(a) through building floor drains connected to the culvert system.

IRP Site 5S(a) also received surface water runoff from other IRP sites (including 11, 12, 13S, and 13W) and several AOCs. Materials handled at these sites included waste oils, cleaning solvents, hydraulic fluids, diesel fuel, gasoline, paint stripper, battery acids, and other chemical wastes (BEI, 2004). The former drainage ditch was diverted and backfilled by the City or its sublessees pursuant to an approved Project Environmental Review Form (AEJV, 2018).

5.3.5.2 IRP Site 5S(b)

IRP Site 5S(b) consisted of an unlined drainage ditch that may have received a variety of wastes disposed of in floor drains from Buildings 28 (Hangar 1) and 29 (Hangar 2), which contained AFFF-based fire suppression systems, as well as runoff from other potential contaminant source areas. Fuels, oils, lubricants, and solvents may have drained into the culvert system. IRP Site 5S(b) is currently unmaintained, open, and partially covered in grass (DON, 2004c).

5.3.5.3 Sampling in the Vicinity of IRP Sites 5S(a) and (b)

Groundwater samples were collected between February and November 2020 from seven wells in the vicinity of IRP Sites 5S(a) and (b). PFOA and PFOS concentrations exceeded DoD (2019a) screening levels in all five wells screened in the first WBZ, but in the second WBZ, only PFOA exceeded the DoD (2019a) screening level in the northernmost well. PFBS did not exceed the U.S. EPA (2021b) screening level in this area. Upgradient concentrations of PFOA and PFOS in well I003MW02S were lower than the concentrations of these PFAS in the IRP Sites 5(a) and (b) wells. This indicates that the drainage ditch at IRP Site 5S(a) is probably a PFAS source area. Because none of the groundwater samples were collected within or downgradient from IRP Site 5S(b), it could not be determined if it was a potential source area.

5.3.6 Drum Storage Area No. 3 (IRP Sites 13E, 13S, and 13W)

Drum Storage Area No. 3 includes multiple drum storage areas that have been subdivided into IRP Sites 13E, 13S, and 13W. Details on potential releases at the three parts of Drum Storage Area No. 3 are as follows:

- **IRP Site 13E:** According to the RI for OU-1 and -2 (BNI, 1997b), IRP Site 13E included a stained area where drums of chemicals were stored between Buildings 41 and 94. The area has since been paved (Brown and Caldwell, 1985). IRP Site 13E is in Parcel 24, east of CO-5.
- **IRP Site 13S:** IRP Site 13S includes three subareas. One of these subareas is within CO-5 and the other two are along the northeastern boundary of CO-5, in Parcel 24-1A. IRP Site 13S includes former AOCs ST-72 and MWA-18. ST-72 was an inactive vehicle maintenance facility consisting of Building 16 (ST-72A) and former Building 50 (ST-72B) in the former Ground Support Equipment Yard. ST-72 was used from the mid-1960s to the mid-1970s. Former Building 50 (ST-72B) was a lubricating facility and included hydraulic lifts and hoist lifts equipped with below-grade sumps to collect waste oil. Building 16 (ST-72A) housed administrative functions in 1997 but operated as a garage for most of its history.

A hoist lift with an underlying pit was present in the building during the 1997 RI. Cleaning solvent was reportedly used to wash down floors, presumably for its degreasing properties. MWA-18 was installed in the 1940s and used as an active wash pad for washing small generators located within the Ground Support Equipment Yard. No O/W SEP was connected to this wash pad. Waste solvents were likely washed to storm drains or to the ground outside the buildings. The remains of demolished Building 50, including the concrete vault, were removed, and remedial excavation of contaminated soil was conducted (BNI, 1997b).

- **IRP Site 13W:** IRP Site 13W is primarily in Parcel 24-1B, just east of the northern portion of CO-5; a portion of the site is within CO-5. IRP Site 13W consists of two past disposal areas. The first area was east and south of Building 98. For approximately 10 years, starting in the mid-1960s, approximately 2,640 gallons of liquid wastes were disposed of on soil in this area (RORE, Inc., 2016). An oil pit was in Building 98 (paint booth). The second area was on the western side of Building 16. Solvents used to wash down the Building 16 floor were allowed to drain along the outside edge of the building adjacent to Severyns Road. A former UST was just beyond the northwestern corner of Building 16. Both the 1993 SI and the 1997 RI found soils contaminated with fuel oils in this area (BNI, 1997b).

Groundwater samples were collected from July 2018 through September 2020 from five wells in the vicinity of IRP Sites 13S and 13W. No samples were collected near potential source area IRP Site 13E, but wells sampled downgradient from IRP Site 13E and near IRP Site 13S contained PFOA and PFOS at concentrations above DoD (2019a) screening levels, and the estimated plume boundaries include IRP Site 13E. PFOA exceeded the DoD (2019a) screening level in the sample collected near IRP Site 13W, just upgradient of IRP Site 13S. Samples collected downgradient of two of the IRP Site 13S subareas contained both PFOA and PFOS at concentrations above DoD (2019a) screening levels, indicating that although potentially impacted by IRP Site 13W, one or both of these areas is also a source of PFAS-impacted groundwater. The third subarea of IRP Site 13S was not sampled. There are no known PFAS source areas upgradient of the drum storage areas associated with IRP Sites 13E and 13W, so these areas are inferred to be the source of PFAS detected in downgradient wells; however, upgradient sample collection would be necessary to verify that there are no contributing upgradient sources.

6.0 Summary and Conclusions

A total of 347 potential AOIs were initially identified. The 36 AOIs where further investigation may be warranted to determine or further assess the presence of PFAS are listed below, shown on Figure 10, and summarized in Table 6-1. The remaining 311 AOIs recommended for NFA are included in Table 6-2.

- IRP Site 1: Moffett Trenches and Crash Crew Burn Pits
- IRP Site 3: Paint Stripper Disposal Area No. 1
- IRP Site 5N: Drainage Area No. 1, Ditch 5 North
- IRP Site 5S(a): Drainage Area No. 1, Ditch 5A South
- IRP Site 5S(b): Drainage Area No. 1, Ditch 5B South
- IRP Sites 9(a) and (b): Hangar No. 1 Line Shacks (9a) and Apron 1 (9b)
- IRP Site 13E: Drum Storage Area No. 3
- IRP Site 13S: Drum Storage Area No. 3
- IRP Site 13W: Drum Storage Area No. 3
- AOI 1: IRP Site 6, Building 250 (MAG Supply), and Associated Drainage Ditch
- AOI 2: Crash Crew Training Classroom (Building 103)
- AOI 3: Fire Station (Building 183)
- AOI 4: Crash Crew Storage Area (Building 259)
- AOI 5: Storm Drain DSD-04
- AOI 6: Burn Pit MCD-2
- AOI 7: Miscellaneous Disposal Area MDA-09
- AOI 8: Miscellaneous Wash Area MWA-14
- AOI 9: Oil/Water Separator TOW-13
- AOI 10: Oil/Water Separator TOW-14
- AOI 11: Fire Station (Building 13)
- AOI 12: Firehouse Annex (Building 49)

- AOI 13: Miscellaneous Disposal Area MDA-05
- AOI 14: Miscellaneous Wash Area MWA-15
- AOI 15: Warehouse AOC (Building 71H)
- AOI 16: Hangar 1 (Building 28)
- AOI 17: Hangar 2 (Building 29)
- AOI 18: Building 520 Hangar
- AOI 19: Oil/Water Separator TOW-3
- AOI 20: Firefighting Training Area (Building 543)
- AOI 21: Land-farming site
- AOI 22: Wastewater treatment plant (Building 610)
- AOI 24: Aircraft crash – Southeast of Mat 5
- AOI 161: MAG-16 Hangar (Building 190)
- AOI 162: MAG-16 Hangar (Building 524)
- AOI 163: MAG-16 Hangar (Building 525)
- AOI 172: Engine Test Cell (Building 273)

Based on the findings of this PA/SI Report, the DON is planning to complete a basewide RI for both soil and groundwater. For those AOIs that are neither located on DON property nor subject to an ongoing CERCLA response, the next step is to formally inform the current owners of the potential presence of PFAS approximately contemporaneously with the publication of this Final PA/SI Report. Such notifications will be made in writing, and the regulatory agency members of the BCT will be copied. The DON plans to work with such owners to determine whether any additional investigation may be necessary. This step will likely be limited, at least initially, to completing additional research, conducting additional interviews with knowledgeable individuals, and conducting onsite inspections. Depending on the circumstances of and the results from this additional work, the DON may recommend exiting or continuing the CERCLA process. The next steps in the CERCLA process for AOIs where further investigation may be warranted that were identified in this PA/SI are summarized in Table 6-3.

Table 6-1: Areas of Interest Where Further Investigation May be Warranted

PFAS AOI	Site Identification	Site Name and Status[a]	Use Dates	Description[b]	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of[c]	Potential for PFAS	Conclusion(s)/Next Step(s)	Source(s)
IRP Site 1	IRP Site 1 (OU-3)	Moffett Trenches and Crash Crew Burn Pits, Open CERCLA Site/LTM	Trenches: 1950–mid-1970s Crash Crew Burn Pits: 1956–1983	OU-3 consists of three former trenches west of and parallel to Peters Canyon Channel, approximately 700 feet northeast of Moffett Road. Each of the trenches was approximately 15 feet wide and 10 to 12 feet deep. The two closest trenches to Peters Canyon Channel were approximately 300 feet in length and were located 35 feet and 100 feet from the channel. The furthest trench was approximately 200 feet from the channel and 150 feet in length. The trenches received inert municipal solid waste, trash, and industrial chemicals from the auto hobby shop, the metal shop, the electrical shop, the photo shop, and various squadrons from 1950 to the mid-1970s. Four or five transformers, each containing up to 30 gallons of potentially PCB-containing fluid, may have been disposed in the trenches. Irregular burnings of the trenches took place for volume reduction. Native soils were used to cover the trenches. Two shallow surface pits approximately 35 to 40 feet in diameter and 5 feet in depth were constructed in the late 1950s in the same area as the trenches. Later, a third pit was constructed in the shape of a "Z" and was approximately 5 feet wide, 3 feet deep, and 45 feet long. The "Z" shaped pit was reportedly used for practicing the use of hand-held fire extinguishers. From 1956 through the late 1960s, 8 to 10 fires a day on training days were ignited for training for 4 months of the year. Approximately 12,000 to 16,000 gallons of fuel were used in the pits for training annually. From 1970 to 1975, 600 gallons of fuel were applied to each pit and ignited for training days for 4 months of the year. About 11,000 to 19,000 gallons of fuel were used for training annually. From 1975 to 1983, 3 fires a day each using 50 gallons of fuel occurred on training days for 6 months of the year. Approximately 2,700 gallons of fuel were used annually. The "Z" shaped pit was used approximately 8 times a year and used 200 gallons of fuel annually. According to historical documents and interviews, this site was used for the burning of fuels and firefighting training, which may have used AFFF for fire suppression. Prior sampling in 2017 and 2020 resulted in PFOA/PFOS detections in groundwater that exceeded the current DoD (2019a) screening levels. The property is currently owned by the City of Tustin.	NA	Inert municipal solid waste, industrial chemicals from auto hobby shop, the metal shop, the electrical shop, and the photo shop, PCB-containing transformer fluid. Oil, JP-5, solvents, hydraulic fluids, lube oil, methyl ethyl ketone, PD680, mineral spirits, lacquer, thinners, epoxy, primers, polyurethane, leaded aviation fuel, and AFFF	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2017 and 2020. The DON will proceed to an RI for groundwater and soil because previous groundwater sampling results indicated considerable impacts in terms of concentration. See Table 6-3 for more information on the next steps in the CERCLA process.	7, 8, 16, 17
IRP Site 3	IRP Site 3 (CO-6)	Paint Stripper Disposal Area No. 1, Open CERCLA Site/RA-O	1967–1984	IRP Site 3 is located in the center of CO-6 and approximately 100 feet north of Hangar 2. Two 30-foot by 40-foot Quonset huts were located at Building E-12 and served as the paint shop for airframes from 1967 to 1975. In 1975, the paint shop moved to Buildings 174 and 175. Approximately 1.5 gallons of waste were disposed of on the ground north and east of Building 174 from 1978 to 1981. Approximately 55 gallons of waste were disposed of on the ground every 3 months east of Building 174 from 1983 to 1984. Prior to 1975, battery acids were disposed of north and east of Building 174. A dip tank was located outside Building 175 and was used to strip paint from parts. The parts were dipped in the tank, paint was then stripped off, and the part was rinsed with a hose. The rinse water was discharged directly to the ground. The property where IRP Site 3 is located is still retained by the DON and has not been transferred.	29, 29A, 40B, 174, 175, 265, E-12	Solvents, paint stripper, battery acids, and TCE	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2018, 2019, and 2020. The DON will proceed to an RI for groundwater and soil because previous groundwater sampling results indicated considerable impacts in terms of both spatial extent and concentration. See Table 6-3 for more information on the next steps in the CERCLA process.	11, 12, 13, 16, 17

Table 6-1: Areas of Interest Where Further Investigation May be Warrened (continued)

PFAS AOI	Site Identification	Site Name and Status[a]	Use Dates	Description[b]	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of[c]	Potential for PFAS	Conclusion(s)/Next Step(s)	Source(s)
IRP Site 5N	IRP Site 5N (Former CO-7)	Drainage No. 1, Ditch 5 North, Closed CERCLA Site	1956–1983	IRP Site 5N consists of an unlined drainage ditch in the area known as Drainage Area No. 1 North. It is located approximately 800 feet to the northwest of Hangar 2 and is 2.5 acres in size. From 1956 to 1983, the ditch may have received a variety of wastes disposed in floor drains from Hangar 1 (Buildings 28) and Hangar 2 (Building 29), which contained AFFF-based fire suppression systems, as well as runoff from other potential contaminant source areas. The AFFF-based fire suppression systems were tested annually in Hangar 1 and Hangar 2 based on interviews. NFA in 2004. The property where IRP Site 5N was located was transferred to the City of Tustin in 2002.	Hangar 1 (Building 28), Hangar 2 (Building 29)	TPH, SVOCs, metals	Yes	The potential presence of PFAS was initially based on historical activities; further investigation may be warranted to determine their presence. The DON will notify the current property owner in writing of the potential presence of PFAS. The regulatory agency members of the BCT will be copied. Depending on the circumstances, the DON may recommend exiting or continuing the CERCLA process. See Table 6-3 for more information on the next steps in the CERCLA process.	11, 13
IRP Site 5S(a)	IRP Site 5S(a) (Former CO-9)	Drainage Area No. 1, Ditch 5A South, Open CERCLA Site/ RA-O	1956–1983	IRP Site 5S(a) was an unlined drainage ditch in the area known as Drainage Area No. 1 South. It is located approximately 500 feet to the southeast of Hangar 2 and is approximately 2 acres in size. From 1956 to 1983, the ditch may have received a variety of wastes disposed of in floor drains from Buildings 28 (Hangar 1) and 29 (Hangar 2), which contained AFFF-based fire suppression systems, as well as runoff from other potential contaminant source areas. The AFFF-based fire suppression systems were tested annually in Hangar 1 and Hangar 2. IRP Site 5S(a) is located in former CO-9, which is now owned by the City of Tustin.	Hangar 1 (Building 28), Hangar 2 (Building 29)	TPH, SVOCs, metals	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2020. The DON will proceed to an RI for groundwater and soil because previous groundwater sampling results indicated considerable impacts in terms of both spatial extent and concentration. See Table 6-3 for more information on the next steps in the CERCLA process.	10, 11, 13, 16
IRP Site 5S(b)	IRP Site 5S(b) (Former CO-1)	Drainage Area No. 1, Ditch 5B South, Closed CERCLA Site	1956–1983	IRP Site 5S(b), Drainage Area No. 1 South, consisted of an unlined drainage ditch located approximately 600 feet south of Hangar 2 and is 1.4 acres in size. From 1956 to 1983, the ditch may have received a variety of wastes disposed of in floor drains from Buildings 28 (Hangar 1) and 29 (Hangar 2), which contained AFFF-based fire suppression systems, as well as runoff from other potential contaminant source areas. IRP Site 5S(b) has been designated as jurisdictional waters of the United States under Section 404 of the Clean Water Act. Development in wetland areas will require Section 404 permits. NFA in 2004. The property where IRP Site 5S(b) was located was transferred to the City of Tustin in 2006.	Hangar 1 (Building 28), Hangar 2 (Building 29)	TPHs, SVOCs, metals	Yes	The potential presence of PFAS was initially based on historical activities; further investigation may be warranted to determine their presence. The DON will notify the current property owner in writing of the potential presence of PFAS. The regulatory agency members of the BCT will be copied. Depending on the circumstances, the DON may recommend exiting or continuing the CERCLA process. See Table 6-3 for more information on the next steps in the CERCLA process.	6, 10, 13
IRP Site 9a	IRP Site 9a	Hangar No.1 Line Shacks, Closed CERCLA Site	1971–1982	IRP Site 9a is an unpaved area north of Aircraft Parking Apron 1 and south of McCord Road that contained line shacks and temporary hazardous substance storage units. The site consists of a strip of land approximately 85 feet wide by 1,000 feet long. The site stretches along the northern edge of Aircraft Parking Apron 1 and contained five line shacks (Buildings 207, 260, 178, 179, and 261) for use by helicopter maintenance crews and a metal building (Building 201). The area was used for helicopter oil and hydraulic fluid changes. A NFA ROD for OU-2, which includes IRP Site 9a, was signed in September 2000. Building 207 is approximately 2,000 square feet and is located near the intersection of Armstrong Avenue and Victory Road.	207, 260, 178, 179, 261, 201	PAHs, VOCs, TRPH, TPH, PCBs, and metals	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2018 and 2020. Further investigation may be warranted to more fully determine PFAS impacts. The DON will proceed to a basewide RI for groundwater and soil. See Table 6-3 for more information on the next steps in the CERCLA process.	3
IRP Site 9b	IRP Site 9b	Apron 1 Closed CERCLA Site	Unknown	IRP Site 9b consists of two areas along the Apron 1 margin, one on the northwestern site (Subarea 1) and one on the southeastern side (Subarea 3), which were impacted by helicopter exhaust transported to the margins by rainwater runoff. A drainage ditch was partially within the IRP Site 9b boundary and ran from Building 185 to 524. Based on historical documentation, the ditch was used for frequent disposal of aviation hydraulic fluids, which have the potential to contain PFAS. A ROD for OU-2, which includes IRP Site 9b, was put in place in September 2000.	NA	PAHs and TPH	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2018 and 2020. Further investigation may be warranted to more fully determine PFAS impacts. The DON will proceed to a basewide RI for groundwater and soil. See Table 6-3 for more information on the next steps in the CERCLA process.	3

Table 6-1: Areas of Interest Where Further Investigation May be Warrened (continued)

PFAS AOI	Site Identification	Site Name and Status[a]	Use Dates	Description[b]	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of[c]	Potential for PFAS	Conclusion(s)/Next Step(s)	Source(s)
IRP Site 13E	IRP Site 13E	Drum Storage Area No. 3, Closed CERCLA Site	Mid-1960s–mid-1970s	IRP Site 13E is located in the northern portion of Parcel 24 and was one of three parts known as Drum Storage Area No. 3. No chemicals of concern were found in groundwater. The risks posed by chemicals identified in soil were determined to be within allowable risk ranges and the site received NFA concurrence. The site was closed in September 2000. Prior sampling in 2018, 2019, and 2020 resulted in PFOA/PFOS detections in groundwater that exceeded current DoD (2019a) screening levels. The property where IRP Site 13E was located was transferred to Marble Mountain Partners LLC in 2005.	NA	Hydraulic fluid, diesel fuel, leaded gasoline, oil, paint stripper, battery acids, and solvents	Yes	The potential presence of PFAS was initially based on historical activities. Recent PFAS sampling did not include collection of groundwater near potential source area IRP Site 13E, but wells sampled downgradient from IRP Site 13E and near IRP Site 13S contained PFOA and PFOS at concentrations above current DoD (2019a) screening levels, and the estimated plume boundaries include IRP Site 13E. Further investigation may be warranted to more fully determine PFAS impacts. The DON will notify the current property owner in writing of the potential presence of PFAS. The regulatory agency members of the BCT will be copied. Depending on the circumstances, the DON may recommend exiting or continuing the CERCLA process. See Table 6-3 for more information on the next steps in the CERCLA process.	3, 5, 15
IRP Site 13S	IRP Site 13S	Drum Storage Area No. 3, Open CERCLA Site/RA-O	Mid-1960s–mid-1970s	IRP Site 13S is part of the area known as Drum Storage Area No. 3 and is located on portions of Parcels 1, 2, 16, 18, 19, 22, 24 (most western portion), and 40 (northern portion). This IRP site includes two AOCs (MWA-18 and ST-72B), an inactive wash area formerly used for cleaning small generators, and an inactive vehicle maintenance facility that formerly consisted of a garage and a lubrication facility. Prior sampling in 2018, 2019, and 2020 resulted in PFOA/PFOS detections in groundwater that exceeded current DoD (2019a) screening levels. The property where IRP Site 13S is located is under multiple ownership, including a portion still retained by the DON.	NA	Hydraulic fluid, diesel fuel, leaded gasoline, oil, paint strippers, battery acids, solvents, solvent-contaminated wash water, TCE, and 1,2,3-TCP	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2018, 2019, and 2020. The DON will proceed to an RI for groundwater and soil because previous groundwater sampling results indicated considerable impacts in terms of both spatial extent and concentration. See Table 6-3 for more information on the next steps in the CERCLA process.	3, 13, 15, 16, 17
IRP Site 13W	IRP Site 13W	Drum Storage Area No. 3, Open CERCLA Site/RA-O	Mid-1960s–mid-1970s	IRP Site 13W, which is approximately 1.5 acres of Parcel 24, is one of three parts of Drum Storage Area No. 3. The site consists of two past disposal areas located in the northwestern portion of Parcel 24 and contains portions of Parcel 40. Prior sampling in 2018, 2019, and 2020 resulted in PFOA/PFOS detections in groundwater that exceeded current DoD (2019a) screening levels. The property where IRP Site 13W was located was transferred to Marble Mountain Partners LLC in 2005.	NA	Hydraulic fluid, diesel fuel, leaded gasoline, oil, paint strippers, battery acids, solvents and solvent-contaminated wash water	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2018, 2019, and 2020. The DON will proceed to an RI for groundwater and soil because previous groundwater sampling results indicated considerable impacts in terms of both spatial extent and concentration. See Table 6-3 for more information on the next steps in the CERCLA process.	5, 15
AOI 1	Former CO-2	IRP Site 6, Building 250 (MAG Supply), and Associated Drainage Ditch/Open CERCLA Site in RA-O phase	Unknown	IRP Site 6, the Paint Locker and Drum Storage Area, was operated from 1972 to 1981 and is located in the northern portion of Parcel 11, the southern portion of Parcel 12, and a portion of Parcel 40. Subsequent to this area being used for storage, Building 250 was constructed and was used as a receiving and distribution center for base supplies. Approximately 225 gallons of Alodine were also disposed of by the metal shop directly to the ground at the site. Building 267 was constructed at the same time for hazardous/flammable material lockers. Building 556 was built in 1990 to be used as hazardous/flammable storage. Prior sampling in 2019 and 2020 detected PFOA/PFOS concentrations in groundwater above current DoD (2019a) screening levels. Building 250 was approximately 67,000 square feet and was located along Park Avenue near the southern corner of the Station. MAG-16 Supply was in charge of ordering and storing all materials for aircraft maintenance. An AFFF-based fire suppression system was present at this site, and annual testing occurred. The property where former CO-2 is located was transferred to the City of Tustin in 2021.	250, 267, 556 (all buildings and structures within this site were demolished)	Chromic acid, cyanide, fluoride, PAHs, VOCs (1,1-dichloroethene), metals, and Alodine (corrosion control)	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2019 and 2020. The DON will proceed to an RI for groundwater and soil because previous groundwater sampling results indicated considerable impacts in terms of both spatial extent and concentration. See Table 6-3 for more information on the next steps in the CERCLA process.	3, 5, 13, 16, 17

Table 6-1: Areas of Interest Where Further Investigation May be Warrened (continued)

PFAS AOI	Site Identification	Site Name and Status[a]	Use Dates	Description[b]	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of[c]	Potential for PFAS	Conclusion(s)/Next Step(s)	Source(s)
AOI 2	NA	Crash Crew Training Classroom (Building 103)	1958–1999	Building 103 is located approximately 100 feet southeast of Hangar 1 and is 1,856 square feet in size. The building past use included a training classroom for the Crash Crew. It is located in CO-5. Prior sampling in 2018, 2019, and 2020 resulted in PFOA/PFOS detections in groundwater that exceeded current DoD (2019a) screening levels. The property where Building 103 is located is still retained by the DON and has not been transferred.	103	None	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2018, 2019, and 2020. The DON will proceed to an RI for groundwater and soil because previous groundwater sampling results indicated considerable impacts in terms of both spatial extent and concentration. See Table 6-3 for more information on the next steps in the CERCLA process.	3, 9, 16, 17
AOI 3	NA	Fire Station (Building 183)	1988–1999	Based on interviews and historical records, Building 183 was used as a fire station. Building 183 is located approximately 150 feet southeast of Hangar 1 and is approximately 6,800 square feet in size. It is located in CO-5. Common practices at fire stations included AFFF storage, transfer of AFFF into fire trucks, test AFFF discharging, and truck washing. TOW-14 was used to separate water and fuel. The 5,000-gallon UST 534A supplied fuel to the burn pit. After firefighting training, the fuel/water mixture was sent to O/W SEP 534. After separation, wastewater was routed to a 1,500-gallon sump (UST 534C) and waste fuel was routed to a 1,500-gallon fuel tank (534B). Both fluids were reused in the burn pit for training. The property where Building 183 is located is still retained by the DON and has not been transferred.	183	AFFF	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2018, 2019, and 2020. The DON will proceed to an RI for groundwater and soil because previous groundwater sampling results indicated considerable impacts in terms of both spatial extent and concentration. See Table 6-3 for more information on the next steps in the CERCLA process.	3, 9, 13, 16, 17
AOI 4	NA	Crash Crew Storage Area (Building 259)	1984–1999	Building 259 is located approximately 200 feet southeast of Hangar 1 and is 1,025 square feet in size. It is located in CO-5. The building past use included storage for the Crash Crew. Prior sampling in 2018, 2019, and 2020 resulted in PFOA/PFOS detections in groundwater that exceeded current DoD (2019a) screening levels. The property where Building 259 is located is still retained by the DON and has not been transferred.	259	AFFF	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2018, 2019, and 2020. The DON will proceed to an RI for groundwater and soil because previous groundwater sampling results indicated considerable impacts in terms of both spatial extent and concentration. See Table 6-3 for more information on the next steps in the CERCLA process.	3, 9, 16, 17
AOI 5	NA	Storm Drain DSD-04	Unknown	DSD-04 is a storm drain located near the eastern corner of Building 183 and is approximately 200 feet west of Burn Pit MCD-02. It is located in CO-5. Prior sampling in 2018, 2019, and 2020 resulted in PFOA/PFOS detections in groundwater that exceeded current DoD (2019a) screening levels. The property where DSD-04 is located is still retained by the DON and has not been transferred.	NA	AFFF	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2018, 2019, and 2020. The DON will proceed to an RI for groundwater and soil because previous groundwater sampling results indicated considerable impacts in terms of both spatial extent and concentration. See Table 6-3 for more information on the next steps in the CERCLA process.	3, 9, 16, 17
AOI 6	NA	Burn Pit MCD-02	1960s	According to interviews, this site was used for the burning of fuels and firefighting training, which may have used AFFF for fire suppression. The site was described as being located off the southern corner of Building 183 at the end of Hangar 1 (Building 28). It is located in CO-5. Controlled fires were started in the pit by igniting a JP-5 fuel fire that the crash crew put out with water or possibly AFFF. The property where the burn pit was located is still retained by the DON and has not been transferred.	NA	AFFF	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2018, 2019, and 2020. The DON will proceed to an RI for groundwater and soil because previous groundwater sampling results indicated considerable impacts in terms of both spatial extent and concentration. See Table 6-3 for more information on the next steps in the CERCLA process.	3, 9, 13, 16, 17
AOI 7	NA	Miscellaneous Disposal Area MDA-09	Unknown	MDA-09 was a miscellaneous disposal area located approximately 50 feet south of the southern corner of Building 183. It is located in CO-5. Prior sampling in 2018, 2019, and 2020 resulted in PFOA/PFOS detections in groundwater that exceeded current DoD (2019a) screening levels. The property where MDA-09 is located is still retained by the DON and has not been transferred.	NA	None	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2018, 2019, and 2020. The DON will proceed to an RI for groundwater and soil because previous groundwater sampling results indicated considerable impacts in terms of both spatial extent and concentration. See Table 6-3 for more information on the next steps in the CERCLA process.	3, 9, 16, 17

Table 6-1: Areas of Interest Where Further Investigation May be Warrened (continued)

PFAS AOI	Site Identification	Site Name and Status[a]	Use Dates	Description[b]	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of[c]	Potential for PFAS	Conclusion(s)/Next Step(s)	Source(s)
AOI 8	NA	Miscellaneous Wash Area MWA-14	1981–1999	MWA-14 was located north of Building 183 and was operated by Combined Fire and Rescue Service to clean trucks. It is located in CO-5. The wash area is connected to TOW-13 (O/W SEP 183). The area received closure on April 21, 2000. Prior sampling in 2018, 2019, and 2020 resulted in PFOA/PFOS detections in groundwater that exceeded current DoD (2019a) screening levels. The property where Building 183 is located is still retained by the DON and has not been transferred.	183	Oily wastes, detergents, and AFFF	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2018, 2019, and 2020. The DON will proceed to an RI for groundwater and soil because previous groundwater sampling results indicated considerable impacts in terms of both spatial extent and concentration. See Table 6-3 for more information on the next steps in the CERCLA process.	3, 9, 13, 16, 17
AOI 9	NA	Oil/Water Separator TOW-13	1988–1999	O/W SEP-183 (TOW-13) was a 1,000-gallon steel tank located along the northern side of Building 183. It is located in CO-5. It was connected to wash area MWA-14, operated by Aircraft Rescue and Firefighting. The O/W SEP was connected to a 1,000-gallon UST (183A) for storage of waste oil and was monitored every two weeks for prevent overflow. The O/W SEP was removed. The area received closure on April 21, 2000. Prior sampling in 2018, 2019, and 2020 resulted in PFOA/PFOS detections in groundwater that exceeded current DoD (2019a) screening levels. The property where Building 183 is located is still retained by the DON and has not been transferred.	183	Oily wastes, detergents, and AFFF	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2018, 2019, and 2020. The DON will proceed to an RI for groundwater and soil because previous groundwater sampling results indicated considerable impacts in terms of both spatial extent and concentration. See Table 6-3 for more information on the next steps in the CERCLA process.	3, 9, 13, 16, 17
AOI 10	NA	Oil/Water Separator TOW-14	1986–1999	O/W SEP-534 (TOW-14) was a 1,500-gallon fiberglass tank located northeast of Building 183, near Burn Pit MCD-02. It is located in CO-5. After firefighting training at the burn pit, the fuel and water mixture was sent to TOW-14. After separating, the water as sent to 1,500-gallon sump (UST 534C) and the waste fuel was sent to a 1,500-gallon fuel tank (UST 534B). Both fluids were reused in the burn pit for training. The O/W SEP was equipped with an overflow alarm and was removed. The area received closure on April 21, 2000. Prior sampling in 2018, 2019, and 2020 resulted in PFOA/PFOS detections in groundwater that exceeded current DoD (2019a) screening levels. The property where Building 183 is located is still retained by the DON and has not been transferred.	183	Waste fuel, water, and AFFF	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2018, 2019, and 2020. The DON will proceed to an RI for groundwater and soil because previous groundwater sampling results indicated considerable impacts in terms of both spatial extent and concentration. See Table 6-3 for more information on the next steps in the CERCLA process.	3, 9, 13, 16, 17
AOI 11	NA	Fire Station (Building 13) (CO-5)	1943–1989	The 3,300-square-foot Fire Station was located in Building 13 along Armstrong Road between Victory Avenue and Valencia Avenue. It is located in CO-5. Common practices at fire stations included AFFF storage, transfer of AFFF into fire trucks, test AFFF discharging, and truck washing. The property where Building 13 is located is still retained by the DON and has not been transferred.	13	AFFF	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2018, 2019, and 2020. The DON will proceed to an RI for groundwater and soil because previous groundwater sampling results indicated considerable impacts in terms of both spatial extent and concentration. See Table 6-3 for more information on the next steps in the CERCLA process.	3, 5, 9, 13, 16, 17
AOI 12	NA	Firehouse Annex (Building 49) (CO-5)	1942–1999	Building 49 is located approximately 30 feet north of Building 13, along Armstrong Avenue between Victory Road and Valencia Avenue. It is located in CO-5. It is 1,800 square feet in size, and past use of the building includes firehouse annex. Prior sampling in 2018, 2019, and 2020 resulted in PFOA/PFOS detections in groundwater that exceeded current DoD (2019a) screening levels. The property where Building 49 is located is still retained by the DON and has not been transferred.	49	None	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2018, 2019, and 2020. The DON will proceed to an RI for groundwater and soil because previous groundwater sampling results indicated considerable impacts in terms of both spatial extent and concentration. See Table 6-3 for more information on the next steps in the CERCLA process.	3, 9, 16, 17

Table 6-1: Areas of Interest Where Further Investigation May be Warrened (continued)

PFAS AOI	Site Identification	Site Name and Status[a]	Use Dates	Description[b]	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of[c]	Potential for PFAS	Conclusion(s)/Next Step(s)	Source(s)
AOI 13	NA	Miscellaneous Disposal Area MDA-05 (CO-5)	Unknown	MDA-05 was a miscellaneous disposal area located approximately 350 feet southwest of Building 13, along Armstrong Avenue between Victory Road and Valencia Avenue. It is located in CO-5. Prior sampling in 2018, 2019, and 2020 resulted in PFOA/PFOS detections in groundwater that exceeded current DoD (2019a) screening levels. The property where MDA-05 is located is still retained by the DON and has not been transferred.	NA	None	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2018, 2019, and 2020. The DON will proceed to an RI for groundwater and soil because previous groundwater sampling results indicated considerable impacts in terms of both spatial extent and concentration. See Table 6-3 for more information on the next steps in the CERCLA process.	3, 9, 16, 17
AOI 14	NA	Miscellaneous Wash Area MWA-15 (CO-5)	1942–1989	MWA-15 was located southwest of Building 13 and was operated by the Fire Department to wash and degrease vehicles. It is located in CO-5. The wash area drained directly into the surrounding soil through French drains. The property where Building 13 is located is still retained by the DON and has not been transferred.	13	Oily water, solvents for degreasing, and AFFF	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2018, 2019, and 2020. The DON will proceed to an RI for groundwater and soil because previous groundwater sampling results indicated considerable impacts in terms of both spatial extent and concentration. See Table 6-3 for more information on the next steps in the CERCLA process.	3, 9, 13, 16, 17
AOI 15	NA	Warehouse AOC (Building 71H) (CO-5)	1945–1999	Building 71H is located approximately 450 feet northwest of Hangar 1 near the intersection of Valencia Avenue and Armstrong Avenue. It is located in CO-5. It is 1,650 square feet in size, and past use of the building includes general warehousing for the Fire Department. Prior sampling in 2018, 2019, and 2020 resulted in PFOA/PFOS detections in groundwater that exceeded current DoD (2019a) screening levels. The property where Building 71H is located is still retained by the DON and has not been transferred.	71H	AFFF	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2018, 2019, and 2020. The DON will proceed to an RI for groundwater and soil because previous groundwater sampling results indicated considerable impacts in terms of both spatial extent and concentration. See Table 6-3 for more information on the next steps in the CERCLA process.	3, 9, 16, 17
AOI 16	NA	Hangar 1 (Building 28) (CO-5)	Unknown	Hangar 1 (Building 28) is located in the northwestern portion of the Station in Parcel 18 and is approximately 300,000 square feet. The building is located near the intersection of Armstrong Avenue and Victory Road. Hangar 1 was one of two large hangars built at the Station to house airships (blimps) that were used for antisubmarine patrols off the California coast during World War II. Construction of Hangar 1 was completed in 1943. The structure housed blimps until 1949 when the facility was officially decommissioned and designated for use by other military units in the area. The facility was recommissioned in 1951 and used for maintenance and helicopter support until 1996. Commercial civilian blimps were occasionally maintained or fabricated in the hangar. An AFFF-based fire suppression system was present at Hangar 1, and annual testing occurred. The property where Hangar 1 is located is still retained by the DON and has not been transferred.	28	AFFF	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2018, 2019, and 2020. The DON will proceed to an RI for groundwater and soil because previous groundwater sampling results indicated considerable impacts in terms of both spatial extent and concentration. See Table 6-3 for more information on the next steps in the CERCLA process.	1, 2, 9, 13, 16, 17
			Unknown	ST-83 consisted of various rooms located within the hangar that may have been used for hazardous materials and/or hazardous waste storage. The site received NFA on April 8, 1999. An AFFF-based fire suppression system was present at Hangar 1, and annual testing occurred. The property where Hangar 1 is located is still retained by the DON and has not been transferred.	28	AFFF	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2018, 2019, and 2020. The DON will proceed to an RI for groundwater and soil because previous groundwater sampling results indicated considerable impacts in terms of both spatial extent and concentration. See Table 6-3 for more information on the next steps in the CERCLA process.	3, 9, 13, 16, 17

Table 6-1: Areas of Interest Where Further Investigation May be Warrened (continued)

PFAS AOI	Site Identification	Site Name and Status[a]	Use Dates	Description[b]	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of[c]	Potential for PFAS	Conclusion(s)/Next Step(s)	Source(s)
AOI 17	NA	Hangar 2 (Building 29) (CO-6)	Unknown	Hangar 2 (Building 29), with approximately 298,000 square feet of floor space, is located in the south-central section of the Station located near the intersection of Warner Avenue and Tustin Ranch Road. The hangar, built in 1943, was used to support operations and house airships (blimps) during World War II. The building was later used for maintenance and helicopter support activities and has been vacant since March 1996. However, a portion (47,700 square feet) of the building was temporarily (September 1996 through 13 December 1996) used by the DON, Applied Technology Test and Simulation, Have Gaze Program for airship maintenance purposes. A TCE groundwater plume was identified both north and south of Hangar 2. Therefore, in 1997, it was concluded that the TCE runs beneath Hangar 2. An AFFF-based fire suppression system was present at Hangar 2, and annual testing was reported to have occurred. Additionally, based on interviews, electroplating operations may have historically occurred on the southern side of the hangar, with the time of operation unknown. The property where Hangar 2 is located is still retained by the DON and has not been transferred.	29	Electroplating materials and AFFF	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2018, 2019, and 2020. The DON will proceed to an RI for groundwater and soil because previous groundwater sampling results indicated considerable impacts in terms of both spatial extent and concentration. See Table 6-3 for more information on the next steps in the CERCLA process.	9, 12, 13, 16, 17
			Unknown	ST-84 consisted of various rooms within the hangar that may have been used for hazardous materials and/or hazardous waste storage. The site received NFA on June 13, 1997. An AFFF-based fire suppression system was present at Hangar 2, and annual testing occurred. The property where Hangar 2 is located is still retained by the DON and has not been transferred.	29	AFFF	Yes	The potential presence of PFAS was initially based on historical activities and was subsequently confirmed by groundwater sampling in 2018, 2019, and 2020. The DON will proceed to an RI for groundwater and soil because previous groundwater sampling results indicated considerable impacts in terms of both spatial extent and concentration. See Table 6-3 for more information on the next steps in the CERCLA process.	3, 13, 16, 17
AOI 18	NA	Building 520 Hangar	1987–1998	Building 520 was also identified as Hangar 53. It was approximately 63,000 square feet and was located near the intersection of Tustin Ranch Road and Park Avenue. Based on interviews, an AFFF-based fire suppression system was present at this site, and annual testing of the system occurred. Additionally, electroplating operations occurred at the site based on interviews. The property where Building 520 was located was transferred to the City of Tustin in 2002, but current ownership is with Vestar/Kimco LP.	520	AFFF, electroplating	Yes	The potential presence of PFAS is based on historical activities; further investigation may be warranted to determine their presence. The DON will notify the current property owner in writing of the potential presence of PFAS. The regulatory agency members of the BCT will be copied. Depending on the circumstances, the DON may recommend exiting or continuing the CERCLA process. See Table 6-3 for more information on the next steps in the CERCLA process.	13

Table 6-1: Areas of Interest Where Further Investigation May be Warrened (continued)

PFAS AOI	Site Identification	Site Name and Status[a]	Use Dates	Description[b]	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of[c]	Potential for PFAS	Conclusion(s)/Next Step(s)	Source(s)
AOI 18 (continued)	NA	Building 520 Hangar	1987–1998	ST-89 was operated by MAG-16 Helicopter Squadron. Constructed in 1987, the approximately 120-foot by 275-foot unit was specially designed to store, repair, and maintain helicopters. Three evenly spaced 1-foot by 2-foot sumps ran along the unit interior to contain releases. The integrity of the unit was good. The unit was issued NFA on May 18, 2000. Based on interviews, an AFFF-based fire suppression system was present at this site, and annual testing of the system occurred and fluid may have run into the sumps. The property where Building 520 was located was transferred to the City of Tustin in 2002, but current ownership is with Vestar/Kimco LP.	520	Materials for helicopter maintenance and AFFF	Yes	The potential presence of PFAS is based on historical activities; further investigation may be warranted to determine their presence. The DON will notify the current property owner in writing of the potential presence of PFAS. The regulatory agency members of the BCT will be copied. Depending on the circumstances, the DON may recommend exiting or continuing the CERCLA process. See Table 6-3 for more information on the next steps in the CERCLA process.	3, 13
			1989–1999	MWA-21 was a wash rack located within Building 520 and was used for cleaning aircraft and automobile parts. The wash rack is connected to TOW-19 (O/W SEP 520). The integrity of the pad appeared to be good. The unit was issued NFA on May 18, 2000.The property where Building 520 was located was transferred to the City of Tustin in 2002, but current ownership is with Vestar/Kimco LP.	520	Oily wastes, detergents, and AFFF	Yes	The potential presence of PFAS is based on historical activities; further investigation may be warranted to determine their presence. The DON will notify the current property owner in writing of the potential presence of PFAS. The regulatory agency members of the BCT will be copied. Depending on the circumstances, the DON may recommend exiting or continuing the CERCLA process. See Table 6-3 for more information on the next steps in the CERCLA process.	3, 13
			1989–1999	TOW-19 (O/W SEP 520) was a 1,000-gallon steel tank located south of Building 520. It was connected to wash rack MWA-21. The O/W SEP was equipped with and overflow alarm. The unit was issued NFA on May 18, 2000.The property where Building 520 was located was transferred to the City of Tustin in 2002, but current ownership is with Vestar/Kimco LP.	520	Oily wastes, detergents, and AFFF	Yes	The potential presence of PFAS is based on historical activities; further investigation may be warranted to determine their presence. The DON will notify the current property owner in writing of the potential presence of PFAS. The regulatory agency members of the BCT will be copied. Depending on the circumstances, the DON may recommend exiting or continuing the CERCLA process. See Table 6-3 for more information on the next steps in the CERCLA process.	3, 13
AOI 19	NA	Oil/Water Separator TOW-3	1988–1999	TOW-3 (O/W SEP 526) was a 1,000-gallon steel unit located east of Building 526 in an underground vault operated by Aircraft Maintenance. It was only used to treat wastewater generated from and firefighting action during a fire in the hangars. The O/W SEP was connected to two 580-gallon USTs (526A and 526B) for storage of waste oil and waste fuel. The system was equipped with an overflow alarm. The unit was issued NFA on November 16, 2000. The property where TOW-3 was located was transferred to the City of Tustin in 2002.	526	Fuels, oils, detergents, AFFF	Yes	The potential presence of PFAS is based on historical activities; further investigation may be warranted to determine their presence. The DON will notify the current property owner in writing of the potential presence of PFAS. The regulatory agency members of the BCT will be copied. Depending on the circumstances, the DON may recommend exiting or continuing the CERCLA process. See Table 6-3 for more information on the next steps in the CERCLA process.	3
AOI 20	NA	Firefighter Training Area (Building 543)	Unknown	The Firefighter Training Area was located near the southwestern edge of the Station, between Armstrong Avenue and Legacy Road. Based on interviews, firefighting training was conducted outside of Building 543. The property where Building 543 was located was transferred to the City of Tustin in 2002, but current ownership is with Brookfield Homes Southern California LLC.	543	AFFF	Yes	The potential presence of PFAS is based on historical activities; further investigation may be warranted to determine their presence. The DON will notify the current property owner in writing of the potential presence of PFAS. The regulatory agency members of the BCT will be copied. Depending on the circumstances and after reviewing recently provided property due diligence data regarding PFAS concentrations in soil and groundwater, the DON may recommend exiting or continuing the CERCLA process. See Table 6-3 for more information on the next steps in the CERCLA process.	13

Table 6-1: Areas of Interest Where Further Investigation May be Warrened (continued)

PFAS AOI	Site Identification	Site Name and Status[a]	Use Dates	Description[b]	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of[c]	Potential for PFAS	Conclusion(s)/Next Step(s)	Source(s)
AOI 21	NA	Land-farming Site	Unknown	Based on interviews, the land-farming site north of Building 577 may have had PFAS-containing sludges incorporated into soil. Because of the proximity to Building 577, there is potential for the land-farming site to contain materials from Fire Station 1 activities. The property where land-farming was located is still retained by the DON and has not been transferred.	577	PFAS-containing sludge	Yes	The potential presence of PFAS was initially based on historical activities and subsequently confirmed by groundwater sampling in 2018, 2019, and 2020. The DON will proceed to an RI for groundwater and soil because previous groundwater sampling results indicated considerable impacts in terms of both spatial extent and concentration. See Table 6-3 for more information on the next steps in the CERCLA process.	9, 13, 16, 17
AOI 22	NA	Wastewater Treatment Plant (Building 610)	Unknown	Building 610 was approximately 800 square feet and located at the intersection of Armstrong Avenue and Barranca Parkway. Based on interviews, the Wastewater Treatment Plant may have potentially received wastewater from O/W SEPs or directly from hangar drain systems that may have discharged into the sanitary system that leads to the Wastewater Treatment Plant. The property where the Wastewater Treatment Plant was located was transferred to the City of Tustin in 2002.	610	potentially PFAS-containing wastewaters	Yes	The potential presence of PFAS is based on historical activities; further investigation may be warranted to determine their presence. The DON will notify the current property owner in writing of the potential presence of PFAS. The regulatory agency members of the BCT will be copied. Depending on the circumstances, the DON may recommend exiting or continuing the CERCLA process. See Table 6-3 for more information on the next steps in the CERCLA process.	3, 13
AOI 24	NA	Aircraft Crash – Southeast of Mat 5	1981	An aircraft crashed into a corn field close to Mat 5 south of Hangar 2.	NA	AFFF	Yes	The potential presence of PFAS is based on historical activities; further investigation may be warranted to determine their presence.	13
AOI 161	NA	MAG-16 Hangar (Building 190)	1970–1998	This hangar (Building 190) was used to park, repair, and maintain helicopters and aircraft that used radioactive equipment operated by MAG-16 squadrons. The unit was approximately 90 by 100 feet. Built in 1970, the unit was in operational use until late 1998. The overall integrity of the unit was good. This AOI was identified by an interviewee for potentially having an AFFF-based fire suppression system.	190	Materials for helicopter maintenance and AFFF	No	The potential presence of PFAS is based on historical activities; further investigation may be warranted to determine their presence. The DON will proceed to a basewide RI for groundwater and soil. See Table 6-3 for more information on the next steps in the CERCLA process.	3, 13
AOI 162	NA	MAG-16 Hangar (Building 524)	1988–1998	This hangar (Building 524) was operated by MAG-16 Helicopter Squadron. Constructed in 1988, the approximately 115-foot by 186-foot unit was specially designed to store, repair, and maintain helicopters. Three evenly spaced sumps (1 foot by 2 feet) were situated within the unit to contain releases. The integrity of the unit was good. This AOI was identified by an interviewee for potentially having an AFFF-based fire suppression system.	524	Materials for helicopter maintenance and AFFF	Yes	The potential presence of PFAS is based on historical activities; further investigation may be warranted to determine their presence. The DON will proceed to a basewide RI for groundwater and soil. See Table 6-3 for more information on the next steps in the CERCLA process.	3, 13
AOI 163	NA	MAG-16 Hangar (Building 525)	1988–1998	This hangar (Building 525) was operated by MAG-16 Helicopter Squadron. Constructed in 1988, the approximately 115-foot by 186-foot unit was specially designed to store, repair, and maintain helicopters. Three evenly spaced sumps (1 foot by 2 feet) were situated within the unit to contain releases. The integrity of the unit was good. This AOI was identified by an interviewee for potentially having an AFFF-based fire suppression system.	525	Materials for helicopter maintenance and AFFF	Yes	The potential presence of PFAS is based on historical activities; further investigation may be warranted to determine their presence. The DON will proceed to a basewide RI for groundwater and soil.	3, 13
AOI 172	NA	Engine Test Cell (Building 273)	Unknown–1999	This former helicopter engine testing area included the test cell at Building 273, which was equipped with exterior baffled exhaust silos that were used to vent the helicopter engines during testing. The engine test pad area was located immediately north of Building 273 and consisted of a large concrete pad with three drain boxes that discharged to the sanitary sewer. The engine test pad area was used for outdoor testing of helicopter engines prior to construction of Building 273. Engine test cells are typically equipped with AFFF-based fire suppression systems.	273	Materials for helicopter maintenance and AFFF	Yes	The potential presence of PFAS is based on historical activities; further investigation may be warranted to determine their presence. The DON will proceed to a basewide RI for groundwater and soil.	3

Notes:

Table 6-1: Areas of Interest Where Further Investigation May be Warrened (continued)

a. "Inactive" or "closed" status indicates that environmental activities at or associated with the AOI are no longer being conducted, as documented in the cited sources. AOIs that do not have a site identification and site name and status, marked as NA, are those that were identified during interviews. As such, the AOIs have not undergone regulatory review, have not been delineated, and do not have official site names or associated regulatory status.
b. For some AOIs, property ownership is estimated and should be verified.
c. Materials in bold may contain PFAS.

Acronyms:
AFFF = aqueous film-forming foam; AOC = Area of Concern; AOI = Area of Interest; AST = aboveground storage tank; BCT = Base Realignment and Closure Cleanup Team; CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act; CO = Carve-Out; DoD = United States Department of Defense; DON = United States Department of the Navy; IRP = Installation Restoration Program; JP-5 = jet propellant, grade 5; LTM = long-term monitoring; MAG = Marine Aircraft Group; MCAS = Marine Corps Air Station; MWA = Miscellaneous Wash Area; NA = not applicable; NFA = no further action; OU = Operable Unit; O/W SEP = oil/water separator; PAH = polycyclic aromatic hydrocarbon; PCB = polychlorinated biphenyl; PFAS = per- and polyfluoroalkyl substances; PFOA = perfluorooctanoic acid; PFOS = perfluorooctane sulfonate; RA-O = remedial action operation; SI = Site Inspection; ST = storage, temporary; SVOC = semivolatile organic compound; TCE = trichloroethene; TPH = total petroleum hydrocarbons; TRPH = total recoverable petroleum hydrocarbons; UST = underground storage tank; VOC = volatile organic compound

Sources:
1. BNI. 2000a. *Final Site Management Plan, Marine Corps Air Facility Tustin, California*. Prepared for Southwest Division Naval Facilities Engineering Command. February.
2. BNI. 2000c. *Finding of Suitability to Lease for Parcels 1, 2, 18, 19, 20, 21, and 22 Marine Corps Air Facility Tustin, California*. September.
3. BNI. 2001a. *Final Basewide Environmental Baseline Survey, Marine Corps Air Facility Tustin, California*. March 21.
4. BNI. 2005. *Final Finding of Suitability to Transfer #7 for Carve-Out 3, Portions of Carve-Out 5, and Carve-Out 8*. April 1.
5. Brown and Caldwell. 1985. *Initial Assessment Study of Marine Corps Air Station Tustin, California*. September 1.
6. CDM Federal Programs Corp. 2002. *Revised Final Finding of Suitability to Lease for Southern Parcels Carve-Out Areas 1, 2, 3, and 4*. April 30.
7. MMEC Group. 2017b. *Final Summary Report for Per- and Polyfluoroalkyl Substances Sampling for Groundwater Remedial Action at OU-3*.October 11.
8. MMEC Group. 2018b. *Final Summary Report for November 2017 Per- and Polyfluoroalkyl Substances Sampling at Operable Unit 3, Installation Restoration Program Site 1*. April.
9. MMEC Group. 2018c. *Final Summary Report for Per- and Polyfluoroalkyl Substances Presence/Absence Sampling in Groundwater in Carve-Outs 5 and 6*. November.
10. DON. 2001a. *Final Finding of Suitability to Transfer #1 for Parcels 3, 21, 38, 39, and portions of 40*. August 1.
11. DON. 2002. *Final Finding of Suitability to Lease for Carve-Out Areas 5, 6, 7, 8, 9, 10, and 11*. April 26.
12. United States Marine Corps Air Station Tustin. 1997. *Final Finding of Suitability to Lease, Interim Lease, Building 29 (Hangar 2) Marine Corps Air Station Tustin*. June 13.
13. Interviews.
14. APTIM. 2020a. *Final Addendum 3 to the Final Operation and Maintenance Plan, Operable Units 1A and 1B Groundwater Remedy, Installation Restoration Program Sites 3, 12, and 13S*. March.
15. APTIM. 2020b. *Final 2019 Annual Performance Evaluation Report, Groundwater Remedy at Operable Units 1A (IRP-13S) and 1B (IRP-3 and -12)*. October.
16. MMEC Group. 2020a. *Final Summary Report, Additional Assessment of Per- and Polyfluoroalkyl Substances in Groundwater in Carve-Outs 2, 5, 6, and 9 and Groundwater and Surface Water Near Operable Unit 3 (Phase 1)*. June.
17. MMEC Group. 2020b. *Final Summary Report, Additional Assessment of Per- and Polyfluoroalkyl Substances in Groundwater in Carve-Outs 2, 5, 6, and 9 and Groundwater and Surface Water Near Operable Unit 3 (Phase 2)*. October.

Table 6-2: Areas of Interest Recommended for No Further Action

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
IRP Site 2	IRP Site 2	Oil Disposal Area, Closed	1970–1981	IRP Site 2 is located in the northeastern portion of the Station. The site is a former oil disposal area that reportedly operated from approximately 1970 to 1981. The site is located 100 to 200 yards east of Peters Canyon Channel and 100 to 200 yards north of Moffett Drive. The site was an approximately 10,000-square-foot area with a pistol range adjacent to the north. Waste fuel, hydraulic fluid, and waste solvents that did not fit into the storage tanks at the Crash Crew Burn Pits were disposed of at the site. An estimated 6,600 gallons of waste were disposed of over the period of operations. A skeet and trap shooting range was located approximately 100 yards north of the pistol range. As-built drawings from 1979 indicated a fuel storage tank at the pistol range and a pad-mounted transformer at the skeet and trap shooting range. Prior to closure, 278 housing units and various recreational facilities (e.g., tennis, handball, basketball courts) occupied the site. NFA was granted in 2000.	NA	Waste oil (JP-5 crankcase oil, hydraulic fluid, and solvents)	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	2, 13
IRP Site 4	IRP Site 4	Liquid Disposal Pit, Closed)	Late 1960s–late 1970s	Liquid chemical wastes, from the Marine Helicopter Training Squadron 301, were disposed of in a bowser located on a lawn between Dunn Street and Summit Road. Reportedly when the bowser was full, excess waste would be disposed of in a pit located on the southern side of Dunn Street near the center of Hangar 2. The pit was estimated to be 1 to 2 feet in depth and width. The site is currently covered with asphalt and is used as a parking lot. NFA was granted on 07/24/1997 after the expanded site inspection.	Hangar 2 (Building 29)	Hydraulic fluid, dry cleaning solvent, and Freon	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	8, 13
IRP Site 7	IRP Site 7	Apron Areas Closed	1969–1982	IRP Site 7 consisted of two helicopter refueling stations adjacent to the parking aprons. The underground JP-5 fueling pipeline distributed fuel to the aprons from the ASTs. In the past, spilled fuel was washed off the aprons onto the surrounding soil. This site was investigated in 1991. Soil and water samples were collected and analyzed for the suspected contaminants. TPH and metals were detected in soil and groundwater at concentrations exceeding background levels. Excavation activities began July 1996 and were completed in 1999. Approximated 120,000 tons of soil were excavated and 1,500,000 gallons of groundwater were treated and discharged. NFA was granted in December 1999.	191, 192, 193, 195, 196, 197	TPH and metals	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	8
IRP Site 8	IRP Site 8 (Former CO-3)	Drainage Area No. 2, Closed	1976–1984	Former CO-3 consists of approximately 4 acres and is located in the south-central section of the Station in portions of Parcels 6, 7, 8, and 40. It contains IRP Site 8, former Drainage Area No. 2. No. 2 diesel fuel from this area, used to supply power generators, was reportedly spilled or leaked to a nearby unlined storm drainage ditch from 1976 to 1984. Associated Building 212 was used for electronics/communications maintenance and was built in 1972. Building 219 was used as hazardous waste storage facility/equipment storage facility and was built in 1976. NFA was granted in 2004.	212, 219, 610	VOCs, PAHs, and	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	4, 6, 13

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
IRP Site 10	IRP Site 10	Auto Hobby Shop Closed	1969–1983	IRP Site 10 was the auto body shop, Building 185. Waste oil, transmission fluids, and solvents were disposed of in a sump, the contents of which were pumped out once a month and disposed of offsite. From 1969 to 1983, the sump overflowed during heavy rains. The area was subsequently paved over with asphalt. A ROD for OU-4A, which includes IRP Site 10, was put in place in December 2004.	185	Waste oil, transmission fluids, and solvents	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	9, 15
IRP Site 11	IRP Site 11	Drum Storage Area No. 1, Closed	1975–1984	IRP Site 11, known as Drum Storage Area number (No.) 1, was used for drum storage from 1975 to 1984 and is located in Parcels 18 and 40. The apron northeast of Hangar 1 was used as a drum storage site. Approximately 40 pallets, with each pallet containing 2 or 3 drums with unknown petroleum, oil, and lubricant materials, were stored in the drum storage area. The northwestern corner of Copeland and Calnan is also included in the site. Approximately 400 drums containing unknown petroleum, oil, and lubricant materials, and aviation parts were stored in a square of 50 feet by 50 feet with bare ground from 1975 to 1984. In 1984, the area was paved and fenced and was used as miscellaneous storage, including about 15 drums. A ROD for OU-4B, which includes IRP Site 11, was put in place in January 2010.	Hangar 1 (Building 28)	Hydraulic fluids, crankcase oils, solvents, and aviation parts, and TCE	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3, 13, 15
IRP Site 12	IRP Site 12 (OU-1B North)	Drum Storage Area No. 2, Open	Mid-1960s–1984	IRP Site 12, also known as Drum Storage Area No. 2, operated from the mid-1960s until 1984 and is located in Parcels 16, 17, 18, and 40. The site consists of three distinct areas. The southern side of Building 20B was used as a petroleum, oil, and lubricants storage lot with approximately 200 drums from the mid-1960s to early 1970s. North of Building 90, 400 drums of various petroleum, oil, lubricants, and solvents were stored in a dirt lot from the early 1970s to 1975. East of Building 90 was used as drum storage for approximately 200 drums containing petroleum, oil, lubricants, and solvents from 1975 to July 1984. Building 104, approximately 40 feet east of Building 90, was used to store 80 drums as a hazardous waste storage area for Facilities Management after July 1984.	20B, 90, 104	Hydraulic fluids, crankcase oils, solvents, and aviation parts, and TCE	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3, 13, 15
IRP Site 14	IRP Site 14	Paint Stripper Disposal Area No. 2 Open	1969–1972	IRP Site 14 lies north of the southwest of Hangar 1. The surrounding area contained buildings that were used for painting operations from 1969 to 1972. Small quantities of liquid waste and wash water generated during the cleaning of a paint strip tank were poured directly onto the ground outside the buildings. The site had been paved and the soil was excavated.	Hangar 1 (Building 28)	Small quantities of liquid waste and wash water	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	15; 9
IRP Site 15	IRP Site 15	Blimp Hangar Wood Disposal Area Closed	1942–1949	IRP Site 15 was reportedly a disposal area where wood from a collapsed blimp hangar was disposed of in the 1940s. Pentachlorophenol, a common wood treatment chemical, was detected in groundwater monitoring wells in the Moffett Trenches. This site was investigated in 1991. From interviews and the record search, it was determined that the existence of IRP Site 15 was not based on sound information and no further action was recommended. NFA was granted in March 1996.	NA	Pentachlorophenol	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	10; 9

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
IRP Site 16	IRP Site 16	VOC Solvent Contamination Area/Fuel Farm, Closed	Unknown–1991	IRP Site 16, which is approximately 2 acres, is located near the intersection of Montgomery Street and Columbus Square. IRP Site 16 was the subject of a confirmation study in 1987 and 1988 and a fuel farm site assessment in 1993. Based on the investigation findings, two separate excavation and restoration activities were conducted in 1995 and 1996. Approximately 6,000 tons of contaminated soils were excavated and treated. The DON performed further groundwater evaluation in October 2001 and determined that all contamination is below the MCLs. A ROD for OU-4A, which includes IRP Site 16, was put in place in December 2004.	NA	Benzene, toluene, ethylbenzene, xylenes, and TPH	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	5, 7, 10, 13
AOI 23	NA	Aircraft Crash – Valencia Avenue	Unknown	An interviewee reported that an aircraft crashed into the area near Valencia Road.	NA	AFFF	Yes	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	13
AOI 25	NA	Parcel 11	Unknown	Parcel 11 consists of about 38 acres located in the southern portion of the Station, mostly between Jamboree Road and The District. One AOC (SAT-14) is located within the boundaries of Parcel 11. SAT-14 received regulatory concurrence for NFA. No UST or AST site is located within the boundaries of Parcel 11. One building (568) and one structure (595) were located within the boundaries of Parcel 11. Both were no longer in use and were scheduled for demolition after transfer. Building 568 was also partially located on Parcels 12 and 40, along Park Avenue, between The District and Warner Avenue. Building 568 was approximately 20,000 square feet and was in the southern corner of the Station, along Park Avenue, between the District and Warner Avenue. Based on interviews, AFFF may have been stored at the site. Parcel 11 did not act as a source of PFAS. Building 568 and Building 595 are in proximity of former CO-2/IRP Site 6 (AOI 1), and the area surrounding Building 568 and Building 595 will be investigated as part AOI 1.	568, 595	AFFF	No	Based on interviews, AFFF was stored at the site. While the DON recognizes that AFFF is a potential source of PFAS in the environment, no documentation could be found indicating any spills, leaks, or releases of PFAS-containing AFFF that occurred at this site.	3, 13, 16
AOI 26	NA	STD-1 NFA 11/10/99	1984–1993	This closed unit (Building 248) was operated by the Station for storage of hazardous wastes for up to 1 year (permitted through RCRA). Divided into six cells, stored wastes were segregated by type and compatibility and contained in drums on wooden pallets. The cells were lined by 6-inch-high berms. A catch sump was located inside the unit to further contain releases. Only wastes in sound containers were accepted in this unit. Wastes generated during maintenance and cleaning operations of the entire station and classified as hazardous were stored in the unit. There are no documented spills, leaks, or releases of PFAS-containing AFFF that occurred at this site. AOI 26 is near the northeastern corner of Hangar 1 (AOI 16), and the area surrounding AOI 26 will be investigated as part of Hangar 1 (AOI 16).	248	Used cleaning compounds, antifreeze, Freon, aerosol, oily rags, and AFFF	No	Based on interviews, AFFF was stored at the site. While the DON recognizes that AFFF is a potential source of PFAS in the environment, no documentation could be found indicating any spills, leaks, or releases of PFAS-containing AFFF that occurred at this site.	5, 16

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 27	NA	Warehouse	Unknown	Building 568 was approximately 20,000 square feet and was located in the southern corner of Former MCAS Tustin, along Park Avenue, between The District and Warner Avenue. Based on interviews, AFFF may have been stored at the site.	568	AFFF	No	Based on interviews, AFFF was stored at the site. While the DON recognizes that AFFF is a potential source of PFAS in the environment, no documentation could be found indicating any spills, leaks, or releases of PFAS-containing AFFF that occurred at this site.	3, 16
AOI 28	NA	Log Cabin Area	Unknown	The Log Cabin Area was reportedly located near the main entrance. Upon further investigation, the log cabin referred to by the interviewee could potentially be located east of Hangar 2. While an exact location could not be identified, the area around Hangar 2 will be investigated as part of AOI 17. Based on interviews, AFFF may have been stored at the site.	NA	AFFF	No	Based on interviews, AFFF was stored at the site. While the DON recognizes that AFFF is a potential source of PFAS in the environment, no documentation could be found indicating any spills, leaks, or releases of PFAS-containing AFFF that occurred at this site.	16
AOI 30	NA	Marine Air Wing Main Building	Unknown	Based on interviews, AFFF may have been stored, released, or disposed of at the site. However, additional r location information was not provided, so an exact location is unknown.	NA	AFFF	No	Based on interviews, AFFF was stored at the site. Although the DON recognizes that AFFF is a potential source of PFAS in the environment, no documentation could be found indicating any spills, leaks, or releases of PFAS-containing AFFF that occurred at this site.	16
AOI 31	Former CO-4	Arsenic Area of Concern, Closed	Unknown	Former CO-4 is located within Parcel 12. Its boundary is that of the Arsenic AOC, which contains areas where elevated levels of arsenic have been detected and an adequate buffer zone to complete the investigation at the site. The elevated levels of arsenic have been detected in the northeastern and northwestern corners of Building 190 and on the northern border of Building 251.	190, 251, 251A, 252, 269, 555, 560, 585, 593 (all buildings and structures within this CO were demolished)	Arsenic	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	8, 12
AOI 32	Former CO-8	NA	1995–2001	Former CO-8 occupies approximately 21 acres of land consisting of parts of Parcels 16, 27, and 40 in the central portion of the Station. It includes AOIs Mooring Pads 4 and 5 and AOC MAW-11, identified as abandoned well #28. Mooring Pad 4 and a portion of Mooring Pad 5 were areas previously used to moor lighter-than-air blimps until 1949. Between 1949 and 1995, the pads did not have a specific use. From May 1995 to April 2001, the pads were used to store and treat contaminated soil. The only building located within former CO-8 is Building 303, a former storage shed. It was built in 1949.	303	TPHs	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	6, 13
AOI 33	Former CO-11	NA	Unknown	Former CO-11 occupies approximately 2.5 acres of land within Parcel 1, which is located in the western portion of the Station. It was a former refueling area located at the end of Aircraft Parking Apron 1. The source for the refueling activity was two ASTs, 194A and 194B, approximately 100 yards from the CO area.	NA	Petroleum	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	6

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 34	NA	Parcel 1	Unknown–1999	Parcel 1 is located along the northwestern boundary of the Station. It consists of approximately 100 acres, divided into three subsections. An area on the southeastern side (former CO-11) and an area on the northeastern corner (CO-5). A total of 40 buildings and 1 structure (10M, 77, 160, 236, 238, 239, 278, 279, 550, 563, and 603) are located within the boundaries of Parcel 1. Building 524, a former hangar, was built in 1988. Building 524 in this AOI was identified by an interviewee for potentially having an AFFF fire suppression system and will be investigated as part of AOI 162 (see Table 6-1). A total of 24 AOCs (AD-1, AD-2, AMS-1, AMS-7, DSD-8, MAW-5, MAW-7, MAW-15, MDA-3, MFL-1, MMS-2, MWA-3, ST-7, ST-8, ST-9A, ST-9B, ST-10, ST-42, ST-66, ST-68, ST-70, ST-82, ST-90, TOW-3, and TOW-4) are located in the parcel boundary. AD-1 and AD-2 were possible disposal areas identified by aerial photos. During the visual site inspection, no evidence of disposal was observed, and the sites received NFA on 07/24/97. AMS-1 and AMS-7 were possible spill areas identified by aerial photos. During the visual site inspection, no evidence of spills was observed. AMS-1 was granted NFA on 04/22/96 and AMS-7 was granted NFA on 07/24/97. DSD-8 was a storm drain that was identified as having possible disposal of oily waste. DSD-8 was granted NFA on 07/24/97. MAW-5 (Well #10), MAW-7 (Well #21), and MAW-15 (Well #16) were wells that were transferred to the California Drinking Water Resources Abandoned Well Program. MDA-3 was identified as a potential disposal area where auto maintenance occurred before the Auto Hobby Shop was built. MDA-3 was granted NFA on 07/24/97. MFL-1 was the JP-5 fuel distribution system. It was closed in place and was granted NFA on 12/21/99. MMS-2 was reported as several spills during refueling operations at Aprons 1 and 2. It was located with IRP Site 7, so no further sampling was conducted, and the site was granted NFA on 09/16/96. MWA-3 was a wash area. TPH-contaminated soils were excavated and MWA-3 was granted NFA on 04/88/99. ST-7 (NFA 02/24/00), ST-8 (NFA 02/24/00), ST-9A (NFA 09/24/99), ST-9B (NFA 09/24/99), ST-10 (NFA 09/24/99), ST-42 (NFA 05/18/00), ST-66 (NFA 04/22/96), ST-68 (NFA 04/22/96), ST-70 (NFA 04/22/96), ST-82 (NFA 02/24/00), and ST-90 were all storage areas. OW-4 were O/W SEPs and were granted NFA on 11/16/00 and 06/06/97 respectively.	2, 3, 4, 5, 10M, 77, 86, 87, 88, 132, 134, 159, 160, 165, 166, 167, 168, 172, 177, 184, 213, 218, 225, 227, 236, 238, 239, 245, 246, 249, 254, 278, 279, 300, 306, 505, 506, 516, 524, 526, 538, 539, 549, 550, 561, 563, 573, 574, 594, 602, 603	Fuel oil, gasoline, diesel, oily wastes, and detergents	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3, 13
AOI 35	NA	Parcel 2	Unknown	Parcel 2 is located in the western portion of the Station in CO-5 and is approximately 10 acres. Three buildings (13, 49, and 185) and four structures (11, 12, 230, and 509) are located within the boundaries of Parcel 2. Building 13 (AOI 11), a former fire/rescue station, was built in 1943. Building 49 (AOI 12), former firehouse annex, was built in 1942. Parcel 2 did not act as a source for contamination. Both AOI 11 and AOI 12 in Parcel 2are part of the Fire/Rescue AOC and will be investigated and are AOIs listed in Table 6-1.	11,12, 13, 49, 185, 230, 509	AFFF	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	1, 3, 13

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 36	NA	Parcel 3	Unknown–1999	Parcel 3 consists of approximately 5.8 acres of property located along the western boundary of the Station. The parcel is bordered by Moffett Drive on the north, Landsdowne on the east, and Red Hill Avenue on the west. Four buildings, three non-PCB-containing transformers, one former UST, and one inactive agricultural well are located within the boundaries of Parcel 3. Buildings 553, 554, and 557 were constructed in 1991. Buildings 553 and 554 were Bachelor Enlisted Quarters, three-story residential buildings that are approximately 41,000 square feet each. Building 557, a mechanical building that supplies the utilities for Buildings 553 and 554, is a one-story building that measures approximately 1,700 square feet. UST-10A was a 360-gallon steel underground tank located approximately 75 feet north of Building 553 that stored Diesel Fuel No. 2 used for heating Building 553. UST-10A has been removed and no contamination was detected at the former tank site. Building 10E is a water well pump house what was originally constructed in 1943. It is owned and operated by Irvine Ranch Water District.	553, 554, 557, 10E	Diesel, oily wastes, and detergents	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3, 10, 11
AOI 37	NA	Parcel 4	Unknown–1999	Parcel 4 consists of about 10 acres located in the southwestern corner of the Station. Seven AOCs (AST-3A, ST-3, ST-4A, ST-4B, ST-5A, ST-5B, and ST-78) are located within the boundaries of Parcel 4. Regulatory concurrence for NFA has been received for all of the AOCs in 1999. No UST/AST site was located within the boundaries of Parcel 4. AST-3a was originally identified in an air photo dated September 20, 1965. However, during the visual site inspection, no evidence of the tanks was observed. ST-4A, ST-4B, ST-5A, and ST-5B were temporary storage areas for wastes including solvents, hydraulic fluids, oily rags, waste JP-5, and oil. ST-78 was also a temporary storage of hazardous materials, but a paint locker was also present to the northeast of the concrete pad. Four buildings (176, 527, 531, and 532) and four structures (237, 571, 572, and 601) were located within the boundaries of Parcel 4. These buildings/structures were no longer in use and were scheduled for demolition after transfer in 2001.	176, 527, 531, 532, 237, 571, 572, 601	Batteries, paints, solvents, hydraulic fluids, and lubricants	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3, 11

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 38	NA	Parcel 5	Unknown–1999	Parcel 5 consists of about 23 acres located in the southwestern corner of the Station. Five AOCs (AST-02, MWA-02, ST-6, ST-91, and TOW-02) are located within the boundaries of Parcel 5. ST-91 (Building 525) is partially located on Parcel 40. Regulatory concurrence for NFA has been received for all of the AOCs. One former UST site (UST-536) was located within the boundaries of Parcel 5, and regulatory concurrence for NFA at the site has been received. No AST was located within the boundaries of Parcel 5. Two buildings (525 and 536) and one structure (535) are located within the boundaries of Parcel 5. Building 525 is partially located on Parcel 40. Buildings 525 and 536 were vacant, and, along with Structure 535, were scheduled for demolition after transfer (2001).	525, 536, 535	Helicopter repair and maintenance	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3, 11
AOI 39	NA	Parcel 6	Unknown–1999	Parcel 6 consists of about 77 acres and is located in the southwestern corner of the Station. Two AOCs (AD-07 and AST-03B) are located within the boundaries of Parcel 6. Regulatory concurrence for NFA has been received for all of the AOCs. No UST/AST was located within the boundaries of Parcel 6. Parcel 6 was primarily used for crop cultivation, and no building or structure is located on the property. The northern portion of Parcel 6 contained a staging area where produce was collected and prepared for transport. Agricultural equipment was also stored in this area. Pesticides may have potentially been used in this area.	None	Agricultural equipment, pesticides	No	While the DON recognizes that some pesticides contain PFAS, the DON has no information or documentation verifying the use, storage, or release of PFAS materials at this site. In addition, operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3, 11
AOI 40	NA	Parcel 7	Unknown–1999	Parcel 7 consists of about 8 acres located in the southwestern corner of the Station. An area on the eastern side contains former CO-3 Four AOCs (MGR-01, MWA-01, ST-2, and TOW-01) are located within the boundaries of Parcel 7. Regulatory concurrence for NFA has been received for all of the AOCs in 1999. Two former UST sites (UST-530A and UST-530B) were located on Parcel 7, and regulatory concurrence for NFA has been received for both sites. No AST was located within the boundaries of Parcel 7. ST-02 was a temporary storage area to store hazardous materials used in the maintenance of generators and vehicles, such as hydraulic fluids, ethylene glycol, antifreeze, grease, oil, degreaser, and cleaning solvents. Three buildings (528, 529, and 530) and three structures (566, 610, and 611) are located within the boundaries of Parcel 7. The three buildings were proposed for reuse after transfer, and the three structures were scheduled for demolition after transfer (2001).	528, 529, 530, 566, 610, 611	Fuels, oils, and diesel	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3, 11

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 41	NA	Parcel 8	Unknown–1999	Parcel 8 consists of about 51 acres located in the southwestern portion of the Station. The western edge of Parcel 8 was formerly used for agricultural purposes. Four AOCs (MAW-06, MFL-1B, MMS-02, and ST-68) are located within the boundaries of Parcel 8. MAW-06, an agricultural well, was listed as an AOC; however, it has been removed from consideration by the BCT. AOCs MFL-1B, MMS-02, and ST-68 received regulatory concurrence for NFA in 1996. ST-68 was a temporary storage unit identified as part of IRP Site 7 North and IRP Site 7 South. Two former AST sites (AST-198A and AST-198B) are located within the boundaries of Parcel 8. Regulatory concurrence for NFA has been received for both sites. No UST site is located within the boundaries of Parcel 8. One building (255) is located within the boundaries of Parcel 8. This building was no longer in use and scheduled for demolition after transfer (2001).	255	JP-5	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3, 11
AOI 42	NA	Parcel 10	Unknown	Parcel 10 consists of about 16 acres located in the southern portion of the Station. Fourteen AOCs (AD-04, AD-06, MAE-01, MWA-05, MWA-21, ST-25, ST-26A, ST-26B, ST-27, ST-28A, ST-76, ST-89, TOW-06, and TOW-19) were located within the boundaries of Parcel 10. Regulatory concurrence for NFA has been received for all of the AOCs. Three buildings (508, 520, and 537) and three structures (517, 581, and 599) were located within the boundaries of Parcel 10. Building 537 was also partially located on Parcels 12 and 40. The buildings/structures on Parcel 10 were no longer in use. Building 520 was reported via interview to have had an AFFF-based fire suppression system and electroplating operations, so it is being recommended for further investigation as AOI 18 in Table 6-1.	508, 520, 537, 517, 581, 599	AFFF	No, except as noted	Operations at the site, excluding Building 520, did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected, except possibly Building 520 (see AOI 18, Table 6-1).	10, 13

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 43	NA	Parcel 12	Unknown–1999	Parcel 12 consists of about 28 acres located in the southern portion of the Station. Three portions of the parcel contain former COs 1, 2, and 4. Seventeen AOCs (AMS-03, DSD-03, MAE-02, MAE-07, MWA-10, MWA-11 [A and B], ST-11A, ST-11B, ST-28B, ST-34A, ST-34B, ST-69, ST-74, TOW-09A, TOW-09B, TOW-09C, and TOW-10) are located within the boundaries of Parcel 12. AMS-3 is partially located on Parcel 40. Regulatory concurrence for NFA has been received for all of the AOCs. Wastes formerly stored at these sites included petroleum oil, lubricant oil, cleaning solvents, batteries and sandbags from demolishing the former unit located at this area. One former UST site (UST-273) and two former AST sites (AST-273A and AST-273B) are located within the boundaries of Parcel 12. Regulatory concurrence for NFA has been received for these sites. Seven buildings (220, 273, 537, 544, 545, 546, and 568) and six structures (205, 231, 559, 565, 586, and 591) were located within the boundaries of Parcel 12. The buildings/structures located on Parcel 12 were no longer in use. The ultimate disposition of Building 220 was not decided. With the exception of Structure 231 and Buildings 273 and 546 (all proposed for reuse), the remaining buildings/structures were scheduled for demolition after transfer.	220, 273, 537, 544, 545, 546, 568, 205, 231, 559, 565, 586, 591	Petroleum oil, lubricant oil, cleaning solvents, batteries, fuel oil, hydraulic fluid, combustible liquid, oily rags, corrosion preventative compounds, adhesives, flammable liquids, desiccant poison, MEK, and toluene	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3, 9
AOI 44	NA	Parcel 14	Unknown–1999	Parcel 14 consists of about 44 acres located in the southwestern portion of the Station. Two AOCs (MWA-19 and TOW-17) are located within the boundaries of Parcel 14. Regulatory concurrence for NFA has been received for both AOCs. One former UST site (UST-543) is located within the boundaries of Parcel 14, and regulatory concurrence for NFA has been received for the site. No AST site is located on the parcel. One unused structure (543) is located on the parcel and was scheduled for demolition after transfer.	543	Oily wastes, detergents, and waste oil	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3, 9
AOI 45	NA	Parcel 16	Unknown–1999	Parcel 16 is located in the central portion of the Station. It consists of approximately 185 aces, mostly the runway and surrounding hover pads. The parcel is bordered by Parcels 17 and 18 to the north and northeast. Three portions of the parcel contain CO-5, CO-6, and former CO-7. Thirteen AOCs (AMS-2A, DSD-1, MCD-2, ST-48, ST-49, ST-50, ST-51, ST-52, ST-84, TOW-14, TOW-X3, TOW-X4, and TOW-X8) were located within the parcel boundaries. AMS-2A was a possible spill area identified on aerial photos. No evidence was observed during the visual site inspection and the site was granted NFA on 04/22/96. DSD -1 was identified as IRP Site 5. MCD-2 was a collection sump and was granted NFA on 04/21/00. ST-48, ST-49 (assessed as IRP Site 3), ST-50, ST-51, ST-52, and ST-84 (NFA 06/13/97) were material storage areas. TOW-14 (NFA 04/21/00), TOW-X3 (assessed as part of OU-1B), TOW-X4 (assessed as part of OU-1B), and TOW-X8 (NFA 12/09/99) were oil water separators.	10G, 29, 29A, 40B, 174, 175, 204, 265, 514, 515, 569, 592, 607, 609	Fuel oil	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3, 11

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 46	NA	Parcel 17	Unknown–1999	Parcel 17 is located in the northern portion of the Station. It consists of approximately 40 acres. An area on the southwestern corner of the parcel contains part of CO-5. There are no AOCs located within the parcel boundaries.	608	None	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3, 11
AOI 47	NA	Parcel 19	Unknown–1999	Parcel 19 is located in the northwestern portion of the Station. The whole area of Parcel 19 is included in CO-5. Three buildings are located within the boundaries of Parcel 19. There are no AOCs located within the parcel boundaries.	189, 199, 547	Hydraulic fluid, diesel fuel, leaded gasoline, oil, paint strippers, battery acids, solvents, solvent-contaminated wash water, TCE, and 1,2,3-TCP	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3, 11, 14
AOI 48	NA	Parcel 20	Unknown–1999	Parcel 20 is located along the western boundary of the Station. The whole area of Parcel 20 is included in CO-5. Associated Building 1, former medical/dental clinic, was built in 1944. Building 42, former administration, was built in 1944. One AOC (AS-5) is located in the parcel boundary. It was identified as a possible temporary storage area on aerial photos. No evidence of storage was identified during the visual site inspection and the site was granted NFA on (09/16/96).	1, 42	Fuel oil	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3, 14
AOI 49	NA	Parcel 21	Unknown–1999	Parcel 21 consists of about 10 acres in the northwestern corner of the Station. Associated Buildings A and B, constructed in 1946, were formerly commanding officers' quarters and executive officers' quarters, respectively. They are approximately 2,800 square feet and 2,200 square feet in area, respectively. Building C, constructed in 1946, was used as Very Important Person quarters and is approximately 972 square feet in area. Buildings A, B, and C are currently vacant and are planned for demolition after transfer (2001). There were no AOCs located within the parcel boundary.	A, B, C	None	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3, 10, 14
AOI 50	NA	Parcel 22	Unknown–1999	Parcel 22 is located in the northwestern portion of the Station. The whole area of Parcel 22 is included in CO-5. Eight buildings (C3, C4, 93, 163, 164, 216, 221, and 258) and 11 structures (128, 131, 143, 144, 145, 146, 148, 150, 202, 208, and 256) are located within the boundaries of Parcel 22. One AOC (ST-58) was located in the parcel boundary. ST-58 was identified as an inactive site and during the visual site inspection, no hazardous wastes were stored here. It was granted NFA on 04/22/96.	C3, C4, 93, 128, 131, 143, 144, 145, 146, 148, 150, 163, 164, 202, 208, 216, 221, 256, 258	Gasoline, oil, and waste oil	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3, 14

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 51	NA	Parcel 23	Unknown–1999	Parcel 23 is located on the northwestern corner of the Station. It consists of approximately 54 acres and is bordered by City of Tustin boundaries to the north, by Parcel 24 to the east and south, and by portions of Parcel 40 to the west. Parcel 23 was a former residential area that consisted of 91 multiplex residential buildings (Tustin Villas Housing). Four AOCs (AMRRT-1, AMS-13, DI-1, and MFL-1) were located within the parcel boundary. AMRRT-1 was a railroad that was identified on aerial photos. No evidence of release was identified during site inspections and the site was granted NFA on 07/09/98. AMS-13 was a potential spill site identified on aerial photographs. During the visual site inspection, no evidence of spills or releases was identified. The site was granted NFA on 09/16/96. DI-1 was identified as an incinerator and was demolished in 1985/1986. It was granted NFA on 07/24/97. MFL-1 was the JP-5 fuel distribution system. It was closed in place and was granted NFA on 12/21/99.	162, 6798, Housing	Hydraulic fluid, diesel fuel, leaded gasoline, oil, paint stripper, battery acids, and solvents	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3, 11

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 52	NA	Parcel 24	Unknown–1999	Parcel 24 in its entirety consists of approximately 50 acres and is located in the northern portion of the Station. Parcel 24 is bordered by Parcel 23 to the north and by portions of Parcel 40 to the east, south, and west. B17: former maintenance and utility shop, built in 1942 B17T: former equipment storage, built in 1990 B41: former storage/warehouse, built in 1942 B53: former lock shop/storage, built in 1942 B66: former public works shop, built in 1944 B89: former warehouse/Marcorps property, built in 1953 B228: former issue warehouse, built in 1979 B247: former POL testing lab/administration, built in 1982 B3005T: former storage of shipping crates, built in 1990 A total of 17 AOCs (AMRRT-1 AMS-6, DSD-6, MAE-4 MDA-6, MDA-10, MFL-1, MWA-17, MWA-18, ST-14, ST-14B, ST-15, ST-21E, ST-72A, ST-72B, TOW-16, and TOW-X7) were located with the parcel boundary. AMRRT-1 was a railroad that was identified on aerial photos. No evidence of release was identified during site inspections and was granted NFA on 07/09/98. AMS-6 was a potential spill area identified on aerial photographs. During the visual site inspection, no evidence of releases was observed, and the site was granted NFA on 09/16/96. DSD-6 is a channel adjacent to IRP Site 13E and was granted NFA on 01/21/98. MAE-4 was an automotive paint booth and was assessed under OU-4. MDA-6 and MDA-10 were identified as possible drum storage areas in aerial photographs and the sites were granted NFA on 12/09/99 and 10/14/99, respectively. MFL-1 was the JP-5 fuel distribution system. It was closed in place and was granted NFA on 12/21/99. MWA-17 and MWA-18 were inactive wash areas. MWA-17 was granted NFA on 10/14/99 and MWA-18 was assessed as part of OU-1A. ST-14 (assessed as part of OU-4), ST-14B (assessed as part of OU-4), ST-15 (assessed as part of OU-4), ST-21E (NFA 02/24/00), ST-72A (assessed as part of OU-1A), and ST-72B (assessed as part of OU-1A) were identified as storage areas. TOW-16 and TOW-X7 were O/W SEPs and were assessed as OU-4.	16, 17, 17T, 41, 53, 66, 89, 228, 247, 3005T	Hydraulic fluid, diesel fuel, leaded gasoline, oil, paint strippers, battery acids, solvents and solvent-contaminated wash water	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 53	NA	Parcel 25	Unknown–1999	Parcel 25 consists of about 21 acres located in the northern portion of the Station. Two structures (604 and 605) are located within the boundaries of Parcel 25. These structures were no longer in use and were scheduled for demolition after transfer. There were no AOCs located within the parcel boundary.	604, 605	None	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3, 11
AOI 54	NA	Parcel 26	Unknown–1999	Parcel 26 consists of about 62 acres located in the northern portion of the Station. Parcel 26 was formerly used for agricultural purposes. It was anticipated that Parcel 26 would be transferred for residential use in 2001. There were no AOCs located within the parcel boundary.	None	None	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3, 11

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 55	NA	Parcel 27	Unknown–1999	Parcel 27 is located in the central portion of the Station. Two portions of the parcel contain former COs 8 and 9. 24 AOCs (AMBP-1, AMS-11, AS-6, MAE-5, MAW-9, MAW-11, MGR-2, MMS-1, MMS-6, MMS-8, MWA-7, MWA-8, ST-16A, ST-16B, ST-18B, ST-18C, ST-19, ST-20A, ST-20B, ST-84, ST-87, TOW-08A, TOW-08B, and TOW-X5) were identified within the parcel boundary. AMBP-1 was identified as a burn pit on aerial photographs, but no evidence was observed during the visual site inspection. It was granted NFA on 07/24/97. AMS-11 was identified as a potential spill area based on aerial photographs. During the visual site inspection, no evidence of a release was observed and the NFA was granted on 07/24/97. AS-6 was identified as a possible storage area based on aerial photographs was the assessed as OU-2. MAE-5 was a former spray booth that was converted in classrooms and was grant NFA on 12/09/99. MAW-9 and MAW-11 were wells that were transferred to the California Department of Water Resources Abandoned Well Program. MGR-2 was a grease rack. Stains were limited during the visual site inspection and was granted NFA on 04/21/00. MMS-1 (assessed as part of OU-2), MMS-6 (NFA 04/21/00), and MMS-8 (NFA 04/21/00) were identified as spills. MWA-7 and MWA-8 were inactive wash areas that both were granted NFA on 04/21/00. ST-16A, ST-16B, ST-18B (NFA 04/21/00), ST-18C (NFA 04/21/00), ST-19, ST-20A, ST-20B, ST-84 (NFA 06/13/97), and ST-87 were all material storage areas. TOW-08A (NFA 04/21/00), TOW-08B (NFA 04/21/00), and TOW-X5 (NFA 09/16/96) were former O/W SEPs.	29, 39, 149, 186, 187, 233, 303, 562, 590, 596	Solvents, paint stripper, battery acids, and TCE	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3, 11
AOI 56	NA	Parcel 28	Unknown–1999	Parcel 28 is located in the northeastern portion of the Station. An area on the eastern boundary of the parcel contains former CO-10. Nine AOCs (DLF-1, MCD-1, STD-2, STD-3A, STD-3B, TR-1A, TR-1B, TR-1C, and TR-1D) were located within the parcel boundary. DLF-1 was a landfill that will be assessed as part of IRP Site 1. MCD-1 was a crash drill site that will be assessed as part of IRP Site 1. STD-2, STD-3A, and STD-3B were permitted storage facilities that all were granted NFA on 11/10/99. TR 1A-D was a groundwater remediation system and will be assessed as part of IRP Site 1.	23A, 23B, 541, 542, 567	Oily rags, waste oil, Freon, and hydraulic fluid	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3, 11
AOI 57	NA	Parcel 29	Unknown–1999	Parcel 29 is located in the eastern portion of the Station. It consists of approximately 55 acres and is bordered by Parcels 30 and 31 to the west and by portions of Parcel 40 to the north, east, and south. Six AOCs and one former UST were located within the boundaries of Parcel 29 and regulatory concurrence for NFA has been received for all of the AOCs and UST. Five AOCs (AS-3A, AS-3B, AS-3C, MAW-8, OCY-1, and ST-81) were located within the parcel boundary. AS-3A, AS-3B, and AS-3C were identified on aerial photographs as possible storage areas. And all were granted NFA on 06/22/00. MAW-8 was a well that was destroyed on 05/22/00 and was granted NFA on 11/16/00. OCY-1 was an agricultural maintenance storage yard for Osumi Corporation. ST-81 was a storage area.	10P, 23C, 23D, 23E, 23F, 6168	Gasoline and ordnance	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3, 11

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 58	NA	Parcel 30	Unknown–1999	Parcel 30 consists of about 5 acres located in the eastern central portion of the Station. Parcel 30 was formerly used for agricultural purposes. It was anticipated that Parcel 30 would be transferred for residential use in 2001. There were no AOCs located within the parcel boundary.	None	None	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 59	NA	Parcel 31	Unknown–1999	Parcel 31 consists of about 10 acres located in the east-central portion of the Station. Parcel 31 was formerly used for agricultural purposes. It was anticipated that Parcel 31 would be transferred for a kindergarten through sixth grade school in 2001. There were no AOCs located within the parcel boundary.	None	None	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 60	NA	Parcel 32	Unknown–1999	Parcel 32 consists of about 5 acres located in the northern portion of the Station. One AOC (AMS-05) is located within the boundaries of Parcel 32. AMS-05 is also partially located on Parcel 40. Regulatory concurrence for NFA has been received for the AOC. Parcel 32 was formerly used for agricultural purposes.	None	Hydrocarbons	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 61	NA	Parcel 33 (Parcel D)	Unknown–1999	Parcel 33 consists of about 25 acres located in the northeastern corner of the Station. Parcel 33 was formerly used for agricultural purposes. In 1942, the DON acquired the parcel from the Irvine Company and used it for a radio transmission facility until approximately 1980. In 1982, the DON transferred the parcel back to the Irvine Company, which then transferred it to the County of Orange. In 1992, the DON reacquired the land from the County of Orange for development of a family housing project. Since that time, the parcel has not been farmed, and pesticides and herbicides have not been applied to the property. This area was not developed because base closure was scheduled. In the interim, Osumi Farms periodically plowed the property for weed control. There were no AOCs located within the parcel boundary.	None	Pesticides DDT, DDD, and DDE, and metals	No	While the DON recognizes that some pesticides contain PFAS, the DON has no information or documentation verifying the use, storage, or release of PFAS materials at this site.	3
AOI 62	NA	Parcel 34 -- Parcel 36	Unknown–1999	Parcels 34, 35, and 36 are located on the eastern side of Peters Canyon Channel at the boundary of the Station. Parcel 34 consists of approximately 36 acres, Parcel 35 consists of approximately 64 acres, and Parcel 36 consists of approximately 22 areas. Parcels 34, 35, and 36 were former residential areas. A total of 77 multiplex residential buildings (Irvine Park North Housing) were located on Parcel 34, 121 multiplex residential buildings (67 in Moffett Meadows Housing and 54 in Irvine Park South Housing) were located in Parcel 35, and 25 multiplex residential buildings (Irvine Park South Housing) were located on Parcel 36. Two AOCs (MRR-1 and MCD-3) are located in the boundaries of these parcels. MRR-1 was a former rifle range. Sampling indicated that contaminant concentrations in soil samples were not above background levels and NFA was granted on 01/21/98. MCD-3 was identified as a potential crash drill site, but during the site visual inspection, no evidence of the site was found. NFA was granted on 04/22/96.	Parcel 34: 6480, 6877, 6878, 6879, 6880, Housing Parcel 35: 215, 6873, 6874, 6875, 6876, Housing Parcel 36: Housing	Waste oil (JP-5 crankcase oil, hydraulic fluid, and solvents)	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3, 11

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 63	NA	Parcel 37	Unknown–1999	Parcel 37 consists of about 45 acres located in the City of Irvine, in the southeastern portion of the Station. Structure 6857 and the Marble Mountain Park housing community are located within the boundaries of Parcel 37. Structure 6857 was a sewer lift station and was proposed for demolition after transfer (2001). The Marble Mountain Park housing community consists of 80 three-, four-, six-, and eight-unit residential buildings constructed in 1984 and 1989. The Marble Mountain Park buildings were vacant, and their ultimate disposition was not determined in 2001. There were no AOCs located within the parcel boundary.	6857, Marble Mountain Park housing community	None	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3, 11
AOI 64	NA	Parcel 38	Unknown–1999	Parcel 38 consists of about 9 acres in the southeastern corner of the Station within the City of Irvine. Parcel 38 was historically used for agricultural purposes since at least 1939. In 1988, the DON acquired land from the Irvine Company, which included the area that is now designated as Parcel 38 as well as a portion of Parcel 39, for development of a family housing project. Since that time, the parcels have not been farmed, and pesticides and herbicides have not been applied to the property. Development of these areas was not implemented because base closure was scheduled. In the interim, Osumi Farms periodically plowed the property to control the weeds. Structure 3003T, a former guard shack, was located along the northern boundary of Parcel 38. It was planned for demolition after transfer in 2001. There were no AOCs located within the parcel boundary.	3003T	None	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3, 11
AOI 65	NA	Parcel 39	Unknown–1999	Parcel 39 consists of about 20 acres in the southern portion of the Station within the City of Irvine. This parcel has historically been used for agricultural purposes since at least 1939. In 1988 and 1991, the DON acquired land from the Irvine Company and the County of Orange, respectively, including the area that is now designated as Parcel 39, for development of a family housing project. Since that time, the parcel has not been farmed, and pesticides and herbicides have not been applied to the property. Development of the property was not implemented due to the scheduled base closure. In the interim, Osumi Farms periodically plowed the property to control the weeds. One AOC (AD-5) was within the parcel boundary. AD-5 was identified as potential disposal site. Soil sampling and a risk assessment was preformed and NFA was granted on 03/20/96.	None	Herbicides and pesticides	No	While the DON recognizes that some pesticides contain PFAS, the DON has no information or documentation verifying the use, storage, or release of PFAS materials at this site. Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	10

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 66	NA	Parcel 40	Unknown–1999	Parcel 40, circulation facilities, are located throughout the Station, covering almost all existing roads or paved areas and cover approximately 157 acres. Eight portions of the parcel contain former COs 1, 2, 3, 7, 8, 9, and 10 and current CO-5. Eight IRP sites (IRP Site 1, 5N, 5S(a), 5S(b), 6, 8, 11, 12, and 13) are located within the boundaries of Parcel 40. 37 AOCs (AD-3, AMRRT-1, AMS-3 AMS-5, AS-6, DSD02, DSD-07, MAW-3, MAW-7, MDA-01, MFL-1, MMS-3, MWA-6, MWA-8, MWA-9, MWA-18, MWA-25, ST-1A, ST-17, ST-18a, ST-23, ST-29, ST-30, ST-32A, ST-32B, ST-32C, ST-33, ST-39, ST-47A, ST-47B, ST-72A, ST-72B, ST-77, ST-84, ST-91, TOW-2, TOW-21, TOW-XA, and TOW-X6) are located on the parcel boundary. Because of the expanding reach of Parcel 40, refer to other AOIs for more specific and localized information.	10B, 16, 27, 29, 77, 162, 180, 181, 182, 219, 225, 229, 231, 244, 250, 266, 303, 507, 514, 516, 525, 537, 551, 563, 568, 570, 577, 583, 589, 598, 606, 3000T, 3002T, 6480	None	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3, 10, 11
AOI 67	NA	Parcel 41	Unknown–1999	Parcel 41 is located in the eastern portion of the Station and contains former CO-10. There were no AOCs located within the parcel boundary.	6873, 6874, 6877, 6878	None	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3, 11
AOI 68	NA	Parcel 42	Unknown–1999	Parcel 42 consists of drainage facilities and includes about 2 acres located in the southern portion of the Station. There were no AOCs located within the parcel boundary.	None	None	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3, 11
AOI 69	NA	ST-1A NFA 09/24/99	1991–1997	This inactive unit (Building 570) was operated by MATCS-38 for temporary storage (less than 90 days) of drums containing hazardous waste. The unit was constructed in 1991 and replaced a storage area near Building 219 (ST-1B) that had been used for the same purpose. Drums were stored on a 17-foot by 22-foot fenced concrete pad with a 6-inch concrete containment berm. The integrity of the unit appeared good.	570	Paint thinners, solvents, oily rags, and oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 70	NA	ST-1B NFA 09/24/99	Unknown–1991	See IRP Site 8. This unit (north of Building 219), operated by Marine Air-Ground Task Force All-Source Fusion Center -38, was used for temporary storage of drums containing hazardous waste. The unit was constructed with a plastic liner and a sandbag berm for containment. The unit was closed and replaced by storage area ST-IA (Building 570) in 1991.	219	Paint thinners, solvents, oily rags, and oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 71	NA	ST-2 NFA 09/24/99	1970–1997	This decommissioned unit (Building 611) was a temporary storage area operated by MATCS-38 to store drummed hazardous materials used in the maintenance of generators and vehicles. At the time of the visual site inspection, the 16-foot by 16-foot area was fenced, had a plastic liner, and was bermed with sandbags for containment.	611	Hydraulic fluids, ethylene glycol, antifreeze, grease, oil, degreaser, and cleaning solvents	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3
AOI 72	NA	ST-3 NFA 07/24/97	Unknown–1995	This closed unit (east of Building 527) was a paint locker operated by HMH-465 to store hazardous waste and materials used in the maintenance of helicopters. The 9-foot by 12-footlocker was constructed of steel, set on a plastic liner, and contained 10 to 20 10-gallon cans. Containment around the locker was limited to a sandbag berm. At the time of the VSI, HMH-465 had decommissioned and removed the temporary storage unit.	527	Paints, solvents, hydraulic fluids, and lubricants	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 73	NA	ST-4 (A, B) NFA 09/24/99	1991–1995	Closed unit ST-4A (Building 571) was operated by HMH-466 for temporary storage (less than 90 days) of drums containing hazardous waste. The unit was installed in 1991. Drums were stored on a 16-foot by 16-foot fenced concrete pad with a sump within a 6-inch containment berm. The entire storage and containment system appeared to have good integrity. The RAC contractor also investigated a dirt/grass area located northeast of area 4A (ST-4B) as part of closure activities for the unit.	571	Paints, solvents, oily rags, and used oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 74	NA	ST-5A NFA 05/18/00	1991–1999	This inactive unit (Building 572) was operated by HMH-465 for temporary storage (less than 90 days) of drums containing hazardous waste. The unit was installed in 1991. Drums were stored on an 18-foot by 23-foot fenced concrete pad with a sump within a 6-inch containment berm. The entire storage and containment system appeared to have good integrity This storage area replaced a former temporary area near Building 525 just to the south (ST-5B).	572	Solvents, oily rags, waste JP-5, and oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 75	NA	ST-5B NFA 09/24/99	Unknown–1991	This closed unit (south of Building 572) was operated by HMH-465 for temporary storage of drums containing hazardous waste. The unit was demolished in 1991 and was replaced by Building 572 (ST-5A). The former temporary area was located between Building 572 to the north and a temporary hazardous material storage locker to the south. The former facility was constructed on a plastic liner with a sandbag berm. Although the hazardous storage locker could not be visually inspected, it appears to be similar in construction to ST-3.	572	Solvents, oily rags, waste JP-5, and oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 76	NA	ST-6 NFA 09/24/99	1991–1996	This inactive unit (dirt area east of Building 536) consisted of three paint lockers operated by HMH-466 to store hazardous materials used in the maintenance of helicopters. The lockers were constructed of steel and contained 20 to 30 10-gallon cans. The larger locker was 7 feet by 12 feet and the two smaller lockers were each 2 feet by 3 feet. No containment was provided around the lockers. The integrity of the storage area and containers was fair to good.	536	Paints, solvents, hydraulic fluids, and lubricants	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3
AOI 77	NA	ST-7 NFA 02/24/00	1991–1999	This inactive unit (Building 574) was operated by HMH-361 for temporary storage of drums containing hazardous waste. The unit was installed in 1991. Drums were stored on a fenced concrete pad with a sump within a 6-inch concrete containment berm. The dimensions of the area are 20 feet by 18 feet. The integrity of the entire storage and containment system appeared to be good.	574	Solvents, oily rags, and waste	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 78	NA	ST-8 NFA 02/24/00	Unknown–1996	The inactive unit (east of Building 574) consists of three paint lockers operated by HMI-361. The lockers were used to store hazardous materials used in the maintenance of helicopters. The lockers were each 3 feet by 3 feet and are constructed of steel. No containment was provided around the lockers. The integrity of the storage area and containers was fair to good.	574	Paints, solvents, hydraulic fluids, and lubricants	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 79	NA	ST-9 (A, B) NFA 09/24/99	Unknown–1995	Closed unit ST-9A (in the southeast comer of the enclosure for Building 172) was a hazardous material storage area constructed in 1991 and operated by MWSS-374. The 23-foot by 28-foot area was located on asphalt pavement, lined with plastic, and bermed with sandbags. A locker was also located on the liner. Materials were stored in 55-gallon drums and cans of various sizes. The integrity of the storage area and containers was reported as good. The hazardous materials storage area had been relocated from a previous site (ST-9B) south of Building 172 occupying a 21-foot by 18-foot area. The storage and containment systems appeared to follow the same protocol as ST-9A.	172	Paints and solvents	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 80	NA	ST-10 NFA 09/24/99	1991–1995	This closed unit (Building 573) was operated by HMSS-374 for temporary storage of drums (less than 90 days) containing hazardous waste. It was installed in 1991. Drums were stored on a 16-foot by 16-foot fenced concrete pad with a sump within a 6-inch containment berm. The integrity of the entire storage and containment system was reported as good.	573	Solvents, oily rags, waste JP-5, potassium bicarbonate, Speedy-Dry absorbent, and waste oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 81	NA	S-11A NFA 09/24/99	1991–1995	This closed unit (Building 586) was operated by Military Airlift Intelligence System -16 for temporary storage (less than 90 days) of hazardous waste. Prior to construction of this unit, the previous storage unit approximately 300 feet south of Building 544 (ST-11B) was used for the same purpose. Drums were stored on a 15-foot by 14-foot fenced concrete pad with a sump within a 6-inch containment berm. The integrity of the entire unit appeared to be good. This unit replaced the storage area for Buildings 546 and 190 (ST-11 B).	586	Petroleum oil, lubricant oil, cleaning solvents, batteries, and sandbags generated from demolishing the former unit located at this location	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 82	NA	S-11B NFA 09/24/19	Unknown–1991	This closed unit (southwest of Building 546) was operated by MALS-16 for temporary storage of hazardous waste generated from Buildings 546 and 190. The unit was demolished in 1991 and was replaced by temporary storage unit at Building 586 (ST-11A), also operated by MALS-16. Drums were stored on a plastic tarp with a sandbag berm for containment. The area currently serves as an asphalt parking lot.	546	Petroleum oil, lubricant oil, batteries, and cleaning solvents	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 83	NA	ST-12 NFA 05/18/00	Unknown–1999	Inactive unit (Building 252) operated by MALS-16 for temporary storage of hazardous materials. There were also two paint lockers for storing hazardous materials used in the adjacent paint booth (MAE-1), solvents, and other materials used in Building 251. Drums containing the hazardous materials were located on an 18-foot by 23-foot fenced concrete pad with a 6-inch containment berm.	252	Petroleum oil, lubricant oil, and paint-related materials	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 84	NA	ST-13 (A, B) NFA 04/21/00	1991–1999	Inactive unit ST-13A (Building 585) was operated by MALS-16 for temporary storage of hazardous waste. Drums containing hazardous waste were located on a 17-foot by 18-foot fenced concrete pad with a sump within a 6-inch containment berm. The integrity of the entire unit appeared to be good. An old storage unit (ST-13B) operated at the same location for 4 to 5 years prior to construction of unit ST-13A. The former unit was constructed of a plastic tarp with a sandbag berm.	585	Petroleum oil, lubricant oil, absorbents, and related materials generated from paint booth MAE-6	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 85	NA	ST-14 (A-C) Open	1991–1997	Demolished unit ST-14A (Building 575) was operated by MWSS-374 for temporary storage (less than 90 days) of drums containing hazardous waste. The unit was constructed in 1991 at the location of an older demolished site (ST-14B). Unit ST-14A was later relocated to unit ST-14C northeast of Building 47T. The unit stored wastes produced as a result of operating electrical generators. Drums were stored on a 21-foot by 18-foot fenced concrete pad (with sump) within a 6-inch containment berm Integrity of the unit appeared good. The former storage unit (ST-148) was a plastic liner with a sandbag berm. Unit ST-14A (Building 575) was demolished as part of the remedial actions at IRP Site 13W.	575	Paint thinners, solvents, oily rags, used oil, batteries, absorbents, filters, iodine, used mogas, and spray cans	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 86	NA	ST-15 Open	Unknown–1995	This demolished unit (west of Building 575) was operated by MWSS-374 for temporary storage of drummed hazardous materials used to maintain and clean generators, including 90-weight oil, 30-weight oil, antifreeze, diesel, mogas, Freon 12 and 22, lubricant oil, and detergents. Drums were stored on a plastic liner bermed with sandbags. The VSI reported the integrity of the unit to be fair. The storage unit was demolished as part of the remedial actions at IRP Site 13W.	575	90-weight oil, 30-weight oil, antifreeze, diesel, mogas, Freon 12 and 22, lubricant oil, and detergents	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 87	NA	ST-16 (A, B) Open	1991–1997	Unit ST-16A (Building 590), a closed temporary hazardous waste storage unit and a former unit at the same location, were operated by MWSS-374 for temporary storage of hazardous waste. Building 590 was constructed in 1991 and deactivated in 1995. Drums containing hazardous waste were formerly stored on a 17-foot by 18-foot concrete pad (with a sump) surrounded by a 6-inch containment berm. The integrity or the unit appeared to be good. ST-16B (two closed paint lockers), located northwest of Building 590, was constructed of plastic tarps with sandbag containment berms.	590	Paint aerosol, paint enamel, absorbent with fuel oil, used JP-5, filters, and rags	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 88	NA	ST-17 NFA 09/24/99	1989–1991	This closed unit (north of Building 562) was operated by MWSS-374 for temporary storage of hazardous wastes. The unit, constructed in 1989, remained in use until 1991 and was replaced by ST-16A (Building 590). Drums containing hazardous materials were located on a plastic liner surrounded by sandbags. About 50 55-gallon drums were stored at this site. The VSI reported the integrity of the unit appeared fair. The site was converted to a parking area for heavy equipment and an outside sitting area. The materials formerly stored at this location were used for maintenance and cleaning of helicopters.	562	Lubricating oil, hydraulic fluids, antifreeze, oil, and detergent motor oil	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 89	NA	ST-18 (A-C) NFA 09/24/99	1991–1999	Inactive unit ST-18A (Building 589) was located west of Buildings 186 and 187 and was operated by MWSS-374 for temporary storage (less than 90 days) of hazardous waste. This unit was constructed in 1991. Drums containing hazardous waste were located on a 17-foot by 21-foot fenced concrete pad (with a sump) within a 6-inch containment berm. The integrity of the unit appeared good. Prior to construction of ST-18A, a former storage area (ST-18B) consisting of a plastic liner and a sandbag berm was located at the east edge of Building 186. In 1995, ST-18B was being used as a welding shop and scrap metal storage area. During closure activities, the RAC contractor also investigated a paved area located east of Building 186 in the comer of the lot (ST-18C).	589, 186	Contaminated absorbent oil, used fuel oil, used antifreeze, filters, and oily rags	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 90	NA	ST-19 Open	1960–1999	This inactive unit (south of Building 186) was a waste oil drum storage area for a vehicle grease rack (MGR-02) with a 1,000-gallon (No. 186 [SAT-8], removed). The unit was operated by MWSS-374 for temporary storage (less than 90 days) of hazardous waste Until 1989, vehicle oil changes were conducted on the rack. After 1989, oil changes took place next to the rack. Absorbents to contain spills surrounded this unit.	186	PAHs	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 91	NA	ST-20 (A, B) Open	Unknown–1998	Inactive unit ST-20A (Building 596) consists of the former hazardous material storage area and a steel locker behind Building 186. Inactive unit ST-20B was a former hazardous materials storage area immediately southwest of the steel locker. Both units were operated by MWSS-374. Storage facility ST-20A was built in 1992 and consisted of a concrete pad (with a sump) within a 6-inch berm. ST-20B was partially beneath the former hazardous material storage area, but predominantly encompassed the area between the steel locker and the fenced facility. ST-20B consisted of a plastic liner surrounded by sandbags. At the time of the VSI, the integrity of the locker and former storage area appeared to be poor. Also, at the time of the VSI, Building 596 stored several 55-gallon drums of gear oil and engine oil, two pallets of approximately 1-liter plastic containers of sulfuric acid, and miscellaneous other containers of unknown contents and volumes. The locker stored lubricant oil used in servicing the vehicles in Building 186.	596	Oil and sulfuric acid	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 92	NA	ST-21A NFA 09/24/99	1991–1995	This closed unit (Building 576) was operated by MALS-16 for temporary storage of hazardous waste. Building 576 replaced former storage area ST-21B. Drums containing hazardous waste were located on a 15-foot by 18-foot concrete pad with a 6-inch concrete containment berm. During the VSI, the integrity of Building 576 (ST-21A) appeared to be good.	576	Mercury, PD-680, JP-5, distilled petroleum, and cleaning compounds	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 93	NA	ST-21B NFA 09/24/99	Unknown–1991	This closed unit (northeast of Building 576) was used for temporary storage of hazardous waste and was operated by MALS-16. The storage area consisted of a plastic liner and sandbag berm. In 1991, this site was demolished and replaced by S1-21A.	576	Mercury, PD-680, JP-5, distilled petroleum, and cleaning compounds	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 94	NA	ST-21C NFA 02/24/00	Unknown–1999	This inactive unit (within Building 90 compound), operated by MALS-16, was used for temporary storage of hazardous waste. The storage area consists of a plastic liner and sandbags over a concrete pad.	90	Mercury, PD-680, JP-5, distilled petroleum, and cleaning compounds	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 95	NA	ST-21D NFA 02/24/00	Unknown–1999	This inactive unit (within Building 90 compound), operated by MALS-16, was used for temporary storage of hazardous waste. The storage area consists of a plastic liner and sandbags over a concrete pad.	90	Mercury, PD-680, JP-5, distilled petroleum, and cleaning compounds	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 96	NA	ST-21E NFA 02/24/00	Unknown–1991	This inactive unit (within Building 90 compound), operated by MALS-16, was used for temporary storage of hazardous waste. The storage area consists of a plastic liner and sandbags over a concrete pad.	90	JP-5 generated from the testing of fuel in the associated ASTs	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 97	NA	ST-21F NFA 02/24/00	Unknown–1999	This inactive unit (within Building 90 compound), operated by MALS-16, was used for temporary storage of hazardous waste. The storage area consists of a plastic liner and sandbags over a concrete pad.	90	Oil, oily rags, and cleaning compounds	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 98	NA	ST-22 NFA 05/18/00	1991–1994	This removed unit (northwest of Building 134) was operated by HMM-163 for temporary storage of hazardous wastes. The unit was constructed in 1991 and stored hazardous wastes generated from vehicle maintenance operations. The drums containing hazardous waste were located on a plastic liner and surrounded by sandbags. During the VSI, the integrity of the unit appeared to have been good.	134	Lubricant, oil, hydraulic fluid, solvents, JP-5, Freon, rags, and absorbents	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3
AOI 99	NA	ST-23 NFA 09/24/99	1991–1995	This closed unit (Building 577) was operated by HMM-164 and HMM-161 for temporary storage (less than 90 days) of hazardous waste. The area consisted of two attached storage units: one operated by HMM-164 and the other by HMM-161. This unit was constructed in 1991. Drums containing hazardous wastes were stored on two 17-foot by 27-foot fenced concrete pads (with a sump) within a 6-inch containment berm. The integrity of the entire unit appeared to be good.	577	Hydraulic oil, used JP-5 fuel, absorbents, Freon, and contaminated rags	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3
AOI 100	NA	ST-24 Proposed to transfer to the Army	1989–1991	This unit (2345 Barranca Road) was operated by the Armed Services Reserve Center for temporary storage of hazardous waste. The unit was located west of the Organizational Maintenance Building (Garage) and was constructed in 1989. Drums fences containing the hazardous waste (used oil and mask filters) were located on a 16-foot by 24-foot concrete pad with a 6-inch containment berm. The integrity of the entire unit appeared to be good. There were also two paint lockers located near the waste storage area and the building, which were used to store paints, alcohol, and thinners. These hazardous materials were used for painting and cleaning vehicles There were also lockers located south of the storage area, which stored hazardous materials.	None	Paints, alcohol, and thinners	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 101	NA	ST-25 NFA 09/24/99	1989–1991	This closed unit (south of Building 520) was operated by HMT-302 for temporary storage of drums containing hazardous materials. The unit was constructed in 1989 for storage of hazardous materials used in Building 520. It consisted of a bermed facility with a plastic liner and sandbag berm for containment According to the VSI, the overall integrity of the system was good.	520	Grease, aircraft soap, rags, speed dry, and JP-5 fuel	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 102	NA	ST-26 (A, B) ST-26A, NFA 04/21/00 ST-26B, NFA 09/24/99	1991–1999	Inactive unit ST-26A (Building 581) was operated by HMT-302 for temporary storage of hazardous waste. It was constructed in 1991. The unit measured 42 feet by 24 feet and consisted of a fenced concrete pad within a 6-inch concrete berm. A catch sump (2 feet by 2 feet) was located within the unit. Wastes were stored on wooden pallets in 5- to 55-gallon, DOT-approved standard hazardous waste drums. According to the VSI, the overall integrity of the unit was good. ST-26B was an abandoned temporary storage site (with plastic liner and sand balls) situated northeast corner, approximately 60 feet away from Building 581.	581	Filters, oil, hydraulic oil, lube oil, fuel and oil filters, solvent, and oily rags	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3
AOI 103	NA	ST-27 NFA 09/24/99	1989–1995	This closed unit (north of Building 581) was a steel locker operated by HMI-320 for storage of wash rack gear. Aircraft soap was stored at this site in the past. Based on the containment system used, the site was probably used to store hazardous materials prior to its use for storage of aircraft soap. The unit was constructed in 1989. Temporary containment consisted of plastic liners and sandbags around the steel vault. The containment area was 34 feet by 16 feet. The overall integrity of the unit was fair, and the integrity of the temporary containment was moderate.	581	Aircraft soap	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 104	NA	ST-28(A, B) NFA 09/24/99	1989–1995	This removed unit (Building 582) (ST-28A) was operated by MALS-16 for temporary storage of hazardous waste. Constructed in 1989, the unit consisted of a 17-foot by 17-foot fenced concrete pad with a 6-inch berm A catch sump (2 feet by 2 feet) was located within the unit. Waste materials were stored on wooden pallets in 5- to 55-gallon, DOT-approved, standard hazardous waste drums. According to the VSI, the overall integrity of the unit was good. Prior to construction of the unit, a former site (S1-28B) located east of Building 582 had been used for the same purpose. ST-28B was constructed using a plastic liner with a sandbag berm.	582	Fuel oil, hydraulic fluid, combustible liquid, and oily rags	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3
AOI 105	NA	ST-29 NFA 09/24/99	1989–1994	This closed unit (Building 583) was operated by HMM-268 and HMT-30 for temporary storage of hazardous waste. The unit was constructed in 1989 and consisted of a 100-foot by 23-foot fenced concrete pad with a 6-inch berm. The unit had two equal sections, separated by a 6-inch concrete berm, where drums were stored from HMM-268 and HMT-301. Waste materials were stored on wooden pallets in 5- or 55-gallon, DOT-approved, standard hazardous waste drums. A catch sump (2 feet by 2 feet) was located within each section of the unit. According to the VSI, the overall integrity of the unit was good.	583	JP-5 fuel, hydraulic fluid, dirty and oily rags, Speedy-Dry absorbent, Freon, polyurethane, rags contaminated solvent, and absorbent	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3
AOI 106	NA	ST-30 NFA 09/24/99	1990–1995	This closed unit (south of Building 182 and northeast of Building 29), was operated by HMT-166 for temporary storage of drums containing hazardous materials. The unit, built in 1990, was bermed with sandbags, had a plastic liner for containment, and was surrounded by a fence. When the VSI was conducted, no waste was stored at the unit and the overall integrity was good.	182, 29	Transmission oil, grease, isopropyl alcohol, lubricating oil, propellant propane, and corrosion preventative oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 107	NA	ST-31(A, B) NFA 09/24/99	1990–1995	Closed unit ST-31A (Building 584) was operated by HMT-166 for temporary storage of drums containing hazardous waste. The unit was built in 1990. Drums were stored on a 20-foot by 20-foot fenced concrete pad with a 6-inch concrete berm. At the time of the VSI, no waste stored at this unit. The overall integrity of the system was good. Prior to 1990, a former site constructed of a plastic liner over temporary aluminum tarmac pads, with a sandbag berm, was used for the same purpose. The former site (ST-31B) was located north of the current site.	584	JP-5, petroleum oil, hydraulic fluid with Freon, thinner, Speedy-Dry absorbent, rags with hydraulic fluid and Freon, and rags with fuel oil	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3
AOI 108	NA	ST-32(A-C) NFA 09/24/99	Unknown–1995	Closed ST-32A (Building 598), built in 1992, and was operated by HMM-268 for temporary storage of hazardous materials. The unit consisted of a concrete pad (with a sump) and a 6-inch berm. Closed ST-32B was a former dirt area under Building 598 used for storage of drummed materials prior to construction of building 598. Closed ST-32C was a former hazardous materials storage unit (east of Building 180) operated by HMM-268. Built in 1989, the unit was an 11-foot by 15-foot wooden building. The VSI reported that the overall integrity was good.	598	Aircraft cleaning compound, engine gas, and path cleaner	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 109	NA	ST-33 NFA 09/24/99	1989–1995	This closed unit (northwest of Building 583) was operated by HMM-268 for temporary storage of drums containing hazardous waste. However, at the time of the VSI, no waste was stored on site. The unit was built in 1989. The unit consisted of an 11-foot by 11-foot wooden storage shack with no containment. The overall integrity of the system appeared to be poor.	583	JP-5 fuel, hydraulic fluids, and Speedy-Dry absorbent	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3
AOI 110	NA	ST-34A NFA 04/21/00	1991–1999	This inactive unit (Building 591) was operated by MALS-16 for temporary storage (less than 90 days) of hazardous wastes. Constructed in 1991, wastes were stored in 5- to 55-gallon drums on a 27-foot by 27-foot fenced concrete pad with a 6-inch concrete containment berm A catch sump (2 feet by 2 feet) was located inside the unit. The overall integrity of the unit was good. This unit replaced a former storage area (ST-34B).	591	Synthetic hydraulic fluids, corrosion preventative compounds, adhesives, flammable liquids, desiccant poison, MEK, and toluene	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3
AOI 111	NA	ST-34B NFA 09/24/99	Unknown–1991	This removed unit (paved area north of Building 591) was operated by HMH-363 for temporary storage of hazardous waste. The unit consisted of a plastic liner and sandbags. The unit was decommissioned and replaced by ST-34A (Building 591) in 1991.	591	Hydraulic fluids and various other chemicals	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 112	NA	ST-35 Open	1991–1999	This inactive unit (Building 556) was operated by MALS-16 for storage of hazardous materials. Constructed in 1991, the unit (concrete) consisted of five walled cells specially designed for storage of hazardous materials. Different types of compatible chemicals were stored in each cell on steel racks/pallets. In addition, the unit included four sections separated by 6-inch berms used to store 5- or 55-gallon drums stacked on wooden pallets. A catch sump (2 feet by 2 feet) was located inside each cell/section. A sump also ran along the center of the unit, which measured 80 by 38 feet. Additional sumps were located along the outside perimeter of the unit, along which 55-gallon drums were stored on steel pallets. A 2-foot-high containment wall was located north of the unit. A portion of this wall had developed cracks. This was the only threat to the overall integrity of the unit.	556	Resin-based and corrosive type adhesives, MEK. sealing compound, PD-680, petroleum oil and synthetic oil, paint-related materials, hydraulic fluids, and grease	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3
AOI 113	NA	ST-36 Open	1981–1999	This inactive unit (Building. 267) was operated by MALS-16 for storage of hazardous materials. Constructed in 1981, the unit (concrete) consisted of shelves formerly used to store 1- to 5-gallon cans. The unit measured 15 feet by 10 feet. Materials used for maintenance and cleaning operations were stored in this unit, typically in 5- to 55-gallon drums. Materials were usually ordered and stored on an as-needed basis and, hence, holding time in the unit was very limited. A list of materials was maintained and updated regularly by the Operating Division. The overall integrity of the unit was good. An exhaust system was in place and was in working condition. A flammable liquid storage cabinet was located along the outside wall (northwest) of the unit. Materials were checked out as required by users.	267	Paints, thinners, and solvents	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 114	NA	ST-37(A, B) NFA 09/24/99	1991–1995	Closed unit ST-37A (Building 588) was operated by MALS-16 for temporary storage of hazardous wastes. The unit was constructed in 1991. Wastes were stored in 5- to 55-gallon drums on a 16-foot by 17-foot fenced concrete slab within a 6-inch containment berm. A catch sump (2 feet by 2 feet) was located inside the unit to contain further releases. The RAC contractor also investigated a concrete pad located north of Building 588 (ST-37B) as part of closure activities for the unit.	588	Cleaning compounds, antifreeze, Freon, and oily rags	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 115	NA	ST-38(A, B) NFA 09/24/99	1991–1995	Closed unit ST-38A (Building 587) was operated by HMT-301 for temporary storage (less than 90 days) of hazardous waste. The unit was constructed in 1991. Wastes were stored in 5- to 55-gallon drums within an 18-foot by 22-foot fenced concrete slab with a 6-inch containment berm. A catch sump (2 feet by 2 feet) was located inside the unit to contain releases. The overall integrity of the unit was good. This unit replaced a former storage area (ST-38B) consisting of a dirt area south of Building 266.	587	Hydraulic fluids, JP-5, oily rags, and polyurethane-based paints	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3
AOI 116	NA	ST-39 NFA 05/18/00	1986–1996	Inactive unit (Building 266) operated by HMI-301 for storage of hazardous materials. The unit was constructed in 1986 and consisted of an 18-foot by 30-foot roof-covered cinder block building on a concrete slab. The building was divided into two sections each accessed by a metal door with a lock and operated by HMT-301 and HMT-302. According to the VSI, overall integrity of the unit was good.	266	Paints, thinners, solvents, and lube oils	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 117	NA	ST-40(A-C) NFA 10/31/00	Unknown–1996	Closed unit ST-40A (Building 578) was used for temporary storage of hazardous wastes. The unit was divided into two identical subunits, one operated by HMH-363 and the other operated by HMH-462. Wastes were stored in 5- to 55-gallon drums on a fenced, concrete slab within a 6-inch containment berm. The fence was about 8 feet high. A catch sump (2 feet by 2 feet) was located inside each of the subunits to contain any releases. The unit measured 26 feet by 17 feet. According to the VSI, the overall integrity of the unit was good. Unit ST-40A replaced a dirt area west of Building 578 (ST-40B) and an old temporary storage area located southeast of Building 578 (ST-40C) operated by HMH-462. Storage area ST-40C consisted of a wooden storage locker and a hazardous materials storage container. These adjacent structures covered an area approximately 13 feet by 13 feet. Various aerosols and some smaller containers were stored at the units. According to the VSI, the unit did not appear to be equipped with a containment system. Additionally, the soil beneath the storage areas appeared to be stained.	578	Fuel oils, oily rags, and paint thinners	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 118	NA	ST-41(A, B) NFA 09/24/99	1991–1995	Closed unit ST-41A (Building 580) was operated by HMH-462 for temporary storage (less than 90 days) of hazardous wastes. The unit was constructed in 1991. Wastes were stored in 5- to 55-gallon drums on a 17-foot by 22-foot fenced, concrete slab within a 6-inch containment berm. A catch sump (2 feet by 2 feet) was located inside the unit to contain any releases. The overall integrity of the unit was good. Prior to construction of ST-41A, a former site (ST-41B) located northeast of Building 580 was used for the same purpose. ST-41B was constructed of a plastic tarp with a sandbag berm.	580	Hydraulic fluid/oil, oily rags, JP-5, and other wastes from metal shops (paint stripper and waste paints)	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3
AOI 119	NA	ST-42 NFA 05/18/00	1960–1999	This inactive unit (Building 306) was operated by MAG-16 for storage of hazardous materials. The unit was constructed around 1960 and was a 10-foot by 10-foot concrete shack with wooden shelves. There were no sumps, drains, or berms. Overall integrity of the unit was good. Paints and related chemicals were stored at the unit in variable quantities determined by need.	306	Paints	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 120	NA	ST-43 NFA 10/31/00	1986–1996	This inactive unit (east of Building 261) was operated by HMH-463 for storage of hazardous materials. Prior to 1991, the unit was operated by HMH-364. Constructed in 1986, the unit consisted of a wooden storage shack with shelves on which 1- to 5-gallon cans were stored. The unit measured 13 feet by 11 feet. The VSI reported that the unit was crowded with drums, a large number of which were stacked on the floor, and the overall integrity of the unit was poor. No exhaust system was present, and ventilation appeared to be poor. The unit was inspected periodically for leaks/spills by a Non-Commissioned Officer for hazardous waste control.	261	Drums containing cleaning solvents, lubrication oils, and paints	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 121	NA	ST-44 NFA 10/31/00	1960–1993	This inactive unit (E of Building 201A) was operated by HMM-164 for storage of hazardous materials. The unit was constructed around 1960 and was a 12-foot by 11--foot steel locker. According to the VSI, the overall integrity of the unit appeared to be poor.	201A	Lube/transmission oils and solvents	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 122	NA	ST-45 NFA 05/18/00	1960s–1995	This inactive unit (Building 263) was operated by HMM-164 and HMM-161 for storage of hazardous materials. It was divided into two identical subunits, one operated by HMM-164 and the other by HMM-161. Constructed in the 1960s, the unit was a concrete shack with shelves on which drums (1- to 10-gallon capacity) containing materials used for maintenance and cleaning substances had been stored. The unit measured 31 feet by 11 feet overall (each subunit was 15.5 feet). According to the VSI, the overall integrity of the unit was good. No exhaust system was in place and ventilation appeared to be poor.	263	Paint thinners, hydraulic fluids, adhesives (resin based), and MEK	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3
AOI 123	NA	ST-46 NFA 04/21/00	1981–1994, reactivated for 1996–1999	This inactive unit (Building 262) was operated by Maintenance Assistance Modules Training Detachment to store parts and hazardous materials from 1981 until 1994. Constructed in 1981, the unit consisted of a 10-foot by 20-foot concrete shack. The VSI indicated the overall integrity of the unit was good. No exhaust system was in place and ventilation appeared to be poor. A temporary waste holding area (steel locker), located approximately 67 feet south, was used to briefly store hazardous wastes before being transferred to a temporary storage unit. The building was reactivated in 1996 for storage of nonhazardous materials for basewide investigation activities.	262	Paint thinners and hydraulic fluids/oils	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3
AOI 124	NA	ST-47(A, B) NFA 10/31/00	1980–1992	Demolished unit ST-47A (Building 206) was operated by HMM-164 for temporary storage of hazardous materials. Constructed around 1980, the unit consisted of a 20-foot by 11-foot wood and aluminum locker used to store cans containing hazardous flammable materials for maintenance of helicopters and GSE. The integrity of the unit appeared to be good during the VSI. A depression in the dirt south of ST-47A was the former location of storage locker ST-47B.	206	Lubricating oil, grease, transmission oil, brake fluid, and hydraulic fluids	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3
AOI 125	NA	ST-48 Open	1980–1995	This closed unit (Building 265) was operated by HMM-268 for temporary storage of hazardous materials. The unit was a locker constructed of concrete around 1980. The locker was divided into two subunits. One unit was operated by HMM-268 and contained 12-ounce to 10-gallon cans of hazardous flammable materials. The VSI reported the integrity of the storage unit appeared to be good. The other identical subunit, which had been operated by HMM-166, was empty at the time of the VSI.	265	Lubricating oil, polyurethane paints, thinners, corrosion prevention compounds, lacquers, and solvents	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 126	NA	ST-49 Open	1940s–1996	This inactive unit (Building 408) was operated by MALS-16 for temporary storage of hazardous materials. The 15-foot by 15-foot unit was constructed of concrete in the 1940s and stored cans of hazardous materials used in the adjacent hangar. The integrity of the storage area was good.	408	Lubricating oil, propellant, epoxy paint, polyurethane-based paints, enamel, and mask filters	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 127	NA	ST-50 Open	1960s–1995	This inactive unit (Building 29A) was a 32-foot by 33-foot concrete building operated by MALS-16. Building 29A was originally built as a boiler for heating Hangar 2 (Building 29). The unit was most recently used for storage of empty boxes and flight equipment. US1-29A (removed) and O/W SEP-29A (10W-X4, inactive) are/were located adjacent Building 29A. According to the VSI, the integrity of the unit appeared to be good. This unit was identified as Hangar 2 (Building 29) in the PR report.	29A	Flight equipment, fuels, grease, anti-scaling and corrosion compounds	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 128	NA	ST-51 Open	1980s–1995	This inactive unit (Building 174) operated by MALS-16 for storage of materials and welding equipment. The concrete unit measured 50 feet by 22 feet and was subdivided into three subunits (A, B, and C). Each of the subunits measured 20 feet by 12 feet. Subunit A was a welding shop until June 1991 that was subsequently used to store miscellaneous items (hoses, etc.). Subunit B had been an office area but was abandoned when inspected. Subunit C had been used as a spraying booth and before that as a battery shop. It was subsequently used for storage of welding and other equipment. Abandoned O/W SEP-174 (TOW-X3) was located adjacent to subunit C. Subunits A and C were fitted with ventilation systems. The system in subunit C was used to filter outgoing air. It reportedly had been a permitted paint booth. No sumps, drains, or berms were located inside any of the subunits. According to the VSI, the overall integrity of the unit was good.	174	Miscellaneous items (hoses) and welding materials	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 129	NA	ST-52 Open	1980	This inactive unit (Building 175) was operated by MALS-16 for storage of hazardous materials. Constructed around 1980, the unit (concrete) was abandoned and contains discarded wooden and steel parts. The unit measured 22 feet by 16 feet. It was formerly used as a paint booth. At the time of the VSI, it was being used to store aircraft parts and equipment. A steel locker (27 feet by 15 feet) was located adjacent to the unit. No ventilation system could be identified in the former paint booth, and the unit was not equipped with containment. According to the VSI, the overall integrity of the unit and the steel locker was fair. In addition, a 360-gallon concrete oil/water SEP (O/W SEP-175) was located at the southwest corner of Building 175. This O/W SEP was not connected to an UST.	175	Paints and aircraft parts	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 130	NA	ST-54 NFA 09/24/99	1942–1995	This removed unit (Building 28A) was a 32-foot by 31-foot concrete building operated by MALS-16. Building 28A was originally built as a boiler for heating Hangar 1(Building 28). The unit was most recently used to store empty boxes and flight equipment. Information was not available on previous operations in this building. Two USTs (28 and 28A) were previously removed from the site. The integrity of the unit appeared good. O/W SEP-28A (TOW-X2) was located 20 feet west of the unit.	28A	Flight equipment	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 131	NA	ST-55 NFA 04/21/00	1940s–1995	This inactive unit (Building 40A) was possibly used for temporary storage of cans containing hazardous materials, similar to ST-49 (Building 408). The unit was constructed of concrete in the 1940s. The operator of the unit is unknown, and no information has been made available. According to the VSI, the integrity of the unit appeared to be good.	40A	Lubricating oil, propellant, epoxy paint, polyurethane-based paints, enamel, and mask filters	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 132	NA	ST-56 NFA 04/21/00	1981–1996	This inactive unit (Building 264) was used for storage of hazardous materials. It was divided into two identical subunits, one operated by HMH-363 and the other by HMH-462. The unit was a 10-foot by 31-foot concrete shack constructed around 198. Materials were stored on steel shelves. According to the VSI, the integrity of the unit was good.	264	Paints (epoxy, polyurethane base) and associated chemicals (thinners, paint removers, and solvents)	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 133	NA	ST-58 NFA 04/22/96	1974	This inactive site was the Main Exchange Service Station (B-222) According to the VSI, no hazardous wastes were stored here.	222	None	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 134	NA	ST-59A NFA 09/24/99	1991–1995	This closed unit (Building 579) was operated by HMH-363 for temporary storage (less than 90 days) of hazardous wastes. Constructed in 1991, it replaced S I-598 (Building 100). Wastes were stored in 5- to 55-gallon drums within a fenced area on a 17-foot by 22-foot concrete slab with a 6-inch containment berm. A catch sump (2 feet by 2 feet) was located inside the unit to contain releases. According to the SI, the overall integrity of the unit was good.	579	JP-5, oily rags, solvents, Freon, and polyurethane-based paints	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 135	NA	ST-59B NFA 09/24/99	1970s–1991	This demolished unit (previously Building 100, east of Building 264) was operated by HMH-363 for temporary storage of hazardous waste. The storage area consisted of a plastic liner with a sandbag berm. In 1991, this site was demolished and replaced with Building 579 (ST-59A).	100	JP-5, paint thinner, oily rags, and Freon	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 136	NA	ST-60(A, B) NFA 09/24/99	1987–1997	Closed unit ST-60B, originally constructed in 1987, was on the northern side of the Auto Hobby Shop enclosure west of the entrance but was moved to ST-60A at the southeastern end of the enclosure in 1991. Waste oil generated from changing vehicle oil was transferred via a gallon drum to a UST by gravity. The drum and storage unit were not contained. Closed unit ST-60A (paved area in the southeastern corner of Building 185, Auto Hobby Shop lot) was operated by MWR for temporary storage (less than 90 days) of hazardous waste. Drums containing hazardous waste were stored on a plastic liner contained within a sandbag berm on the asphalt pavement. The dimensions of the unit were 14 feet by 10 feet. A few drums were stored on wooden pallets outside the containment. According to the VSI, the integrity of the unit was poor. From 8 to 10 drums were stored in this unit at the time of the VSI.	185	Antifreeze, oily rags, Speedy-Dry absorbent, aerosol cans, and contaminated soil excavated from the area of a recent spill incident (MMS-04)	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 137	NA	ST-61 NFA 07/09/98	1975–1997	This inactive area (northeast of Buildings 20A and 71F) was a former hazardous waste storage area operated by the Station. Furniture was subsequently stored here. In the past, there were three paint lockers on the site containing various waste oils. Materials used in vehicle maintenance were also stored here.	20A, 71F	Furniture, waste oils, and vehicle maintenance materials	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 138	NA	ST-62 (MWA-16) NFA 04/22/96	NA	This site was a former wash area (MWA-16) near B-106 that was incorrectly identified as a hazardous materials waste storage unit. The VSI confirmed that no hazardous materials were present.	106	None	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 139	NA	ST-63 NFA 04/22/96	NA	This site was incorrectly identified during VSI; no hazardous waste was observed (B-71 G). According to activity personnel, no hazardous wastes have been stored here in the past. Aircraft parts were the only materials stored.	71G	Aircraft parts	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 140	NA	ST-64 NFA 04/22/96	NA	This site was incorrectly identified in the PR/VSI as hazardous materials storage unit. During the VSI, no hazardous waste was observed (north of B-203).	203	NA	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 141	NA	ST-65 NFA 04/22/96	NA	During the VSI, no hazardous waste was observed (B-71J). According to activity personnel, no hazardous wastes were stored at the site in the past, only aircraft parts.	71J	Aircraft parts	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 142	NA	ST-66 NFA 04/22/96	NA	This site was incorrectly identified in PR/VSI as a hazardous materials storage unit. During the VSI, no hazardous wastes were observed (B-526). According to activity personnel, no hazardous wastes were stored at the site in the past.	526	NA	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 143	NA	ST-67 Draft Final Focused FS for OU-4	1969–1972	The demolished former location of Building 63/78 (a Quonset hut placed on bare ground) had been associated with the use and/or disposal of hazardous materials. Solvents were reportedly used in the hut and were disposed on the ground within or outside of the hut. Because the building had been demolished, the former storage/disposal area was subsequently paved with asphalt and used as a parking area.	63, 78	Solvents	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 144	NA	ST-68(A-F) NFA 04/22/96	NA	This temporary storage unit (ST-68) was identified as part of IRP Site 7 North (Aircraft Parking Apron No. 1) and at IRP Site 7 South (ST-68A) in the revised PR/draft VSI report. This report documented no evidence of a release or hazardous wastes stored at the site.	None	None	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 145	NA	ST-69 NFA 04/22/96	NA	This site was incorrectly identified in the PR as a hazardous materials storage unit. The area was an engine test cell near B-273. At the time of the VSI, no hazardous waste was being stored at this site and according to activity personnel, no hazardous wastes had been stored in this area in the past.	273	None	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 146	NA	ST-70 NFA 04/22/96	NA	This site was incorrectly identified in the PR as a hazardous materials storage unit. During the VSI, no hazardous wastes were observed and according to activity personnel, no hazardous wastes had been stored at the site (near B-3) in the past.	3	None	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 147	NA	ST-71 NFA 04/22/96	NA	A waste disposal area was reportedly present at B-62B. The IAS recommended NFA at the site. The location of the site was not determined during the VSI and no evidence of releases was identified near MMS-3.	62B	None	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 148	NA	ST-72(A, B) (MWA-23) Open	1942–1997 B-16) 1942–1982 (B-50)	Two buildings in former GSE yard originally constructed in 1942 as a garage (ST-72A, inactive Building 16) and a lubrication facility (ST-72B, demolished Building 50). ST-72A housed administrative functions but operated as a garage for most of its history. A hoist lift with an underlying pit is still present in the building. Cleaning solvent was reportedly used (for degreasing properties) to wash down floors. Waste solvent was likely washed to storm drains or to the ground outside the building. Biodegradable soaps had replaced the solvents by 1985. The IAS identified ST-72B as a vehicle maintenance facility reportedly used from the mid-1960s to the mid-1970s. A steam wash rack was reportedly installed on the south side of the building in 1979. The VSI found no evidence of a wash rack (MWA-23). ST-72B was demolished in 1982 and the area was subsequently paved over and used as a parking lot. The unit consisted of a 40-foot by 47-foot concrete pad with the remains of a hydraulic lift in the middle. The VSI reported that the sumps were filled with sediment and appeared to be stained. No sumps were visible. No records indicate whether the sumps were removed via excavation or left in-place. During closure under the RAC in 1999, the concrete pad was removed, as were the remains of two hydraulic lifts and a concrete vault found beneath the pad. The overall integrity of the area was fair, with cracks and stains visible on the concrete. Oil and grease from vehicle maintenance operations and hydraulic fluid were generated through daily operations. The quantity of oil was unknown, as were the quantities and kinds of cleaning solvents used on the floors.	16, 50	Oil, grease, hydraulic fluid, and cleaning solvents	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3
AOI 149	NA	ST-73 (MAE-5) (MAE-4A) NFA 09/16/96	NA	The site is a former spray paint booth (MAE-5) that was converted to a classroom. The revised PR/draft VSI report identified Building 187 as MAE-5. Subsequently, the EBS documented the unit as ST-73 and MAE-4. Later, MAE-4 was split into MAE-4 and MAE-4A. Thus, MAE-5 has been counted as ST-73, MAE-4, and MAE-4A.	187	Paint	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 150	NA	ST-74 NFA 09/16/96	NA	According to the EBS for CERFA, a storage unit designated ST-74 was reportedly associated with wash area MWA-10. However, a subsequent field inspection determined that no storage unit was associated with the wash area.	None	Oily waste and detergents	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 151	NA	ST-75(A, B) NFA 09/24/99	1992–1997	Closed unit ST-75A (Building 597) was built in 1992 for temporary storage of hazardous materials. The unit was constructed of a concrete pad (with a sump) within a 6-inch berm. The RAC contractor also investigated ST-75B (a 10-foot by 10-foot dirt AST [fuel] area west of Building 597) as part of closure activities for the unit.	597	Aircraft cleaning compound, engine gas, and path cleaner	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 152	NA	ST-76 NFA 09/24/99	1992–1995	This closed unit (Building 599) was built in 1992 and was operated by HMH-361 for temporary storage of hazardous materials. The unit was constructed of a concrete pad (with a sump) within a 6-inch berm.	599	Hazardous materials	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 153	NA	ST-77 NFA 09/24/99	1992–1999	This inactive unit (Building 600) was built in 1992 and was operated by MALS-1 for temporary storage of hazardous materials. The unit was constructed of a concrete pad (with a sump) within a 6-inch berm.	600	Hazardous materials	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 154	NA	ST-78 NFA 09/24/99	1992–1995	Closed unit ST-78A (Building 601) was built in 1992 for temporary storage of hazardous materials. The unit was constructed of a concrete pad (with sump) within a 6-inch berm. A paint locker (ST-78B) was also present to the northeast of the concrete pad. It was constructed of steel and its dimensions were 9 feet by 12 feet.	601	Paint	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 155	NA	ST-79 NFA 02/24/00	NA	This inactive unit (at the southwest comer of Building 173) was used for temporary storage of hazardous material.	173	Hydraulic fluid	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3
AOI 156	NA	ST-80 NFA 04/21/00	NA	This inactive unit (at the northwest comer of Building 173) was used for temporary storage of hazardous material.	173	Hydraulic fluid	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3
AOI 157	NA	ST-81 Open	1942–1999	This inactive unit (Building 23C) was a bunker built in 1942 for ordnance storage. It was used by MWSS-374 for temporary storage of hazardous materials.	23C	Ordnance	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 158	NA	ST-82 NFA 02/24/00	1992–1999	This inactive unit (Building 602) was built in 1992 and was operated by HMH-462 for temporary storage of hazardous materials. The unit was constructed of a concrete pad (with a sump) within a 6-inch berm.	602	Hazardous materials	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 159	NA	ST-86 Open	Unknown	This closed unit (Building 251) consisted of various rooms located within the hangar that may have been used for hazardous materials and/or hazardous waste storage.	251	Paint, solvents	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 160	NA	ST-87 Open	Unknown	This closed unit (Building 186) consisted of various rooms located within the hangar that may have been used for hazardous materials and/or hazardous waste storage.	186	Waste oil and hydraulic fluid	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3
AOI 164	NA	STD-2 (formerly known as ST-53) NFA 11/10/99	1942–1998	This inactive unit (Building 23A) was a permitted storage facility (RCRA Part B Permit). Prior to August 1993, the unit was used for temporary storage of hazardous wastes. Wastes from temporary storage units throughout the base were taken to this unit for storage prior to transport off the installation. Building 23A was built in 1942 as a bunker for ordnance storage.	23A	Ordnance	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 165	NA	STD-3(A, B) (formerly known as ST-57 [A, B]) NFA 11/10/99	1991–1998	Inactive unit STD-3A (Building 567) was a permitted storage facility (RCRA Part B Permit). The unit was operated by the Station for temporary storage of hazardous waste. STD-3A was constructed in 1991 and was a 40-foot by 60-foot fenced concrete pad with a 6-inch containment berm. Approximately 75 drums were stored on the pad. A catch sump (2 feet by 2 feet) was located inside the unit to help contain releases. The overall integrity of the unit was good. A former storage unit (STD-3B) was located approximately 20 feet west of the existing site.	567	Oily rags, waste oil, Freon, and hydraulic fluid	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 166	NA	MAE-1 Open	1988–1999	An inactive sandblaster at Building 537 was operated by MALS-16 and was used approximately 16 to 24 hours every week. The room housing the unit was equipped with a ventilating system consisting of a 20-horsepower blower connected to a baghouse that separated the silica sand, metal (aluminum oxide), and paint debris generated during sandblasting. The unit was periodically checked and certified by an industrial hygienist. The sandbag unit and the baghouse were permitted by SCAQMD under Permit No D21060.	537	silica sand, metal (aluminum oxide)	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 167	NA	MAE-2 Open	1991–1999	This inactive spray paint booth at Building 537 was operated by MALS-16 to paint support equipment and automobile parts. The unit was reportedly installed in 1991. Hazardous releases (air emissions) were restricted by use of a modified ventilation system (Viskon Air Filter System) that filtered outgoing air before it was discharged to the atmosphere. It was periodically checked/monitored and certified for operation by an industrial hygienist. A release prevention system was in place and prevented operation of spray guns while the doors to the unit were open. The overall integrity of the unit was good. The unit was permitted by the SCAQMD under Permit No. D79123.	537	paints	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 168	NA	MAE-3 Open	Unknown–1999	This inactive spray paint booth within Building 190 was operated by MALS-16 to paint support equipment and parts. The unit operated about three to four times per week. Hazardous releases (air emissions) were restricted by use of a modified ventilation system that filtered outgoing air before discharge to the atmosphere. It also functioned as a monitoring system that filtered outgoing air before being discharged to the atmosphere. It also functioned as a monitoring system by beeping when a certain level of pressure was created by paint dust and debris caught on the filter pads. When this occurred, the filter pads were replaced. The unit was permitted by the SCAQMD (Permit No. D36997).	190	paints	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 169	NA	MAE-4 Open	Unknown	According to the VSI, the demolished unit was an automotive paint booth in Building 98 operated by MWR. The booth was reportedly used only about 10 times a year for small painting tasks. The unit was reportedly a 3-year old, 15-foot by 33-foot steel-framed structure. Hazardous releases (air emissions) were restricted by use of a modified ventilation system that filtered outgoing air before discharge to the atmosphere. The overall integrity was poor. No certification for operation by an industrial hygienist or permission to operate by SCAQMD was found. The booth also housed a waste oil sump of unknown capacity. During an O/W SEP survey, O/W SEP-98 (TOW-X7) was identified inside the paint booth which appeared to be abandoned. Because the integrity of the unit was poor, the VSI recommended demolition, with investigation of the vicinity for possible waste discharges.	98	paints	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 170	NA	MAE-5 (MAE-4A, ST-73) NFA 12/09/99	Unknown–1993	This inactive former spray paint booth in Building 187 was reportedly converted to a classroom in 1988–1989. The steel frame unit was operated by MWSS-374. Hazardous releases (air emissions) were restricted by use of a modified ventilation system that filtered outgoing air before it was discharged to the atmosphere. The filter integrity was questionable. The structural integrity of the unit was good. No information was available as to certification/permission for operating the unit during its operational period. The CERFA EBS documented the unit as ST-73 and MAE-4 (later split into MAE-4 and MAE-4A).	187	paints	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 171	NA	MAE-6 NFA 12/09/99	Unknown–1999	This inactive unit was a spray paint booth at Building 251 operated by MWSS-374 under SCAQMD Permit No. M51450. It was used for painting support equipment and automobile parts. Hazardous releases (air emissions) were restricted by use of a modified ventilation system that filtered outgoing air before discharge to the atmosphere. The overall integrity of the unit was good.	251	paints	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 173	NA	TOW-1 NFA 11/16/00	1987–1999	O/W SEP-530 was a 350-gallon steel unit located neat Building 566. It was connected to an adjacent wash rack (MWA-1 at Building 610). A 1,000-gallon UST (530B) was connected to the O/W SEP for storage of waste oil. Overall integrity of the unit was good and there was secondary containment. The unit was removed.	566, 610	Fuels, oils	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 174	NA	TOW-2 NFA 05/18/00	1988–1999	O/W SEP-536 a 500-gallon steel unit located north of Building 536. It was connected to wash area MWA-2 (Building 535), which was used for washing helicopters. The O/W SEP was connected to a 150-gallon UST (536) for storage of waste oil. The O/W SEP was equipped overflow alarm. The unit was removed.	535, 536	Fuels, oils	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 176	NA	TOW-4 NFA 06/06/97	1966–1993	O/W SEP-172 was 220-gallon concrete tank located north of Building 172. It was connected to former MWA-03, a wash area adjacent to Building 172. The O/W SEP was removed.	172	Pine oil, detergents, fuels, and oils	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 177	NA	TOW-5 NFA 05/18/00	1984–1999	O/W SEP-509 was a 200-gallon steel unit located near Building 230. It was connected to wash area MWA-4, which was used for washing helicopters. The O/W SEP was connected to a 100-gallon UST (509) used for storage of waste oil. The system was equipped with an overflow alarm. The O/W SEP was removed.	230	Fuels, oil, and aircraft cleaning compound	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 178	NA	TOW-6 NFA 03/0900	1984–1999	OSW 508 was a 200-gallon steel tank located near building 508. It was connected to wash area MWA-05 (Building 517), which was used for washing helicopters. The O/W SEP was connected to an UST (508) for storage of waste oil. The O/W SEP was removed.	508	Oily wastes and detergents	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 179	NA	TOW-7 NFA 11/16/00	1989–1997	O/W SEP-551 was a 200-gallon steel tank located near Buildings 181 and 551. It was connected to wash are MWA-6 (Building 551). The O/W SEP was connected to a 100-gallon UST for storage of waste oil and was equipped with an overflow alarm. The O/W SEP was removed.	181, 551	Oily wastes and detergents	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 180	NA	TOW- 8 (A, B) NFA 04/21/00	1970–1999	O/W SEP-186 (1 and 2) was a 390-gallon three stage concrete system located near Building 186. A UST (186D) was connected to the O/W SEP. The O/W SEP was removed.	186	Oily wastes and detergents	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 181	NA	TOW-09A Open	1985–1999	O/W SEP-273 or SI-3B was a 450 gallon-steel tank located northeast of Building 273. It was connected to wash area MWA-10 (Building 231), which was used for cleaning aircraft engine test cell equipment. The O/W SEP was connected to a 550-gallon UST (273 or SI-3A) for storage of waste oil and was equipped with an overflow alarm, the O/W SEP was removed.	273	Cleaners, fuels, oils, and test cell cooling water	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 182	NA	TOW-09B Open	1985–1999	The primary separator was removed within the drain box.		Cleaners, fuels, oils, and test cell cooling water	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 183	NA	TOW-09C Open	1985–1999	The secondary separator located within the drain pipeline was removed.		Cleaners, fuels, oils, and test cell cooling water	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 184	NA	TOW-10 NFA 06/22/00	1987–1999	O/W SEP-546 was a 500-gallon concrete unit located near Building 546. It was connected to wash area MWA-11 (West of Building 546). The O/W SEP was removed.	546	Oil wastes and detergents	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 185	NA	TOW-11 NFA 03/09/00	1982–1999	O/W SEP-251 was a 300-gallon concrete unit located at the northeastern corner of Building 251. It was connected to wash area MWA-12 (north of Building 251). The O/W SEP was connected to a 700-gallon fiberglass UST (251) for storage of waste oil and was equipped with an overflow alarm. The O/W SEP was removed.	251	Oily wastes and detergents	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 186	NA	TOW-12 NFA 03/09/00	1989–1999	O/W SEP-252 was a 1,500-gallon fiberglass tank west of Building 555. It was connected to wash area MWA-13 (Building 560. The O/W SEP was connected to a 500-gallon UST (252) for storage of waste oil and was equipped with an overflow alarm. The O/W SEP was removed.	555, 560	Oily wastes and detergents	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 187	NA	TOW-15 NFA 06/22/00	1989–1999	O/W SEP-533 was a three-compartment, 750-gallon steel tank located northwest of Building 533. It was connected to wash area MWA-24, which was used for washing and degreasing mechanical equipment in Building 533 and small arms cleaning.	533	Oily wastes, detergents, and gun-cleaning solvents	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 188	NA	TOW-16 NFA 09/16/96	NA	No O/W SEP was present at wash area MWA-18. The O/W SEP Survey conducted in 1993 concluded that the wash pad near Building 47 discharged to a storm drain catch basing and not an O/W SEP. A field inspection was unable to identify an underground structure.	NA	NA	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 189	NA	TOW-17 Open	1986–1999	O/W SEP-543 was a 5,000-gallon steel tank located near the southwestern corner of Building 543. It was connected to adjacent wash area MWA-19, which was used for washing helicopters. The O/W SEP was connected to a 1,000-gallon fiberglass UST (543) for storage waste oil. The O/W SEP was removed.	543	Oily wastes and detergents	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 190	NA	TOW-18-1 NFA 01/13/00	1981–1997	O/W SEP-185 [1], [2], [3], [4] were 750-gallon concrete tanks located around Auto Hobby Shop (Building 185). They were connected to wash rack MWA-20 and from other sources in Building 185. The integrity of the O/W SEPs was questionable because of operational problems. The O/W SEPs were removed.	185	Oily wastes, heavy metals, and VOCs	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 191	NA	TOW-20 See Parcel 9	1989–1999	O/W SEP-2345 was a three-compartment concrete unit located as 2345 Barranca Road, west of the Organization Reserve Center, and was operated by the Armed Services Reserve Center. It was connected to wash area MWA-22.	Organization Reserve Center	Oily wastes and detergents	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 192	NA	TOW-21 NFA 05/18/00	Unknown–1999	O/W SEP-206 was an 84-gallon concrete and steel tank located near the corner of the tarmac south of former Building 206. It was connected to MWA-9. The O/W SEP was removed.	206	Oily wastes and detergents	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 193	NA	TOW-22 NFA 10/14/99	1942–1998	O/W SEP-35A was located outside of Building 35A. It received drainage the basement of Building 35A. The O/W SEP was decommissioned in September 1974.	35A	Drainage from basement	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 194	NA	TOW-X1 NFA 12/09/99	Unknown	O/W SEP-27 was a 300-gallon concrete tank located near the northwest corner of Building 27. It received drainage from floor drains in Building 27. The O/W SEP was removed.	27	Oily wastes and detergents	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 195	NA	TOW-X2 NFA 01/13/00	Unknown	O/W SEP-28A was a 350-gallon concrete tank located west of Building 28A. The O/W SEP received blow-down from the boilers and was removed.	28A	Fuels, grease, and anti-scaling and corrosion compounds	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 196	NA	TOW-X3 Open	Unknown	O/W SEP-174 was a 300-gallon concrete tank located at the southeastern corner of Building 174. Building 174 formerly contained a welding shop and spraying booth and was later converted into a battery shop. The O/W SEP may have been previously used as a wash rack.	174	Oily wastes and detergents	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 197	NA	TOW-X4 Open	1942–1949	O/W SEP-29A was a 350-gallon concrete tank located west of Building 29A. Based on 1942 drawings, the O/W SEP discharged to a dry well and historically received blow-down waste from boilers. The O/W SEP was removed.	29A	Fuels, grease, and anti-scaling and corrosion compounds	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 198	NA	TOW-X5 NFA 09/16/96	NA	The feature was incorrectly identified as an O/W SEP. It is actually a diversion valve for hydrocarbon located between TOW-8A and TOW-8B.	NA	NA	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 199	NA	TOW-X6 NFA 06/22/00	Unknown–1999	O/W SEP-568 was a 680-concrete tank located in the southwestern corner of the Armory (Building 568). The O/W SEP received wastewater from mop washing activities. Wastes were created from cleaning .50-caliber guns in the building. The O/W SEP was removed.	586	Oily wastes and detergents	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 200	NA	TOW-X7 Open	1954–1995	O/W SEP-98 was a less-than-100-gallon tank located in the center of Building 98. The O/W SEP was removed.	98	Solvents and paint thinner	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 201	NA	TOW-X8 NFA 12/09/99	1967–1999	O/W SEP-175 was a 360-gallon concrete tank located at the southwestern corner of Building 175.	175	Paints, oily wastes, and detergents	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 202	NA	MGR-01 Building 566 Open	1988–1999	This concrete ramp was located near Building 530. The ramps were designated as Building 566 and the site was intended to be used as a grease rack but never was used as such.	530, 566	None	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 203	NA	MGR-02 Building 149 NFA 04/21/00	1960s–1999	This metal ramp was located between Building 186 and 187 and was used as a grease rack for changing oil/fluids in motor vehicles.	149, 186, 187	Waste oil, hydraulic fluid, and transmission fluid	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3
AOI 204	NA	MGR-03 Proposed for transfer to the Army	NA	This was a miscellaneous grease rack located in building 6169, which was located in Parcel 9.	NA	NA	No	No materials that contain PFAS are documented to have been used, stored, or disposed of at this site. This site is recommended for NFA for PFAS.	3
AOI 205	NA	MWA-1 Building 610 NFA 12/9/99	1988–1999	The wash pad was associated with Building 530 and was used to clean vehicles and generators. It was connected to TOW-1 (O/W SEP-530). The integrity of the pad appeared to be good.	530, 610	Oily wastes and detergents	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 206	NA	MWA-2 Building 535 NFA 05/18/00	1988–1999	The wash pad was used for cleaning helicopters and equipment. It was connected to TOW-2 (O/W SEP-536). The integrity of the pad appeared to be good.	535	Oily wastes and detergents	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 207	NA	MWA-3 NFA 04/08/99 ROD 09/28/00	1966–1995	The wash area was located north of Building 172 and was connected to TOW-4 (O/W SEP-172). The integrity of the pad was poor with many observed cracks. TPH-contaminated soils were excavated, and the site was paved over.	172	Oily wastes and detergents	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 208	NA	MWA-4 Building 230 NFA 05/18/00	1950s–1999	The wash rack was connected to TOW-5 (O/W SEP-509). It was used to wash helicopters and the integrity of the pad was good.	None	Oily wastes and detergents	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 209	NA	MWA-5 Building 517 NFA 03/09/00	Unknown–1999	The wash pad is located adjacent to Building 508 and was used to wash helicopters. It was connected to TOW-6 (O/W SEP-508). The integrity of the pad appeared to be good.	508, 517	Oily wastes and detergents	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 210	NA	MWA-6 Building 229 NFA 10/14/99	1950s–1996	The wash pad is located next to Building 551 and was used to wash helicopters. It was connected to TOW-7 (O/W SEP-551). The integrity of the pad appeared to be good.	229, 551	Oily wastes and detergents	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 211	NA	MWA-7 Building 233 NFA 04/21/00	Unknown–1999	The wash pad was connected to TOW-8A (O/W SEP-186[1]) and was used for cleaning vehicles. The integrity of the concrete pad good but the surrounding asphalt was in poor condition. The wash area was formerly a fueling area with a center island that was decommissioned.	233	Wash water and oily waste	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 212	NA	MWA-8 NFA 04/21/00	Unknown–1996	The unit was part of the wash area south of Building 507 and discharged into a catch basin to the storm drain. The integrity of the pad was poor.	507	Wash water and oily waste	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 213	NA	MWA-9 NFA 10/14/99	1950–1970	The wash area was connected to TOW-21 (O/W SEP-273) and was used to wash helicopters.	Apron	Oily wastes and detergents	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 214	NA	MWA-10 Building 231 Open	Unknown–1999	The wash area was connected to TOW-9 (O/W SEP-273) and was used to clean test cell equipment.	231	Oily wastes and detergents	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 215	NA	MWA-11 NFA 06/22/00	Unknown–1999	The wash area is connected to TOW-10 (O/W SEP-546) and is located west of Building 546.	546	Oily wastes and detergents	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 216	NA	MWA-12 NFA 03/09/00	Unknown–1999	The wash area is located north for Building 251 and was used for washing trailers. It was connected to TOW-11 (O/W SEP-251). The integrity of the pad appeared to be good.	251	Oily wastes and detergents	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 217	NA	MWA-13 Building 560 NFA 03/09/00	Unknown–1999	The wash area is located west of Building 555 and was used for washing trailers and ground support equipment. The wash area was connected to TOW-12 (O/W SEP-252). The integrity of the pad appeared to be good.	555	Oily wastes and detergents	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 218	NA	MWA-16 NFA 10/14/99	1982–1988	The wash area is a covered self-service car wash area. Wastewater is discharged directly to the storm drain that flowed to Peters Canyon Channel. The wash area was also incorrectly identified as ST-62.	106	Oily wastes and detergents	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 219	NA	MWA-17 Open	1940s–1996	The wash rack was located south of Building 53 and was used for washing vehicles. Wastewater is discharged directly to the storm drain that flowed to Peters Canyon Channel.	53	Oily wastes and detergents	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 220	NA	MWA-18 Open	1940s–1995	The wash area was located southwest of Building 47 and was used for washing small generators. There was no O/W SEP connected to the wash rank and the concrete pad was in poor condition.	47	Oily wastes and detergents	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 221	NA	MWA-19 Building 543 Open	1986–1999	The wash rack was used for washing helicopters and was connected to TOW-17 (O/W SEP-543). The integrity of the pad appeared to be good.	543	Oily wastes and detergents	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 222	NA	MWA-20 NFA 01/13/00	1981–1999	Concrete paved area north of the Auto Hobby Shop (Building 185). A drain was connected to TOW-18 (O/W SEP-185[1]).	185	Oily wastes and detergents	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 223	NA	MWA-22 Proposed for transfer to the Army	1989–1999	The wash pad is located at the Army Service Reserve Center and was used for cleaning vehicles. The wash area is connected to TOW-20. The integrity of the pad appeared to be fair.	Army Service Reserve Center	Oily wastes and detergents	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 224	NA	MWA-23 NFA 09/16/96	NA	The structure was incorrectly identified as a wash rack and was actually a hydraulic lift. The correct designation is ST-72B.	NA	NA	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 225	NA	MWA-24NFA 06/22/00	1989–1999	The wash pad is located outside of Building 533 and was used for cleaning small arms. The wash pad is connected to TOW-15 (O/W SEP-533).	533	Gun cleaning solvents	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3
AOI 226	NA	MWA-25 NFA 06/22/00	Unknown–1999	The wash area is located at the southwestern corner of Building 568 and was connected to TOW-X6.	568	Oily wastes and detergents	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 227	NA	Marine Air Base Squadron 16	Unknown	This unit acts as an administrative squadron that provides ground support and radio communications for aircraft, guards for the armory, food services, crash, fire, and rescue service in the field, and nuclear, biological, and chemical training and support. No wastes are generated.	17	None	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	13
AOI 228	NA	Electronic Maintenance	Unknown	Primarily mobile and stationary radios are repaired. Any repair service not performed here is sent to a depot level repair facility off-station. Wastes generated by the Electronic Maintenance Division are stored in Building 172 until they are disposed of in on-station trash containers.	172	Wiring harnesses, transistors, resistors, capacitors, nickel-cadmium dry cells, gel cells, wet cell batteries, empty spray paint cans, and Freon solvent	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	13
AOI 229	NA	Materials Division	Unknown	Materials Division is responsible for ordering and storing office supplies and related materials. No chemicals are involved.	20A	Office supplies	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	13
AOI 230	NA	Exchange Gas Station	1954–Unknown	The previous gas station had two 500-gallon USTs containing new oil, one 500-gallon UST containing waste oil, and three 5000-gallon UST for fuel. The newer gas station had two 500-gallon USTs containing new oil, one 500-gallon UST containing waste oil, two 25-gallon parts tanks, and four 12,000-gallon gasoline USTs.	105: 1954–1977 222: 1977–Unknown	Gasoline, crankcase oil, waste transmission fluid, and dirty solvents	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	13
AOI 231	NA	Dental Clinic	1959–Unknown	The dental clinic operates out of Building 1. Silver mercury scraps were collected in stainless steel containers containing a mercury halide solution beginning in 1980. Prior to 1980 the mercury halide solution was not used. X-ray developer and X-ray fixer were disposed of down the sanitary sewer drain. Lead linings were collected and sent off-station.	1	Silver mercury scraps, mercury halide, X-ray developer, X-ray fixer, and lead linings	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	13
AOI 232	NA	Medical Clinic	1959–Unknown	The medical clinic operated out of Building 1. From 50 to 70 gallons of biological wastes area are generated per month and sent to Naval Complex Long Beach. X-ray fixer is passed through a silver recovery system and then was disposed of into the sewer system.	1	Biological waste and X-ray fixer	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	13
AOI 233	NA	Station Motor Transport	Unknown	Station Motor Transport provided administrative service only. No vehicle maintenance or industrial waste occurs from station motor transport.	Unknown	None	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	13
AOI 234	NA	Building Trades Branch	1950s–1970	This site is located in the northwestern corner of the Station and contains carpentry, painting, housing maintenance, and office appliance repair. Carpentry repaired and assembled structural woodwork, and painting removed and applied paint to the station's buildings. Housing maintenance completed minor repairs not needed carpentry or painting. Office appliance repaired mostly typewriters. Painting generated 50 to 100 gallons of waste and 250 to 400 gallons of lacquer and used thinner annually. The wastes were placed in drums and sent to the salvage yard.	Northwestern corner of station	Waste paint, used lacquer, and thinner	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	13

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 235	NA	Metals Trades Branch	1944–1970s	The Metal Trades Branch was responsible for pipe cutting, treading, and light metal fabrication and repairs. Cutting oils, various solvent and degreasers, and metal cuttings were stored in Building 66. Wastes were disposed of in the trash, removed by Public Works to a landfill, occasionally burned in station boilers, or sold to private contractors.	66	Cutting oils, solvents, and metal cuttings	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	13
AOI 236	NA	Electrical Trades Branch	1944–1970	The Electrical Trades Shop replaced Kellman switches on power pole and substation transformers. The components typically contained Parnol, an insulating fluid that is believed to contain PCBs. Four to five switches are believed to be disposed of at the Moffett Trenches.	17	PCBs	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	13
AOI 237	NA	General Services	1944–1970	General Service provided trash collection and pest and weed control. Primary materials handled are 2,4-D, DDT, and other undetermined pesticides, which are stored in Building 41. Pesticide wastes were reportedly disposed of in a “Class A landfill near Santa Barbara.” No pesticide wastes were disposed of at the station.	Northwestern corner of station, 41	Pesticides	No	While the DON recognizes that some pesticides contain PFAS, the DON has no information or documentation verifying the use, storage, or release of PFAS materials at this site.	13
AOI 238	NA	Air Traffic Control Squadron 48	1970–1983	This unit maintains diesel electric generator and motor transport vehicles. Approximately 255 gallons of waste oil and hydraulic fluids were generated per month. The waste fluids are stored in Building 24 until facilities management empties the containers.	24	Waste oil and hydraulic fluid	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	13
AOI 239	NA	Naval Calibration Laboratory	Mid-1970s–Unknown	The Naval Calibration Laboratory recertifies and calibrates physical measuring and electronic measuring equipment. Small quantities of batteries were generated and disposed of in a nearby dumpster. Instruments containing radium or other radioactive dials were never handled at the laboratory.	176	Batteries	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	13
AOI 240	NA	Mobile Calibration Complex 3	Mid-1970s–Unknown	This site has capabilities similar to those of the Naval Calibration Laboratory but is deployable. The largest waste generated was paints. Expired carbon tetrachloride, aerosol flux remover, and contaminated rags were intermittently generated.	NA	Paints, carbon tetrachloride, aerosol flux remover, and contaminated rags	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	13
AOI 241	NA	Headquarters and Maintenance Squadron 16 Power Plants	1972–1982	The facility consisted of a tank shop for maintenance of fuel cells and a test cell shop for performance checks on aircraft engines. Approximately 60 gallons of waste lubrication and JP-5 were generated a month, with half of that being disposed of in floor drains in Hangar 2 and the rest going into a bowser that was then emptied into the crash crew pit storage tanks. Approximately 400 gallons a month of B&B 3100, a biodegradable aircraft surface cleaner, were used to clean the concrete testing pads.	190, Hangar 2	Waste lubrication, JP-5, and B&B 3100	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	13
AOI 242	NA	Headquarters and Maintenance Squadron 16 Ordnance	1984–Unknown	The ordnance group cleans ordnance with cleaning fluids, such as PS661 and PD680. The waste cleaning fluids are stored in a 55-gallon drum and are disposed of by Facilities Management.	190	PS661 and PD680	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	13

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 243	NA	Marine Air Base Squadron 16 Ground Support Equipment	1970–Unknown	This unit's function is to maintain and operate equipment needed for training and positioning or aircraft. Wastes generated from operations were composed mostly of oils, fuels, degreasers, hydraulic fluids, and cleaning solvents. The wastes were stored in a bowser that was towed to the Crash Crew Burn Pit when full.	Public Works Compound: 1970–1984 251: 1984–Unknown	Oils, fuels, degreasers, hydraulic fluids, and cleaning solvents	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	13
AOI 244	NA	Marine Air Base Squadron 16 Supply	1950s–Unknown	This unit ordered and stored material needed for aircraft. From 100 to 150 drums of various POLs are stored at any given time. No waste is generated by the unit.	90: 1950s–1984 250: 1984–Unknown	POLs	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	13
AOI 245	NA	Marine Air Group 38	1976–Unknown	This unit was an aviation support squadron that provided precision approach for aircraft using radar, communication gear, and generators. Crankcase oil, diesel, hydraulic fluid, and battery acids are generated monthly and kept in drums until Facilities Management picks up the drums for disposal. Approximately six defective or spent radar tubes are generated every six months.	176	Crankcase oil, diesel, hydraulic fluid, battery acids, and radar tubes	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	13
AOI 246	NA	Marine Wing Support Group 37 Detachment	Unknown	This unit provided training in the operation of motor vehicles and provided support vehicles for base operations. Waste oil and hydraulics fluids were disposed of in a UST located on the southern side of Building 186. Rags, sandpaper, and other cleaning operation waste are also generated. Waste paint thinner was disposed into a storm drain located at the western end of Building 187.	186, 187	Waste oil, hydraulics fluids, and paint thinner	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	13
AOI 247	NA	Sewer Lift Stations	Unknown	Five lift stations are located on the Station for the sewage system.	6168, 6169, B212, 204, 205	Sewage	No	Operations at the site did not involve materials known to contain PFAS. Therefore, no known releases of products containing PFAS are suspected.	13
AOI 248	NA	UST C4 and C5	1943–1996	UST C4 was a 7,000-gallon steel tank. UST C5 was an 800-gallon steel tank.	NA	Fuel oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 249	NA	UST 1 NFA 05/14/97	1944–1993	UST 1 was a 1,000-gallon steel tank.	NA	Fuel oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 250	NA	UST 3 (NFA 09/03/97), and 4A (NFA 10/28/96)	1943–1993	UST 3 was a 1,000-gallon steel tank and UST 4A was a 7,000-gallon steel tank. Excavation was not required for either tank; no contaminants were reported.	NA	Fuel oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 251	NA	UST 4B (NFA 10/28/96), 5 (NFA 03/31/97), 7 (NFA 08/11/97), 9 (01/27/97), 11 (NFA 08/11/97), and 20A (NFA 08/11/97)	1943–1991	UST 4B was a 360-gallon steel tank. UST 9 was a 500-gallon steel tank and UST 20A was a 1,000-gallon steel tank. Excavation was not required; no contaminants reported. UST 5 was a 7,000-gallon steel tank and UST 7 was a 3,000-gallon steel tank. UST 11 was a 200-gallon steel tank. Excavation and backfill activities were completed.	NA	Fuel oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 252	NA	UST 4C (NFA 10/28/96), 18A (Open), and 18B (Open),	1943–1991	UST 4C was a 360-gallon steel tank. Excavation was not required; no contaminants were reported. USTs 18A and 18B were 1,000-gallon steel tanks. The tank was closed by the RAC contractor.	NA	Gasoline	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 253	NA	UST 10A (NFA 01/27/97)	1943–1991	UST 10A was a 360-gallon steel tank. Excavation and backfill of concrete electrical vault were complete; no contamination report was prepared.	NA	Diesel	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 254	NA	UST 16 (See IRP Site-13W), 22A-1 (NFA 03/03/97), and 26 (NFA 10/18/97)	1942–1991	UST 16 was a 1,000-gallon steel tank. Contamination was assessed under CLEAN II IRP Site 13W. UST 22A-1 was a 15,000-gallon steel tank. Former IRP Site 16(A). Excavation and backfill activities were completed under the RAC. UST 26 was a 10,000-gallon steel tank. Excavation was not required; no contaminants were reported.	NA	Fuel oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 255	NA	UST 22A-2 NFA 03/03/97	1942–1991	UST 22A-1 was a 15,000-gallon steel tank. Former IRP Site 16(A). Excavation and backfill activities were completed under the RAC.	NA	Gasoline	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 256	NA	USTs 22B-1, 22B-2, 22B-3, 22C-1, 22C-2, 22C-3, 22H-1, 22H-2, 22H-3, 22I-1, 22I-2, 22I-3, 22J-1, 22J-2, 22J-3, 22K-1, 22K-2, 22K-3, 22L-2, 22L-3, 22M-1, 22M-2, and 22M-3 All NFA 03/03/97	1942–1991	USTs 22B-1, 22B-2, 22B-3, 22C-1, 22C-2, 22C-3, 22H-1, 22H-2, 22H-3, 22I-1, 22I-2, 22I-3, 22J-1, 22J-2, 22J-3, 22K-1, 22K-2, 22K-3, 22L-2, 22L-3, 22M-1, 22M-2, and 22M-3 were all 8,000-gallon steel tanks. Former IRP Site 16(A). Excavation and backfill activities completed under the RAC.	NA	Gasoline	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 257	NA	USTs 22D-1, 22D-2, 22D-3, 22D-4, 22E-1, 22E-2, 22E-3, 22F-1, 22F-2, 22F-, 22G-1, 22G-1, 22G-2, and 22G-3 All NFA 03/03/97	1942–1991	USTs 22D-1, 22D-2, 22D-3, 22D-4, 22E-1, 22E-2, 22E-3, 22F-1, 22F-2, 22F-, 22G-1, 22G-1, 22G-2, and 22G-3 were all 7,000-gallon steel tanks. Former IRP Site 16(A). Excavation and backfill activities were completed under the RAC.	NA	Gasoline	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 258	NA	UST 22L-1 NFA 03/03/97	1942–1991	UST 22L-1 was a 500-gallon steel tank. Former IRP Site 16(A). Excavation and backfill activities were completed under the RAC.	NA	Gasoline	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 259	NA	UST 23C NFA 03/22/99	1977–1997	UST 23C was a 500-gallon steel tank. Excavation and backfill activities were completed under the RAC.	NA	Gasoline	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 260	NA	UST 27A (Open), and 27B (Open)	1942–1994	USTs 27A and 27B were 10,000- gallon steel tanks. Excavation and backfill activities were completed under the RAC.	NA	Diesel	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 261	NA	UST 28 (NFA 06/06/97), 28A (NFA 01/27/97), and 29A (See IRP Site 3)	1942–1993	UST 28 was a 2,000-gallon steel tank. The tank was removed with a Clean Closure Determination. USTs 28A and 29A were 7,000-gallon steel tanks. Excavation and backfill activities were completed for UST 28A. UST 29A was removed without piping on August 12, 1993, in the presence of the OCHCA Inspector.	NA	Fuel oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 262	NA	UST 32 NFA 04/11/97	1942–1991	UST 32 was a 360-gallon steel tank. Excavation was not required; no contaminants were reported.	NA	Fuel oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 263	NA	UST 35 NFA 03/31/97	1943–1996	UST 35 was a 7,000-gallon steel tank. Excavation and backfill activities were completed.	NA	Fuel oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 264	NA	UST 42 NFA 04/02/99	1944–1997	UST 42 was a 1,000-gallon steel tank. Excavation and backfill activities were completed.	NA	Fuel oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 265	NA	UST 47 NFA 06/17/98	1942–1997	UST 47 was an 800-gallon steel tank. Excavation and backfill activities were completed.	NA	Fuel oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 267	NA	UST 58 NFA 01/07/98	1945–1991	UST 58 was a 2,000-gallon steel tank. Excavation was not required; no contaminants were reported.	NA	Fuel oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 268	NA	UST 66 NFA 01/21/98	1944–1991	UST 66 was a 450-gallon steel tank. Excavation and backfill activities were completed.	NA	Fuel oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 269	NA	UST 89 Open	Unknown–1999	UST 89 was 30 (drum) steel. Excavation and backfill activities were completed. The drum was removed in the presence of the OCHCA Inspector.	NA	Waste diesel or other fuel	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 270	NA	UST 90 (See IRP Site 12) and 93 (NFA 05/14/97)	1953–1993	UST 90 was a 500-gallon steel tank. Tank and piping were removed (corroded) in the presence of the OCHCA Inspector. UST 93 was a 1,000-gallon steel tank. Excavation and backfill activities were completed.	NA	Fuel oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 271	NA	UST 91 (NFA 08/11/97)	1953–1996	UST 91 was a 10,000-gallon steel tank. Excavation and backfill activities were completed.	NA	Fuel oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 272	NA	USTs 105A (Open) and 105B (Open)	1952–1993	USTs 105A and 105B were 12,000-gallon steel tanks. Excavation/backfill activities were completed.	NA	Gasoline	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 273	NA	USTs 105C (Open) and 105D (Open)	1952–1993	UST 105C was a 10,000-gallon steel tank and UST 105D was a 5,000-gallon steel tank. Excavation/backfill activities were completed.	NA	Diesel	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 274	NA	USTs 105E (Open) and 105F (Open)	1952–1993	UST 105E was a 5,000-gallon steel tank and UST 105F was a 300-gallon steel tank. During excavation activities for USTs 105A, B, C, D, and E, and additional tank (105F) was discovered. The tank was removed and disposed of offsite. Excavation/backfill activities were completed.	NA	Gasoline or diesel fuel	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 275	NA	UST 132 NFA 01/27/97)	1961–1993	UST 132 was a 2,000-gallon steel tank. Excavation and backfill activities were completed.	NA	Fuel oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 276	NA	UST 133 (133B) NFA 04/13/99	1961–1997	UST 133 was a 2,200-gallon steel tank. Excavation was not required; no contaminants were reported.	NA	Fuel oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 277	NA	UST 134 NFA 06/06/97	1961–1993	UST 134 was a 2,220-gallon steel tank. The tank was removed with a clean closure determination.	NA	Fuel oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 278	NA	UST 135 Open	1961–1997	UST 135 was a 2,200-gallon steel tank. Excavation and backfill activities were completed.	NA	Fuel oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 279	NA	UST 161 NFA 01/27/97	1964–1993	UST 161 was a 2,000-gallon steel tank. Excavation and backfill activities were completed.	NA	Fuel oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 280	NA	UST 171 NFA 10/21/97	1965–1993	UST 171 was a 550-gallon steel tank. Excavation and backfill activities were completed.	NA	Diesel	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 281	NA	UST 172A NFA 06/06/97	1966–1993	UST 172A was a 3,000-gallon steel tank. The tank was removed with a clean closure determination.	NA	Diesel	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 282	NA	UST 172B NFA 06/06/97	1996–1993	UST 172B was a 3,000-gallon steel tank. The tank was removed with a clean closure determination.	NA	Gasoline	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 283	NA	UST 177 NFA 01/21/98	1968–1993	UST 177 was a 1,000-gallon steel tank. Excavation was not required; no contaminants were reported.	NA	Fuel oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 284	NA	UST 181 NFA 01/21/98	1967–1997	UST 181 was an 800-gallon steel tank. The UST with monitoring systems was associated with O/W SEP-551 (removed).	NA	Waste oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 285	NA	UST 183 NFA 01/21/97	1968–1993	UST 183 was a 500-gallon steel tank. Excavation was not required; no contaminants were reported.	NA	Diesel	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 286	NA	UST 184 NFA 06/06/97	1969–1993	UST 184 was a 4,000-gallon steel tank. Tank was removed with a clean closure determination.	NA	Fuel oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 287	NA	UST 185 NFA 04/02/99	1969–1993	UST 185 was a 750-gallon concrete tank. Investigation activities were conducted under the Extended Site Inspection program. This tank is identified as AOC MMS-04 (Delivery Order No. 51).	NA	Waste oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 288	NA	UST 186A (NFA 01/27/97) and 186C (NFA 01/27/97)	1970–1993	USTs 186A and 186C were 10,000-gallon steel tanks. Excavation was not required; no contaminants were reported.	NA	Gasoline	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 289	NA	UST 186B NFA 01/27/97	1970–1993	UST 186B was a 10,000-gallon steel tanks. Excavation was not required; no contaminants were reported.	NA	Diesel	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 290	NA	UST 186D NFA 02/21/00	1970–1999	UST 186D was a 500-gallon concrete tank. The UST with monitoring system was associated with O/W SEP-186(2).	NA	Waste oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 291	NA	UST 203A (NFA 06/02/97) and 203B (NFA 06/02/97)	1982–1994	USTs 203A and 203B were 500-gallon steel tanks. RFA was conducted; NFA was recommended.	NA	Waste oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 292	NA	UST 213 NFA 06/06/97	1973–1993	UST 213 was a 2,000-gallon steel tank. It was removed with a clean closure determination.	NA	Fuel oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 293	NA	UST 222A, 222B, 222C, 222D Open	1974–1998	USTs 222A, B, C, and D were 12,000-gallon fiberglass tanks. The station-wide annual testing program last tested the USTs on November 26, 1996. UST 222C failed.	NA	Gasoline	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 294	NA	UST 222G, 222H Open	1974–1998	USTs 222G and 222H were 550-gallon fiberglass tanks. The USTs were located north of building 222; the surface area was covered with concrete and asphalt.	222	Oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 295	NA	UST 222I Open	1974–1998	UST 222I was a 550-gallon fiberglass tank. The UST was located north of building 222I; the surface area was covered with concrete and asphalt.	222L	Waste oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 296	NA	UST 226 NFA 08/11/97	1980–1996	UST 226 was a 550-gallon fiberglass tank.	NA	Hydraulic fluid	No	Although some aviation lubrication/hydraulic fluids may contain PFAS, there are no records or information indicating that lubrication/hydraulic fluids stored at the site contained PFAS and no releases of products known to contain PFAS have been documented.	3
AOI 297	NA	UST 249 NFA 06/06/97	1984–1993	UST 249 was a 14,000-gallon steel tank. The tank was removed with a clean closure determination.	NA	Fuel oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 298	NA	UST 251 NFA 03/09/00	1984–1998	UST 251 was a 700-gallon fiberglass tank associated with O/W SEP-251.	NA	Waste oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 299	NA	UST 252 NFA 03/09/00	1990–1998	UST 252 was a 500-gallon fiberglass tank with a monitoring system associated with O/W SEP-252. It was a lift station to the sanitary sewer.	NA	Waste oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 300	NA	UST 268 Open	1984–1998	UST-268, which is approximately 2 acres, is located in the southern portion of Parcel 24. UST-268 was a base fuel filling station primarily used for government vehicles. Prior to 1991, the site contained UST-18A and UST-18B. These were 1,000-gallon steel gasoline USTs that were installed in 1943. UST-18A and UST-18B were removed by the base before 1991. In 1984, the base replaced UST-18A/B with UST-268 and a new fuel delivery system. UST-268 was a 4,500-gallon fiberglass gasoline tank. UST-268 was removed in December 1998. From 1998 to 2000 approximately 20,800 tons of contaminated soil were removed and treated onsite.	NA	Gasoline	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3, 4
AOI 301	NA	UST 273 (SI-3A) Open	1987–1999	UST 273 was a 300-gallon fiberglass tank with a monitoring system associated with O/W SEP-273 (also known as O/W SEP SI-3B).	NA	Waste oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 302	NA	UST 300 NFA 09/18/98	1973–1993	UST 300 was a 7,000-gallon steel tank. No excavation was conducted.	NA	Fuel oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 303	NA	UST 506 NFA 01/27/97	1986–1998	UST 506 was a 360-gallon steel tank. Excavation and backfill activities were completed.	NA	Diesel	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 304	NA	UST 508 (SI-2A) (NFA 03/09/00) and 509 (SI-1A) (NFA 05/18/00)	1985–1998	USTs 508 and 509 were 100-gallon steel tanks associated with O/W SEP-508 (also known as SI-2B) and with O/W SEP-509 (also known as SI-1B).	NA	Waste oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 305	NA	UST 526A (NFA 11/16/00) and 526B (NFA 11/16/00)	1987–1999	USTs 526A and 526B were 580-gallon steel tanks associated with O/W SEP-526. The tanks were in a below-grade vault.	NA	Waste oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 306	NA	UST 530A NFA 03/18//98	1988–1997	UST 530A was a 2,000-gallon steel tank. Excavation was not required; no contaminants were reported.	NA	Diesel	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 307	NA	UST 530B NFA 12/09/99	1988–1998	UST 530B was a 1,000-gallon fiberglass tank associated with O/W SEP-530.	NA	Waste oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 308	NA	UST 534A NFA 04/21/00	1988–1999	UST 534A was a 5,000-gallon fiberglass tank. This UST was used to store fuel for fire training exercises (runoff from training pad flows to O/W SEP-534).	NA	Contaminated JP-5	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 309	NA	UST 536 and 543	1988–1999	UST 536 was a 150-gallon fiberglass tank with monitoring system associated with O/W SEP-536. UST 543 was a 1,000-gallon steel tank with monitoring system associated with O/W SEP-543.	NA	Waste oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 310	NA	AST 24C NFA 11/26/97	Unknown	AST 24C was a 360-gallon steel tank. No contaminants were detected.	NA	Heating fuel	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 311	NA	AST 27 NFA 05/15/00	Unknown–1997	AST 27 was a 500-gallon steel tank.	NA	Diesel	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 312	NA	AST 28A Open	Unknown–1999	AST 28A was originally AST 28, a 150-gallon steel tank.	NA	Diesel	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 313	NA	AST 28B Open	Unknown–1998	AST 28B was a 15-gallon steel tank.	NA	Diesel	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 314	NA	AST 106 NFA 02/24/97	Unknown–1996	AOC SAT-7. AST 106 was a 500-gallon steel tank.	NA	Propane	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 315	NA	AST 169 NFA 09/28/00	Unknown–1998	AOC SAT-3A. AST 169 was a 219,000-gallon steel tank.	NA	JP-5	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 316	NA	AST 170 NFA 09/28/00	Unknown–1998	AOC SAT-15. AST 170 was a 217,000-gallon steel tank.	NA	JP-5	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 317	NA	AST 183 Open	Unknown–1999	AOC SAT-15. AST 183 was a 50-gallon steel tank.	NA	Diesel	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 318	NA	AST 186 NFA 05/13/00	Unknown–1997	AOC SAI-8. AST 186 was a 1,000-gallon steel tank.	NA	Waste oil	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 319	NA	AST 194A and 194B (Formerly IRP Site 7N) Closed	Unknown–1999	AOC SAI-1A and AOC SAI-1B. ASTs 194A and 194B were 30,000-gallon steel tanks.	NA	JP-5	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 320	NA	AST 198A and 198B Open	Unknown–1998	AOC SAT-2A and AOC SAT-2B. ASTs 198A and 198B were 30,000-gallon steel tanks.	NA	JP-5	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 321	NA	AST 227 NFA 05/15/00	Unknown–1997	AST 227 was a 1,750-gallon steel tank.	NA	Diesel	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 322	NA	AST 273A and 273B Open	Unknown–1999	AOC SAI-9 and AOC SAI-10. ASTs 273A and 273B were 500-gallon steel tanks.	NA	JP-5	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 323	NA	AST 526 Open	Unknown–1999	AOC SAI-6. AST 526 was a 100-gallon steel tank.	NA	JP-5	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3

Table 6-2: Areas of Interest Recommended for No Further Action (continued)

PFAS AOI[a]	Site Identification	Site Name and Status[b]	Use Dates	Description	Associated Buildings	Type of Material Stored/Used/Spilled/ Disposed of	Potential for PFAS	Conclusions	Source(s)
AOI 324	NA	AST 537 NFA 05/15/00	Unknown–1997	AOC SAI-11. AST 537 was a 1,000-gallon steel tank.	NA	Solvent waste	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 325	NA	AST 558A Open	Unknown–1998	AST 540A was a 5,000-gallon steel tank, and AST 540B was a 1,000-gallon steel tank that contained Moffett Trench waste. The ASTs were removed on June 10, 1997, and both received no further action approval on May 15, 2000.	NA	Diesel	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 326	NA	AST 558B Open	Unknown–1998	AOC SAI-4. AST 558B was a 2,000-gallon steel tank.	NA	Unleaded gas	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 327	NA	AST 568B Open	Unknown–1999	AOC SAT-13. AST 568B was a 550-gallon steel tank.	NA	Noncombustible waste	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 328	NA	AST 6169A	Unknown	AST 6169A is a 200-gallon steel tank. This was an active AST when Parcel 9 was transferred to the Army.	NA	Diesel	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3
AOI 329	NA	AST 6169B NFA 05/15/00	Unknown–1997	AST 6169B was a 200-gallon steel tank. It was proposed for transfer to the Army (Parcel 9).	NA	Diesel	No	No materials that contain PFAS are documented to have been used, stored, released, or disposed of at this site.	3

Note:
a. Duplicate entry for AOI 23 (AOI 29) in the previous (draft) version of this report was removed.
b. "Inactive" or "closed" status indicates that environmental activities at or associated with the AOI are no longer being conducted, as documented in the cited sources. AOIs that do not have a site identification and site name and status, marked as NA, are those that were identified during interviews. As such, the AOIs have not undergone regulatory review, have not been delineated, and do not have official site names or associated regulatory status.

Acronyms:
AOC = area of concern; AOI = area of interest; AMS = air photo, miscellaneous, stain, possible spill; Army = United States Department of the Army; AST = aboveground storage tank; BCT = Base Realignment and Closure Cleanup Team; CERFA = Community Environmental Response Facilitation Act of 1992; CO = Carve-Out; DDD = dichlorodiphenyldichloroethane; DDE = dichlorodiphenyldichloroethylene; DDT = dichlorodiphenyltrichloroethane; DO = delivery order; DON = United States Department of the Navy; DOT = United States Department of Transportation; EBS = Environmental Baseline Survey; GSE = ground support equipment; HMH = Heavy Medium Helicopter; HMM = Marine Medium Helicopter Squadron; IAS = Initial Assessment Study; ID = identification; IRP = Installation Restoration Program; JP-5 = jet propellant, grade 5; MAE miscellaneous air emissions; MALS = Marine Aviation Logistics Squadron; MATCS = Marine Air Traffic Control Squadron; MAW = Marine Aircraft Wing; MCAS = Marine Corps Air Station; MCL = maximum contaminant level; MEK = methyl ethyl ketone ; MGR = miscellaneous grease rack; mogas = motor gasoline; MWA = miscellaneous, wash area; MWR = Morale, Welfare, and Recreation; MWSS = Marine Wing Support Squadron; NA = not applicable; NAVFAC SW = Naval Facilities Engineering Command Southwest; NFA = no further action; OCHCA = Orange County Health Cary Agency; O/W SEP = oil/water separator; PAH = polycyclic aromatic hydrocarbon; PCB = polychlorinated biphenyl; PFAS = per- and polyfluoroalkyl substances; POL = petroleum, oil, lubricant; PR = preliminary review; RAC = remedial action contract; RCRA = Resource Conservation and Recovery Act; RFA = RCRA Facility Assessment; RI = Remedial Investigation; SCAQMD = South Coast Air Quality Management District; SI = Site Inspection; SVOC = semivolatile organic compound; TCE = trichloroethene ; TCP = trichloropropane; TPH = total petroleum hydrocarbons; TOW = treatment, oil/water separator; UST = underground storage tank; VOC = volatile organic compound; VSI = visual site inspection

Sources:
1. Enviro Compliance Solutions, Inc. 2017. *Final Finding of Suitability to Transfer #9 for Carve-Outs 2 and 9*. March 2.
2. Bechtel National Inc. (BNI). 2000b. *Final Record of Decision/Remedial Action Plan Operable Unit 2 No Action Sites and Area of Concern*. July 7.
3. BNI. 2001a. *Final Basewide Environmental Baseline Survey, Marine Corps Air Facility Tustin, California*. March 21.
4. BNI. 2002a. *Finding of Suitability to Transfer for a Portion of Parcel 24 Former Marine Corps Air Station Tustin, California*. September 26.
5. BNI. 2002b. *Final Finding of Suitability to Transfer #5 for a Portion of Parcel 1 (Carve Out-11) and Portions of Parcel 16, 27, and 40 (Carve Out-8)*. December 17.
6. BNI. 2005. *Final Finding of Suitability to Transfer #7 for Carve-Out 3, Portions of Carve-Out 5, and Carve-Out 8*. April 1.
7. CDM Federal Programs Corp. 2002. *Revised Final Finding of Suitability to Lease for Southern Parcels Carve-Out Areas 1, 2, 3, and 4*.
8. Jacobs Engineering Group, Inc. 1994. *Final Environmental Baseline Survey (EBS) for CERFA Report Marine Corps Air Station Tustin, California*. April 14.
9. DON. 1994. *BRAC Cleanup Plan Marine Corps Air Station Tustin, California*. March.
10. DON. 2001a. *Final Finding of Suitability to Transfer #1 for Parcels 3, 21, 38, 39, and portions of 40*. August 1.
11. DON. 2002. *Final Finding of Suitability to Lease for Carve-Out Areas 5, 6, 7, 8, 9, 10, and 11*. April 26.
12. United States Marine Corps Air Station Tustin. 1997. *Final Finding of Suitability to Lease, Interim Lease, Building 29 (Hangar 2) Marine Corps Air Station Tustin*. June 13.
13. Brown and Caldwell. 1985. *Initial Assessment Study of Marine Corps Air Station, Tustin California*. September 1.
14. BNI. 2000c. *Final Finding of Suitability to Lease for Parcels 1, 2, 18, 19, 20, 21, and 22, Marine Corps Air Facility Tustin California*. September.
15. BNI. 2006. *Final Finding of Suitability to Transfer Carve-Outs 1 and 4 Former Marine Corps Air Station Tustin, California*. February.
16. Interviews.

Table 6-3: Next Steps in the CERCLA Process for AOIs Where Further Investigation May Be Warranted

PFAS AOI(s)	Previous PFOA/PFOS/PFBS Results for Groundwater	CERCLA Status	Property Owner[a]	Recommendation[c]
IRP Site 1	PFOA/PFOS > DoD (2019a) screening levels. PFBS > U.S. EPA (2021b) screening level.[b] Highest PFAS concentrations observed at the Station.	Open	City	Conduct RI to evaluate impacts to soil and groundwater.
IRP Site 3	PFOA/PFOS > DoD (2019a) screening levels. PFBS > U.S. EPA (2021b) screening level.[b]	Open	DON	Conduct RI to evaluate impacts to soil and groundwater.
IRP Site 5N	No site-specific data available.	Closed	City	Notify current property owner[d] and conduct RI to evaluate impacts to soil and groundwater.
IRP Site 5S(a)	PFOA/PFOS > DoD (2019a) screening levels. Concentrations generally greater than upgradient locations.	Open	City	Conduct RI to evaluate impacts to soil and groundwater.
IRP Site 5S(b)	No site-specific data available, but samples collected adjacent to the site have PFOA/PFOS > DoD (2109a) screening levels.	Closed	Costco	Notify current property owner[d] and conduct RI to evaluate impacts to soil and groundwater.
IRP Site 9a	No site-specific data available, but samples collected upgradient of the site have PFOA/PFOS > DoD (2019a) screening levels.	Closed	DON	Conduct RI to evaluate impacts to soil and groundwater.
IRP Site 9b	No site-specific data available, but samples collected upgradient of the site have PFOA/PFOS > DoD (2019a) screening levels.	Closed	DON	Conduct RI to evaluate impacts to soil and groundwater.
IRP Site 13E	No site-specific data available, but samples collected downgradient of IRP Site 13E and near IRP Site 13S have PFOA/PFOS > DoD (2019a) screening levels and the estimated plume boundaries include IRP Site 13E.	Closed	Multiple	Notify current property owner[d] and conduct RI to evaluate impacts to soil and groundwater.
IRP Site 13S	Samples collected downgradient of two of the three subareas have PFOA/PFOS > DoD (2019a) screening levels. Upgradient sample has only PFOA > DoD (2019a) screening level, suggesting that IRP Site 13S is a source area.	Open	DON	Conduct RI to evaluate impacts to soil and groundwater.
IRP Site 13W	PFOA > DoD (2019a) screening level. No upgradient sources identified, suggesting that IRP Site 13W is a source.	Open	Multiple, including DON	Notify current property owner[d] and conduct RI to evaluate impacts to soil and groundwater.
AOI 1	PFOA/PFOS > DoD (2019a) screening levels and upgradient concentrations, indicating a release in this area.	Open	City	Notify current property owner[d] and conduct RI to evaluate impacts to soil and groundwater.
Crash Crew AOC (AOIs 2–10)	PFOA/PFOS > DoD (2019a) screening levels and upgradient concentrations. PFBS > U.S. EPA (2021b) screening level[b] and upgradient concentrations. Appears to be a significant source area.	Closed	DON	Conduct RI to evaluate impacts to soil and groundwater.
Fire/Rescue Station AOC (AOIs 11–14)	PFOA/PFOS > DoD (2019a) screening levels in all wells, but concentrations are similar to upgradient samples collected downgradient of Drum Storage Area No. 3.	Closed	DON	Conduct RI to evaluate impacts to soil and groundwater.
Warehouse AOC (AOI 15)	PFOA/PFOS > DoD (2019a) screening levels in all wells, but concentrations are similar to upgradient sample.	Closed	DON	Conduct RI to evaluate impacts to soil and groundwater.
AOI 16	PFOA/PFOS > DoD (2019a) screening levels. PFBS > U.S. EPA (2021b) screening level.[b] PFOA concentrations near AOI 16 are about three times higher than in upgradient temporary well TW14S, which suggests that PFAS may have been released in the vicinity of AOI 16.	Closed	DON	Conduct RI to evaluate impacts to soil and groundwater.
AOI 17	PFOA/PFOS > DoD (2019a) screening levels. Concentrations upgradient of AOI 17 but downgradient of IRP Site 3 were higher than those measured closest to AOI 17, indicating that IRP Site 3 may be the CO-6 site having the greatest impact on the first WBZ. However, AOI 17 may also be contributing to the PFAS concentrations noted in wells downgradient of Hangar 2.	Open	DON	Conduct RI to evaluate impacts to soil and groundwater.
AOI 18	No site-specific data available.	Closed	Vestar/Kimco LP	Notify current property owner[d] and conduct RI to evaluate impacts to soil and groundwater.
AOI 19	No site-specific data available.	Closed	City	Notify current property owner[d] and conduct RI to evaluate impacts to soil and groundwater.
AOI 20	City and new owner collected and recently shared with the DON property transfer due diligence data regarding PFAS concentrations in soil and groundwater.	Closed	Brookfield Homes Southern California LLC	Notify current property owner[d] and review due diligence data prior to making recommendation.
AOI 21	Location is estimated to be in an area of CO-5 where PFOA/PFOS concentrations > DoD (2019a) screening levels.	NA	DON	Conduct RI to evaluate impacts to soil and groundwater.
AOI 22	No site-specific data available.	Closed	City	Notify current property owner[d] and conduct RI to evaluate impacts to soil and groundwater.
AOI 24	No site-specific data available.	NA	Multiple	Notify current property owner[d] and conduct RI to evaluate impacts to soil and groundwater.
AOI 161	No site-specific data available.	NA	Costco	Notify current property owner[d] and conduct RI to evaluate impacts to soil and groundwater.
AOI 162	No site-specific data available.	NA	Army	Notify current property owner[d] and conduct RI to evaluate impacts to soil and groundwater.
AOI 163	No site-specific data available.	NA	Army or City (exact location TBD)	Notify current property owner[d] and conduct RI to evaluate impacts to soil and groundwater.

Table 6-3: Next Steps in the CERCLA Process for AOIs Where Further Investigation May Be Warranted (continued)

PFAS AOI(s)	Previous PFOA/PFOS/PFBS Results for Groundwater	CERCLA Status	Property Owner[a]	Recommendation[c]
AOI 172	No site-specific data available.	NA	Lowe's HIW, Inc.	Notify current property owner[d] and conduct RI to evaluate impacts to soil and groundwater.

Notes:
a. For some AOIs, property ownership is estimated and should be verified.
b. The screening level for PFBS has been updated to 0.60 µg/L for tap water based on U.S. EPA (2021b).
c. Based on current DoD (2019) and U.S. EPA (2021b) screening levels. The DON will continue to monitor the evolving regulatory climate and if previous detections are greater than any new applicable and/or promulgated screening levels, the DON will reassess the situation.
d. Notifications will be made in writing, and the regulatory agency members of the BCT will be copied. The DON plans to work with property owners to conduct any necessary additional investigation, which will likely be limited, at least initially, to completing additional research, conducting additional interviews with knowledgeable individuals, and conducting onsite inspections. Depending on the circumstances and the results from this additional work, the DON may recommend exiting or continuing the CERCLA process.

Acronyms:

AOI = Area of Interest; Army = United States Department of the Army; BCT = Base Realignment and Closure Cleanup Team; CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act; City = City of Tustin; Costco = Costco Wholesale Corporation; DoD = United States Department of Defense; DON = United States Department of the Navy; IRP = Installation Restoration Program; PFAS = per- and polyfluoroalkyl substances; PFBS = perfluorobutanesulfonic acid; PFOA = perfluorooctanoic acid; PFOS = perfluorooctane sulfonate; TBD = to be determined; U.S. EPA = United States Environmental Protection Agency

7.0 References

AECOM-Energy Solutions Joint Venture (AEJV). 2018. Final 2018 Semi-annual Data Update, Sites 5 South (A), 6, and Mingled Plumes Area, Operable Unit 4B, Former Marine Corps Air Station Tustin, Tustin, California. December 18.

———. 2021. *Final Summary Report, Per- and Polyfluoroalkyl Substances Baseline Groundwater Sampling, Operable Unit 4B, Installation Restoration Program Site 5S(a), Former Marine Corps Air Station Tustin, California.* March.

Aptim Federal Services, LLC (APTIM). 2020a. *Final Addendum 3 to the Final Operation and Maintenance Plan, Operable Units 1A and 1B Groundwater Remedy, Installation Restoration Program Sites 3, 12, and 13S, Former Marine Corps Air Station, Tustin, California.* March.

———. 2020b. *Final 2019 Annual Performance Evaluation Report, Groundwater Remedy at Operable Units 1A (IRP-13S) and 1B (IRP-3 and -12), Former Marine Corps Air Station Tustin, Tustin, California.* October.

———. 2020c. *Final Summary Report, Per- And Polyfluoroalkyl Substances Groundwater Sampling at Monitoring Wells I001BC50S and I001MW52S, Operable Unit 3, Installation Restoration Program Site 1, Former Marine Corps Air Station Tustin, Tustin, California.* November.

———. 2021a. *Final 2020 Annual Performance Evaluation Report, Groundwater Remedy at Operable Units 1A (IRP-13S) and 1B (IRP-3 and -12), Former Marine Corps Air Station Tustin, Tustin, California.* August.

———. 2021b. *Final 2020 Annual Long-Term Monitoring Report, Operable Unit 3, Installation Restoration Program Site 1, Former Marine Corps Air Station Tustin, Tustin, California.* August.

Bechtel Environmental, Inc. (BEI). 2004. *Final Technical Memorandum, Shallow Groundwater Investigation for Operable Unit 4, Former Marine Corps Air Station Tustin, California*. June 22.

———. 2008. *Final Feasibility Study Report for Operable Unit 4B, Former Marine Corps Air Station Tustin, Tustin, California.* September.

Bechtel National, Inc. (BNI). 1996a. *Final Remedial Investigation Report for Operable Unit 3, Marine Corps Air Station, Tustin, California.* July.

———. 1996b. *Draft Final Expanded Site Inspection Report, Marine Corps Air Station Tustin, California.* Prepared for Southwest Division Naval Facilities Engineering Command. October.

———. 1997a. *Final Finding of Suitability to Lease, Interim Lease, Building 29 (Hangar 2), Marine Corps Air Station Tustin.* June 13.

_____. 1997b. *Draft Final Remedial Investigation Report for Operable Units 1 and 2, Marine Corps Air Facility Tustin, California*. November 14.

———. 2000a. *Final Site Management Plan, Marine Corps Air Facility Tustin, California.* Prepared for Southwest Division Naval Facilities Engineering Command. February.

———. 2000b. *Final Record of Decision/Remedial Action Plan, Operable Unit 2 No Action Sites and Area of Concern.* July 7.

———. 2000c. *Final Finding of Suitability to Lease for Parcels 1, 2, 18, 19, 20, 21, and 22, Marine Corps Air Facility Tustin, California.* September 1.

———. 2001a. *Final Basewide Environmental Baseline Survey, Marine Corps Air Facility Tustin, California.* March 21.

———. 2001b. *Final Amended Site Management Plan, 2001 Update, Marine Corps Air Station Tustin, California.* Prepared for Southwest Division Naval Facilities Engineering Command. October.

———. 2002a. *Final Finding of Suitability to Transfer #4 for a Portion of Parcel 24, Former Marine Corps Air Station Tustin, California.* September 26.

———. 2002b. *Final Finding of Suitability to Transfer #5 for a Portion of Parcel 1 (Carve-Out 11) and Portions of Parcels 16, 27, and 40 (Carve-Out 8), Former Marine Corps Air Station Tustin, California.* December 17.

———. 2005. *Final Finding of Suitability to Transfer #7 for Carve-Out 3, Portions of Carve-Out 5, and Carve-Out 8, Former Marine Corps Air Station Tustin, California.* April 1.

———. 2006. *Final Finding of Suitability to Transfer #8 for Carve-Outs 1 and 4, Former Marine Corps Air Station Tustin, California.* February 1.

Brown and Caldwell. 1985. *Initial Assessment Study of Marine Corps Air Station, Tustin California.* September 1.

California Regional Water Quality Control Board, Santa Ana Region (RWQCB). 2019a. *Water Quality Control Plan, Santa Ana River Basin.* June.

———. 2019b. General Waste Discharge Requirements for Discharges to Surface Waters Resulting from de minimis Discharges, Groundwater Dewatering Operations, and/or Groundwater Cleanup/Remediation Operations at Sites Within the Newport Bay Watershed, Order No. R8-2019-0061, NPDES No. CAG918002; Attachment F – Fact Sheet. November 6.

California State Water Resources Control Board (CSWRCB). 2020a. *Response Levels Lowered for Water Systems Statewide as PFAS Investigation Continues*. February 6. Available at: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/PFOA_PFOS.html

———. 2020b. Groundwater Ambient Monitoring and Assessment Program Groundwater Information System Website. Available at: http://geotracker.waterboards.ca.gov/gama/gamamap/public/

CDM Federal Programs Corporation. 2002. *Revised Final Finding of Suitability to Lease for Southern Parcels Carve-Out Areas 1, 2, 3, and 4, Marine Corps Air Station Tustin, California.* April 30.

City of Tustin (City). 2014. *MCAS Tustin Specific Plan/Reuse Plan.* November.

———. 2017. *MCAS Tustin Specific Plan/Reuse Plan.* July 18.

Enviro Compliance Solutions, Inc. 2010. *Final Operating Properly and Successfully Demonstration, Groundwater Remedial Action, Operable Units 1A (IRP-13S) and 1B (IRP-3 and -12), Former Marine Corps Air Station, Tustin, California.* February.

———. 2017. *Final Finding of Suitability to Transfer #9 for Carve-Outs 2 and 9, Former Marine Corps Air Station Tustin, Tustin, California.* March 2.

Interstate Technology & Regulatory Council (ITRC). 2020. *Technical/Regulatory Guidance, Per- and Polyfluoroalkyl Substances (PFAS).* April.

Jacobs Engineering Group, Inc. 1994. *Final Environmental Baseline Survey for CERFA Report, Marine Corps Air Station Tustin, California. April 14.*

Multi-Media Environmental Compliance Group (MMEC Group). 2016. *Final CERCLA Five-Year Review Report, Operable Units 1A, 1B North, 1B South, 3, and 4B, Former Marine Corps Air Station Tustin, Tustin, California.* October.

———. 2017a. *Final Sampling and Analysis Plan for Per- and Polyfluoroalkyl Substances Sampling for Groundwater Remedial Action at Operable Unit 3, Installation Restoration Program Site 1, Former Marine Corps Air Station Tustin, Tustin, California.* July.

———. 2017b. *Final Summary Report for Per- and Polyfluoroalkyl Substances Sampling for Groundwater Remedial Action at Operable Unit 3, Installation Restoration Program Site 1, Former Marine Corps Air Station Tustin, Tustin, California.* October.

———. 2018a. *Draft Finding of Suitability to Transfer #10 for Carve-Outs 5 and 6, Former Marine Corps Air Station Tustin, Tustin, California.* March.

———. 2018b. *Final Summary Report for November 2017 Per- and Polyfluoroalkyl Substances Sampling at Operable Unit 3, Installation Restoration Program Site 1, Former Marine Corps Air Station Tustin, Tustin, California.* April.

———. 2018c. *Final Summary Report for Per- and Polyfluoroalkyl Substances Presence/Absence Sampling in Groundwater in Carve-Outs 5 and 6, Former Marine Corps Air Station Tustin, Tustin, California.* November.

———. 2020a. *Final Summary Report, Additional Assessment of Per- and Polyfluoroalkyl Substances in Groundwater in Carve-Outs 2, 5, 6, and 9 and Groundwater and Surface Water Near Operable Unit 3 (Phase 1), Former Marine Corps Air Station Tustin, Tustin, California*. June.

———. 2020b. *Final Summary Report, Additional Assessment of Per- and Polyfluoroalkyl Substances in Groundwater in Carve-Outs 2, 5, 6, and 9 and Groundwater and Surface Water Near Operable Unit 3 (Phase 2), Former Marine Corps Air Station Tustin, Tustin, California*. October.

National Oceanic and Atmospheric Administration, National Weather Service. 2020. Seasonal Rainfall. Available online at: https://www.wrh.noaa.gov/sgx/display_text.php?product=LAXWRKPCP&title=Seasonal%20Rainfall. July 29.

Naval Facilities Engineering Systems Command Southwest (NAVFAC SW). 2012. *Base Summary, Former Marine Corps Air Station Tustin*. March.

———. 2021. Administrative Record Online Database for Former Marine Corps Air Station Tustin. Available online via https://www.bracpmo.navy.mil/brac_bases/california/former_mcas_tustin/documents.html. Link verified September 21.

RORE, Inc. 2016. *Final 2015 Annual Institutional Control Compliance Monitoring Report for Installation Restoration Program Sites 11 and 13W, Operable Unit 4B, Former Marine Corps Air Station Tustin, Tustin, California*. June.

Tierra Madre Consultants. 1993a. *Report for a Biological Assessment, MCAS Tustin.* Prepared for City of Tustin. March.

———. 1993b. *Focused Biological Survey, MCAS Tustin.* Prepared for City of Tustin. July 29.

———. 1999. *Focused Survey for Southwest Pond Turtle.* Prepared for City of Tustin.

Trevet, Inc. 2016. *Well Searches Around Bases with Potential Perfluoroalkyl Substances Sites at Various Base Realignment and Closure Installations, Former Marine Corps Air Station Tustin, California*. October.

United States Department of Agriculture (USDA). 1978. *Soil Survey of Orange County and Western Part of Riverside County, California*.

United States Department of the Army. 2002. *Transfer of BRAC Real Property, Marine Corps Air Station (MCAS) Tustin, California*. December 4.

United States Department of Defense (DoD). 2017. *Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1.* January.

———. 2019a. *Memorandum: Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program*. October 15.

———. 2019b. *Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.3.* May.

United States Department of the Navy (DON). 1994. *BRAC Cleanup Plan, Marine Corps Air Station Tustin, California*. March 14.

———. 1998. Jennifer Stone, Biologist, e-mail to Melanie Ault, Environmental Planner, BRAC, regarding survey for burrowing owl. August 4.

———. 1999. *Final Environmental Impact Statement/Environmental Impact Report, Disposal and Reuse of MCAS Tustin, California.* Prepared in conjunction with the City of Tustin. December.

———. 2001a. *Final Finding of Suitability to Transfer #1 for Parcels 3, 21, 38, 39, and portions of 40, Marine Corps Air Station, Tustin, California*. August 1.

———. 2001b. *Final Record of Decision/Remedial Action Plan, Operable Unit 3, Moffett Trenches and Crash Crew Burn Pits Site, Marine Corps Air Station, Tustin, California*. December.

———. 2002. *Final Finding of Suitability to Lease for Carve-Out Areas 5, 6, 7, 8, 9, 10, and 11 at Former MCAS Tustin, Tustin, California*. April 26.

———. 2004a. *Final Record of Decision/Remedial Action Plan, Operable Unit 1A, Former Marine Corps Air Station Tustin, California.* October.

———. 2004b. *Final Record of Decision/Remedial Action Plan, Operable Unit 1B, IRP-3 Paint Stripper Disposal Area, IRP-12 – Drum Storage Area No. 2, Former Marine Corps Air Station Tustin, California.* October.

———. 2004c. *Final No Further Action Record of Decision/Remedial Action Plan, Operable Unit 4A, Former Marine Corps Air Station Tustin, California.* November.

———. 2010. *Final Record of Decision/Remedial Action Plan for Operable Unit 4B, Former Marine Corps Air Station Tustin, California*. January 15.

———. 2020. *Interim Per- and Polyfluoroalkyl Substances Site Guidance for NAVFAC Remedial Project Managers/November 2020 Update*. November 24.

United States Environmental Protection Agency (U.S. EPA). 2016a. *Drinking Water Health Advisory for Perfluorooctane Sulfonate (PFOS)*. 822-R-16-004. May.

———. 2016b. *Drinking Water Health Advisory for Perfluorooctanoic Acid (PFOA).* 822-R-16-005. May.

———. 2016c. *Fact Sheet, PFOA and PFOS Drinking Water Health Advisories*. EPA 800-F-16-003. November.

———. 2016d. *Third Unregulated Contaminant Monitoring Rule*. December 6. Available at: https://www.epa.gov/dwucmr/third-unregulated-contaminant-monitoring-rule

———. 2017a. *UCMR 3 Occurrence Data.* January. Available at: https://www.epa.gov/dwucmr/occurrence-data-unregulated-contaminant-monitoring-rule#3

———. 2017b. U.A. EPA's Non-CBI Summary Tables for 2015 Company Progress Reports (Final Progress Reports). February.

———. 2017c. *Technical Fact Sheet – Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA)*. EPA 505-F-17-001. November.

———. 2019. *Interim Recommendations to Address Groundwater Contaminated with Perfluorooctanoic Acid and Perfluorooctanesulfonate*. December 19.

———. 2020. 40 Code of Federal Regulations Part 721, *Long-Chain Perfluoroalkyl Carboxylate and Perfluoroalkyl Sulfonate Chemical Substances; Significant New Use Rule; Supplemental Proposal*. February 20. Available at: https://www.epa.gov/sites/production/files/2020-02/documents/10003-21_prepubcopy_suppnprm_lcpfac-snur_signed_2020-02-20.pdf

———. 2021a. Human Health Toxicity Values for Perfluorobutane Sulfonic Acid (CASRN 375-73-5) and Related Compound Potassium Perfluorobutane Sulfonate (CASRN 29420-49-3). EPA/600/R-20/345F. April.

———. 2021b. Regional Screening Levels. May. Available at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables

United States Fire Administration. 2017. Choosing and using fire extinguishers. December 12. Available at: https://www.usfa.fema.gov/prevention/outreach/extinguishers.html

United States Geological Survey (USGS). 2020. California Water Science Center. Available at: https://ca.water.usgs.gov/

United States Marine Corps Air Station Tustin. 1997. *Final Finding of Suitability to Lease, Interim Lease, Building 29 (Hangar 2) Marine Corps Air Station Tustin*. June 13.

This page is intentionally blank.

Figures

This page is intentionally blank.

Former MCAS Tustin

Location Map
Not to Scale

Detail

LEGEND

Former MCAS Tustin Boundary

Notes:
MCAS = Marine Corps Air Station

Basemap Source/Aerial Photo: ESRI ArcGIS online service 2021

0 5 10 20
Miles
1 Inch = 10 Miles

Preliminary Assessment/Site Inspection Report,
Basewide Investigation of Per- and Polyfluoroalkyl Substances,
Former Marine Corps Air Station Tustin, Tustin California

Site and Vicinity Map

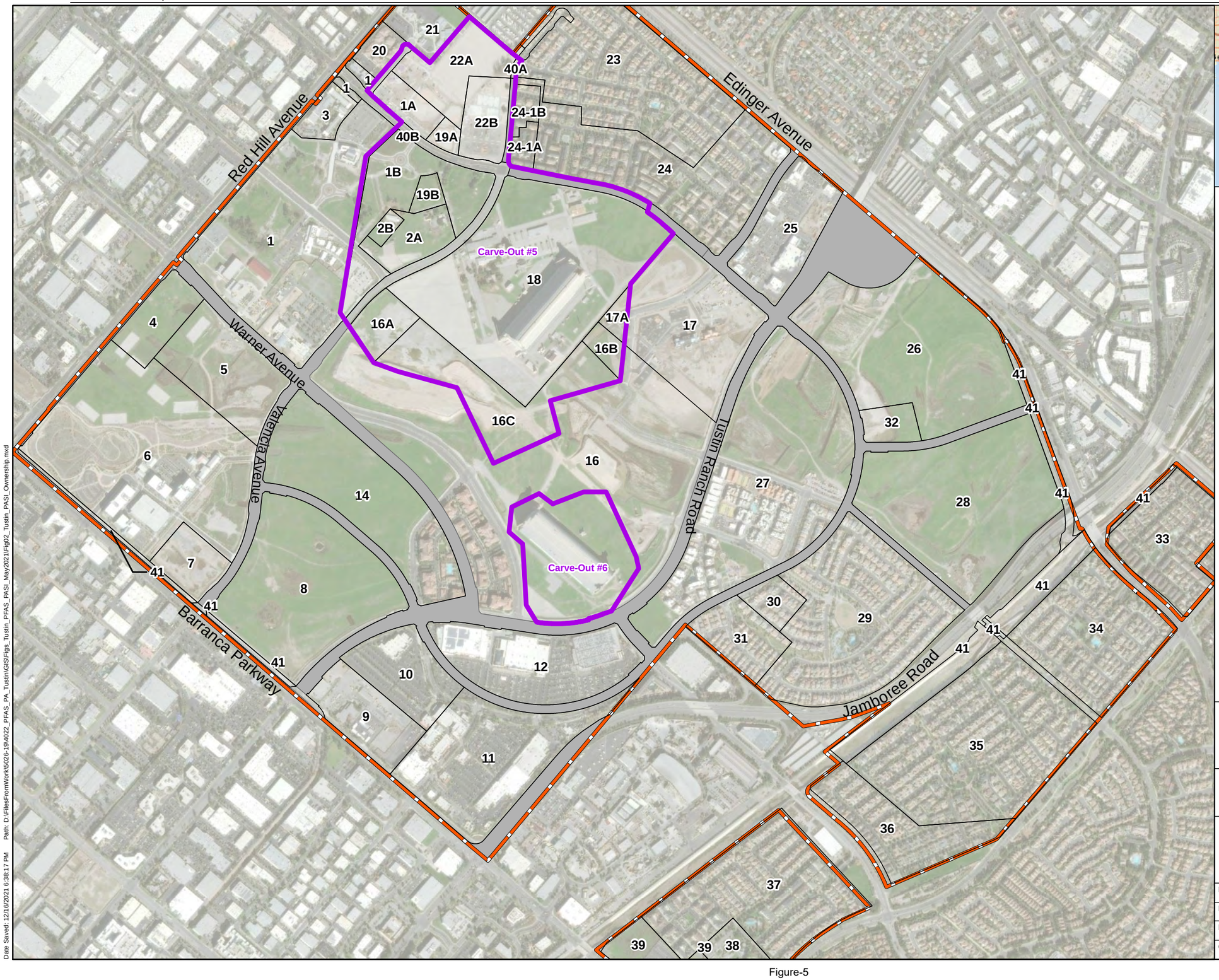
PROJECT NO.:	5026-19-4022
DATE:	December 2021
DRAWN BY:	KOB
CHECKED BY:	KS

NAVFAC

FIGURE 1

Date Saved: 12/16/2021 6:38:06 PM Path: D:\FilesFromWork\5026-19\4022_PFAS_PA_Tustin\GIS\Figs_Tustin_PFAS_PASI_May2021\Fig01_Tustin_PFAS_PASI_SiteMap.mxd

This page is intentionally blank.



LEGEND

- Department of Navy-Owned Property
- 32 — Parcel Boundary and Identification
- Former MCAS Tustin Boundary
- Parcel 40 (Right of Way[1])

Notes:
[1] Right of way may not match actual roads.

DON = Department of Navy
MCAS = Marine Corps Air Station

References:
MMEC Group, 2018. *Draft Finding of Suitability to Transfer #10 for Carve-Outs 5 and 6, Former Marine Corps Air Station Tustin, Tustin, California.* March.

Basemap Source/Aerial Photo: ESRI ArcGIS online service 2021

N
0 500 1,000 2,000
Feet
1 Inch = 1,000 Feet

Preliminary Assessment/Site Inspection Report,
Basewide Investigation of Per- and Polyfluoroalkyl Substances,
Former Marine Corps Air Station Tustin, Tustin California

DON-Owned Property

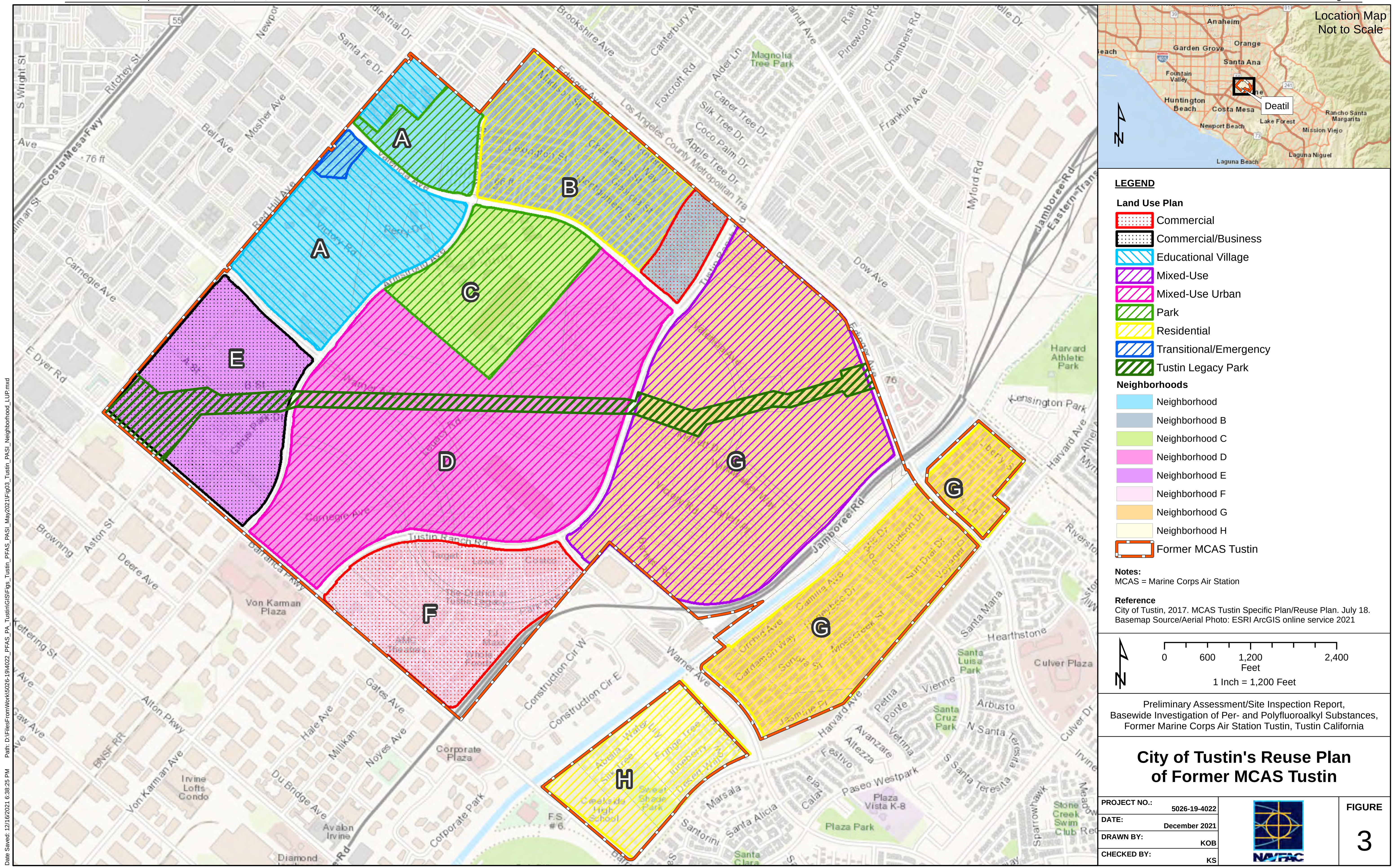
PROJECT NO.:	5026-19-4022
DATE:	December 2021
DRAWN BY:	KOB
CHECKED BY:	KS

NAVFAC

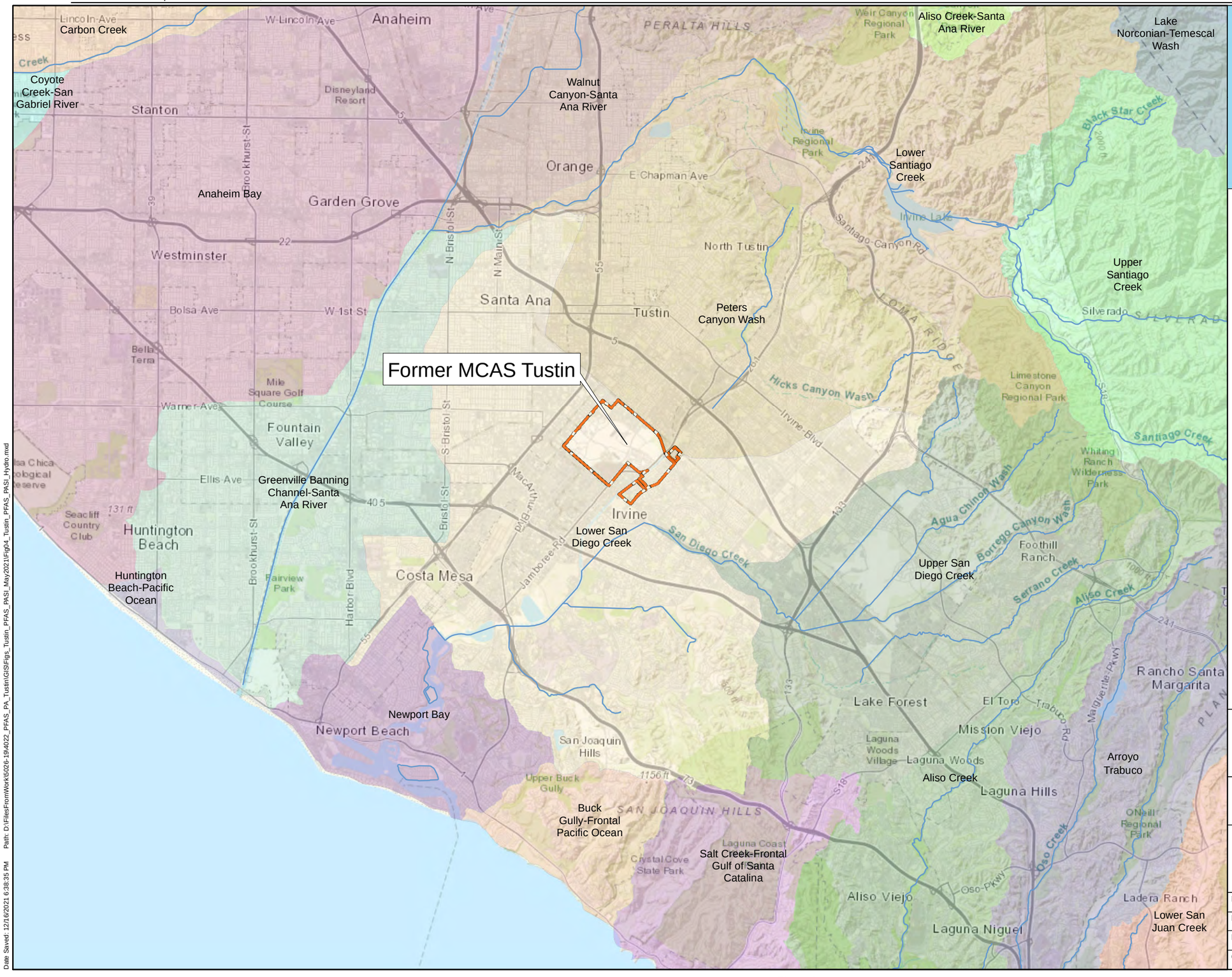
FIGURE 2

Path: D:\FilesFromWork\5026-19\4022_PFAS_PA_Tustin\GIS\Figs_Tustin_PFAS_PASI_May2021\Fig02_Tustin_PASI_Ownership.mxd
Date Saved: 12/16/2021 6:38:17 PM

This page is intentionally blank.


Location Map
Not to Scale
Anaheim
Garden Grove
Orange
Santa Ana
Fountain Valley
Huntington Beach
Costa Mesa
Deatil
Newport Beach
Lake Forest
Rancho Santa Margarita
Mission Viejo
Laguna Niguel
Laguna Beach
LEGEND
Land Use Plan
Commercial
Commercial/Business
Educational Village
Mixed-Use
Mixed-Use Urban
Park
Residential
Transitional/Emergency
Tustin Legacy Park
Neighborhoods
Neighborhood
Neighborhood B
Neighborhood C
Neighborhood D
Neighborhood E
Neighborhood F
Neighborhood G
Neighborhood H
Former MCAS Tustin
Notes:
MCAS = Marine Corps Air Station
Reference
City of Tustin, 2017. MCAS Tustin Specific Plan/Reuse Plan. July 18.
Basemap Source/Aerial Photo: ESRI ArcGIS online service 2021
0 600 1,200 2,400
Feet
1 Inch = 1,200 Feet
Preliminary Assessment/Site Inspection Report,
Basewide Investigation of Per- and Polyfluoroalkyl Substances,
Former Marine Corps Air Station Tustin, Tustin California
City of Tustin's Reuse Plan
of Former MCAS Tustin
PROJECT NO.: 5026-19-4022
DATE: December 2021
DRAWN BY: KOB
CHECKED BY: KS
FIGURE
3
A
B
C
D
E
F
G
H
Jamboree Rd
Edinger Ave
Tustin Ranch Rd
Barranca Pkwy
Red Hill Ave
Warner Ave
Harvard Ave
Costa Mesa Fwy
Von Karman Plaza
Corporate Plaza
Culver Plaza
Harvard Athletic Park
Magnolia Tree Park
Plaza Park
Plaza Vista K-8
Date Saved: 12/16/2021 6:38:25 PM
Path: D:\FilesFromWork\5026-19\4022_PFAS_PA_Tustin\GIS\Figs_Tustin_PFAS_PASI_May2021\Fig03_Tustin_PASI_Neighborhood_LUP.mxd

This page is intentionally blank.



LEGEND

Streams

Former MCAS Tustin Boundary

Hydrologic Unit Code, Subwatershed Name Scale and HU Type: HUC 12S

- 180701060605, Carbon Creek
- 180701060606, Coyote Creek-San Gabriel River
- 180702010001, Anaheim Bay
- 180702010002, Huntington Beach-Pacific Ocean
- 180702030606, Lake Norconian-Temescal Wash
- 180702030901, Upper Santiago Creek
- 180702030902, Lower Santiago Creek
- 180702031001, Aliso Creek-Santa Ana River
- 180702031002, Walnut Canyon-Santa Ana River
- 180702031003, Greenville Banning Channel-Santa Ana River
- 180702040101, Peters Canyon Wash
- 180702040102, Upper San Diego Creek
- 180702040103, Lower San Diego Creek
- 180702040201, Newport Bay
- 180702040202, Buck Gully-Frontal Pacific Ocean
- 180703010103, Arroyo Trabuco
- 180703010104, Lower San Juan Creek
- 180703010301, Aliso Creek
- 180703010302, Salt Creek-Frontal Gulf of Santa Catalina

Notes:
HU = Hydrologic Unit
HUC = Hydrologic Unit Code
MCAS = Marine Corps Air Station

Basemap Source/Aerial Photo: ESRI ArcGIS online service 2021

0 1 2 4
Miles
1 Inch = 2 Miles

Preliminary Assessment/Site Inspection Report,
Basewide Investigation of Per- and Polyfluoroalkyl Substances,
Former Marine Corps Air Station Tustin, Tustin California

Hydrological Basins

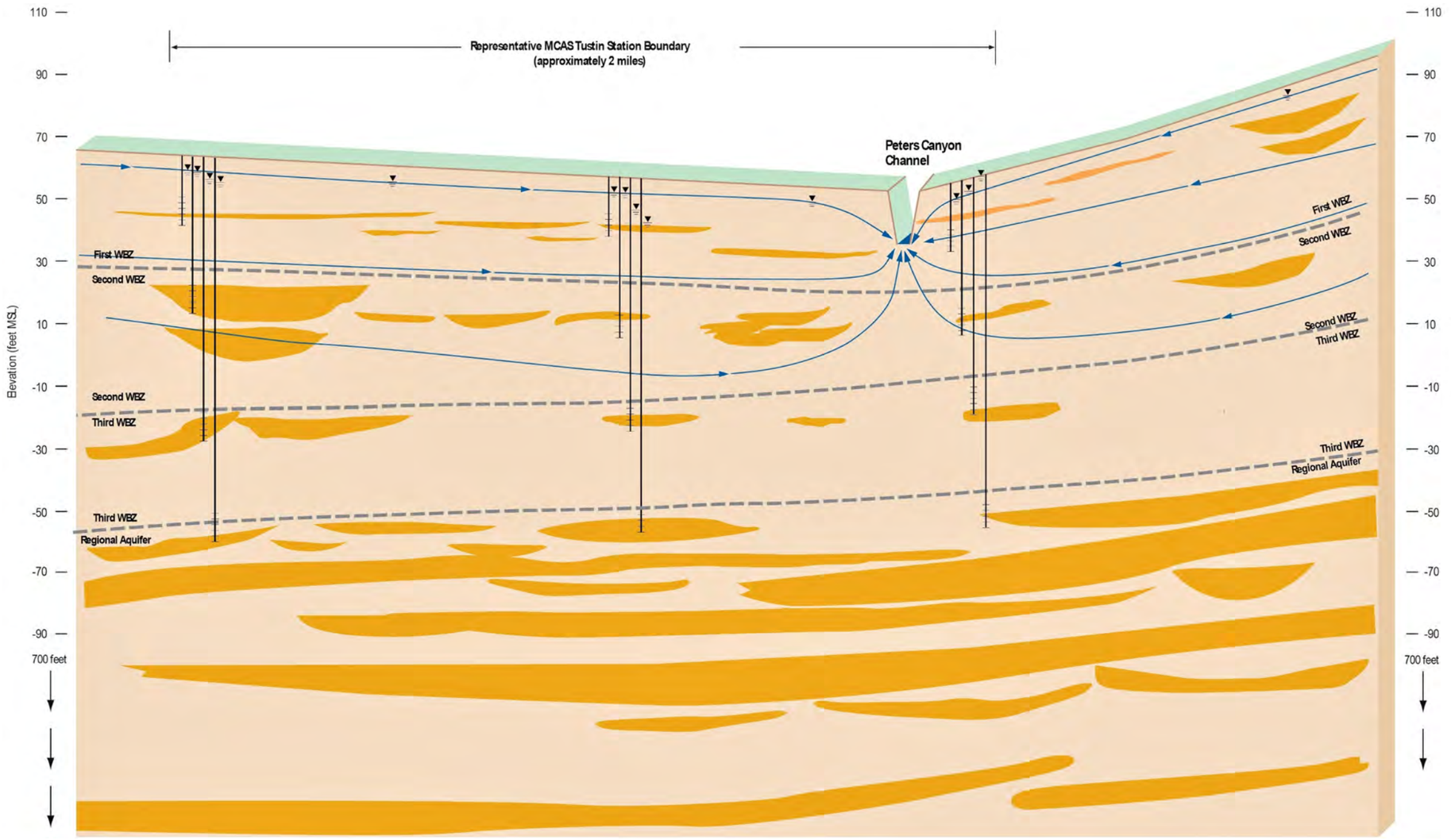
PROJECT NO.:	5026-19-4022
DATE:	December 2021
DRAWN BY:	KOB
CHECKED BY:	KS

NAVFAC

FIGURE 4

Date Saved: 12/16/2021 6:38:35 PM Path: D:\FilesFromWork\5026-19-4022_PFAS_PA_Tustin\GIS\Figs_Tustin_PFAS_PASI_May2021\Fig04_Tustin_PFAS_PASI_HydroBasins.mxd

This page is intentionally blank.



LEGEND

- Clayey Silt and Clay
- Silty Sand and Sand
- Potentiometric Surface (Water Level)
- Groundwater Flow Direction
- Monitoring Well

Notes:
Figure 5 depicts the conceptual hydrogeologic model developed during the RI for MCAS Tustin, illustrating the general relationship between the three WBZs making up the shallow aquifer, the continuous clay aquitard at the bottom of the third WBZ, and the regional aquifer underlying the facility.

Horizontal Scale: Not to Scale.

IRP = Installation Restoration Program
MCAS = Marine Corps Air Station
MSL = mean sea level
WBZ = water-bearing zone

Source:
2008. Bechtel Environmental, Inc. 2008. Final Feasibility Study Report for Operable Unit 4B, Former Marine Corps Air Station Tustin, California. September.

Preliminary Assessment/Site Inspection Report,
Basewide Investigation of Per- and Polyfluoroalkyl Substances,
Former Marine Corps Air Station Tustin, Tustin California

Conceptual Hydrogeologic Model

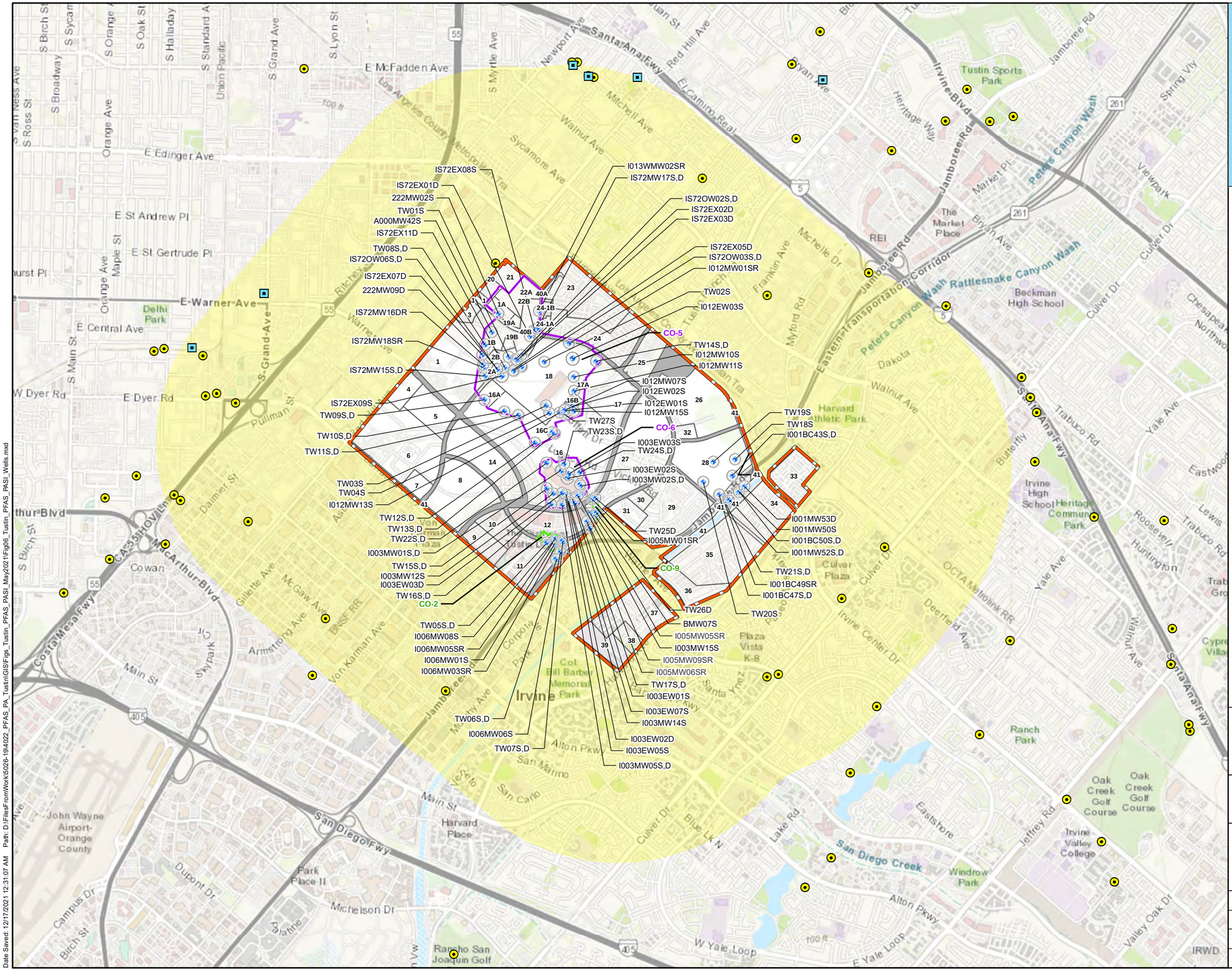
PROJECT NO.:	5026-19-4022
DATE:	December 2021
DRAWN BY:	KOB
CHECKED BY:	KS

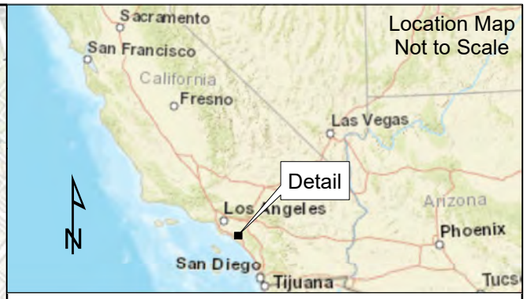
NAVFAC

FIGURE 5

Date Saved: 12/10/2021 6:38:47 PM Path: D:\FilesFromWork\5026-19\4022_PFAS_PA_Tustin\GIS\Figs_Tustin_PFAS_PASI_May2021\Fig05_Tustin_PFAS_PASI_CHM_CrossSection.mxd

This page is intentionally blank.





LEGEND

- Water Supply Domestic
- Water Supply - (Public or Unknown)
- Groundwater Monitoring Well (previously sampled for PFAS)
- Carve-Out
- Former Carve-Out – Transferred September 2021
- 32 Parcel Boundary and Identification
- Parcel 40 (Right of Way[1])
- 1 Mile Buffer Around Former MCAS Tustin Boundary
- Former MCAS Tustin Boundary

Sources:
California State Water Resources Control Board 2020. Groundwater Ambient Monitoring and Assessment Program (GAMA) Groundwater Information System Website. Available at: http://geotracker.waterboards.ca.gov/gama/gamamap/public/

Trevet, Inc. 2016. *Well Searches Around Bases with Potential Perfluoroalkyl Substances Sites at Various Base Realignment and Closure Installations,* Former Marine Corps Air Station Tustin, California. October.

United States Geological Survey (USGS). 2020. California Water Science Center. Available at: https://ca.water.usgs.gov/

Notes:
[1] Right of way may not match actual roads.

PFAS = Per- and Polyfluoroalkyl Substances
MCAS = Marine Corps Air Station

Basemap Source/Aerial Photo: ESRI ArcGIS online service 2021

0 0.25 0.5 1
Miles
1 Inch = 0.5 Miles

Preliminary Assessment/Site Inspection Report,
Basewide Investigation of Per- and Polyfluoroalkyl Substances,
Former Marine Corps Air Station Tustin, Tustin California

Well Locations

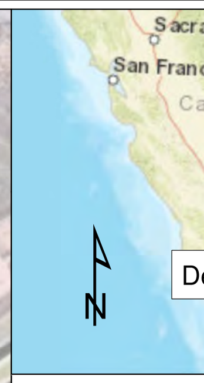
PROJECT NO.:	5026-19-4022
DATE:	December 2021
DRAWN BY:	KOB
CHECKED BY:	KS

NAVFAC

FIGURE 6

Date Saved: 12/17/2021 12:31:07 AM Path: D:\FilesFromWork\5026-19\4022_PFAS_PA_Tustin\GIS\Figs_Tustin_PFAS_PASI_May2021\Fig06_Tustin_PFAS_PASI_Wells.mxd

This page is intentionally blank.



LEGEND

- Groundwater Monitoring Well (previously sampled for PFAS)
- Temporary Groundwater Monitoring Well (previously sampled for PFAS)
- Groundwater Remedial Extraction Well (previously sampled for PFAS)
- Treatment Plant Sample
- General Groundwater Flow Direction
- Carve-Out Boundary (Navy Property)
- Former Carve-Out – Transferred September 2021
- OU-3 Boundary
- Former MCAS Tustin Boundary

Estimated Extent of PFOA, PFOS and/or PFBS Concentrations in Groundwater Exceeding DoD Screening Levels
(dashed where inferred or uncertain)

- ≥ 10,000x
- ≥ 1,000x
- ≥ 100x
- ≥ 10x
- > 1x
- 1,1-DCE > 6 µg/L
- TCE > 5 µg/L
- 1,2,3-TCP > 0.5 µg/L
- 1,2,3-TCP > 0.005 µg/L

DoD Groundwater Screening Levels for PFAS (HQ = 0.1)			
PFAS Analyte	PFOA[1]	PFOS[1]	PFBS[2]
Concentration (µg/L)	0.04	0.04	0.6

TW18S			
Date	PFOS	PFOA	PFBS
2/20/2020	0.0043	0.0127	0.00379 J

Well Identification
Sample Date
Result in µg/L

References:
1) U.S. Department of Defense. 2019. *Memorandum: Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program.* October 15.
2) U.S. Environmental Protection Agency. 2021b. *Regional Screening Levels.* May. Available at: https://www.epa.gov/risk/regional-screeninglevels-rsls-generic-tables
3) AECOM-Energy Solutions Joint Venture (AEST JV). 2019. *Final 2019 Semiannual Data Update, Installation Restoration Program Sites 5S(a), 6, and the Mingled Plumes Area, Operable Unit 4B, Former Marine Corps Air Station Tustin, Tustin, California.* December.
4) AEST JV. 2020. *Final 2019 Annual Institutional Control Compliance Monitoring Report for Installation Restoration Program Sites 11 and 13W, Operable Unit 4B, Former Marine Corps Air Station Tustin, Tustin, California.* July.
5) APTIM. 2019. *Final 2019 Semiannual Groundwater Monitoring Data Summary, Groundwater Remedy at Operable Units 1A (IRP-13S) and 1B (IRP-3 and -12), Former Marine Corps Air Station Tustin, Tustin, California.* November.
6) APTIM. 2020. *Final 2020 Semiannual Groundwater Monitoring Data Summary, Groundwater Remedy at Operable Units 1A (IRP-13S) and 1B (IRP-3 and -12), Former Marine Corps Air Station Tustin, Tustin, California.* August.
7) Multimedia Environmental Compliance Group (MMEC Group). 2018a. *Final Summary Report for November 2017 Per- and Polyfluoroalkyl Substances Sampling at Operable Unit 3, Installation Restoration Program Site 1, Former Marine Corps Air Station Tustin, Tustin, California.* April.
8) MMEC Group. 2018b. *Final Summary Report for Per- and Polyfluoroalkyl Substances Presence/Absence Sampling in Groundwater in Carve-Outs 5 and 6, Former Marine Corps Air Station Tustin, Tustin, California.* November.
9) MMEC Group. 2020a. *Final Summary Report, Additional Assessment of Per- and Polyfluoroalkyl Substances in Groundwater in Carve-Outs 2, 5, 6, and 9 and Groundwater and Surface Water Near Operable Unit 3 (Phase 1), Former Marine Corps Air Station Tustin, Tustin, California.* June.
10) MMEC Group. 2020b. *Final Summary Report, Additional Assessment of Per- and Polyfluoroalkyl Substances in Groundwater in Carve-Outs 2, 5, 6, and 9 and Groundwater and Surface Water Near Operable Unit 2 (Phase 2), Former Marine Corps Air Station Tustin, Tustin, California.* October.

Notes:
1) PFAS data were collected by the Navy from November 2017 through December 2020 (References 3-10). Shaded concentrations exceed DoD groundwater screening levels.
2) To support PA/SI recommendations, PFAS exceedances of the DoD groundwater screening levels were used to estimate the extent of groundwater requiring further investigation for PFOA, PFOS, and PFBS. The estimated plumes were delineated by dividing the PFOA, PFOS, and PFBS concentrations at each location by their respective DoD screening levels, resulting in a unitless multiple of the DoD screening levels for each PFAS. The maximum exceedance at each location was then used for plume delineation regardless of when the sample was collected or which PFAS had the highest exceedance. **Therefore, the interpreted plume shown is not representative of a single PFAS, the total PFAS in groundwater, or a particular sampling event and should be used for screening purposes only.**

µg/l = micrograms per liter
DCE = dichloroethene
DoD = Department of Defense
HQ = hazard quotient
IRP = Installation Restoration Program
J = estimated result
MCAS = Marine Corps Air Station
OU = Operable Unit
PA/SI = Preliminary Assessment/Site Inspection
PFAS = per- and polyfluoroalkyl substances
PFOS = perfluorooctane sulfonate
PFOA = perfluorooctanoic acid
PFBS = perfluorobutanesulfonic acid
TCE = trichloroethene
TCP = trichloropropane
U = not detected at the indicated limit

Basemap Source/Aerial Photo: ESRI ArcGIS online service 2021

0 300 600 1,200
Feet
Graphic Scale

Preliminary Assessment/Site Inspection Report, Basewide Investigation of Per- and Polyfluoroalkyl Substances, Former Marine Corps Air Station Tustin, Tustin California

Estimated Lateral Extent of PFOA/PFOS/PFBS Concentrations Exceeding DoD Groundwater Screening Levels in the First Water-Bearing Zone

PROJECT NO.:	5026-19-4022	FIGURE
DATE:	December 2021	7
DRAWN BY:	KOB	
CHECKED BY:	KS	

NAVFAC

Date Saved: 12/17/2021 12:31:40 AM Path: D:\FilesFromWork\5026-19\4022_PFAS_PA_Tustin\GIS\Figs_Tustin_PFAS_PASI_May2021\Fig07_Tustin_PFAS_PASI_FWBZ.mxd

This page is intentionally blank.

IS72OW02D

Date	PFOS	PFOA	PFBS
2/19/2020	0.0192	0.446	0.0264

TW08D

Date	PFOS	PFOA	PFBS
7/6/2020	0.0210	0.0952	0.00874

222MW09D

Date	PFOS	PFOA	PFBS
7/1/2020	0.0150 J	0.0839	0.0105
Duplicate	0.0154 J	0.0822	0.0105

IS72EX11D

Date	PFOS	PFOA	PFBS
9/16/2019	0.0365	0.593	0.0269
3/26/2020	0.0380	0.594	0.0257
9/29/2020	0.0362	0.486	0.0244 J

IS72MW16DR

Date	PFOS	PFOA	PFBS
7/1/2020	0.0650	0.167	0.0236

IS72EX07D

Date	PFOS	PFOA	PFBS
9/16/2019	0.615	0.256	0.0638
3/26/2020	0.700	0.284	0.0715
9/29/2020	0.540	0.256	0.0671

IS72OW06D

Date	PFOS	PFOA	PFBS
2/19/2020	0.0319	0.500	0.0307

IS72MW15D

Date	PFOS	PFOA	PFBS
7/1/2020	0.136	0.167	0.0191

TW09D

Date	PFOS	PFOA	PFBS
7/7/2020	0.349	0.463	0.0693

TW10D

Date	PFOS	PFOA	PFBS
7/9/2020	0.531	0.854	0.101

TW11D

Date	PFOS	PFOA	PFBS
7/9/2020	0.305	0.184	0.0407

IS72EX01D

Date	PFOS	PFOA	PFBS
9/16/2019	0.0832	0.541	0.0414
3/26/2020	0.0735	0.601	0.0382
9/29/2020	0.0662	0.538 J	0.0339

IS72MW17D

Date	PFOS	PFOA	PFBS
7/1/2020	0.0432	0.781	0.0262
Duplicate	0.0418	0.755	0.0285

IS72EX02D

Date	PFOS	PFOA	PFBS
9/16/2019	0.0522	0.664	0.0418
3/26/2020	0.0514	0.766	0.0375
9/29/2020	0.0450	0.557	0.0302

IS72EX03D

Date	PFOS	PFOA	PFBS
9/16/2019	0.0532	0.763	0.0376
Duplicate	0.0527	0.748	0.0379
3/26/2020	0.0581	0.832	0.0373
9/29/2020	0.0539	0.632	0.0293

IS72EX05D

Date	PFOS	PFOA	PFBS
9/16/2019	0.0996	0.657	0.0538
3/26/2020	0.0902	0.644	0.0520
9/29/2020	0.0873	0.553	0.0507

TW14D

Date	PFOS	PFOA	PFBS
7/9/2020	0.0233	0.250	0.0328

IS72OW03D

Date	PFOS	PFOA	PFBS
2/19/2020	0.0169	0.540	0.0172

TW13D

Date	PFOS	PFOA	PFBS
7/9/2020	0.231	4.22	0.290

TW23D

Date	PFOS	PFOA	PFBS
7/8/2020	1.32	10.8	0.711

I003MW01D

Date	PFOS	PFOA	PFBS
7/1/2020	3.12	10.6	0.982

TW24D

Date	PFOS	PFOA	PFBS
7/8/2020	0.0326	1.55	0.0448

I003MW02D

Date	PFOS	PFOA	PFBS
7/1/2020	0.879	11.1	0.364
Duplicate	0.972	11.0	0.397

I001MW43D

Date	PFOS	PFOA	PFBS
11/15/2017	0.00539 U	0.00812 J	0.00308 J
12/9/2020	0.0044 J	0.0088 U	0.0040 J

I001MW53D

Date	PFOS	PFOA	PFBS
11/14/2017	0.00517 U	0.0575	0.0115
12/9/2020	0.0049 J	0.0822	0.0154

I003EW02D

Date	PFOS	PFOA	PFBS
9/16/2019	0.665	7.76	0.323
3/26/2020	0.779 J	8.04	0.317
9/29/2020	0.635	5.46	0.249 J

TW22D

Date	PFOS	PFOA	PFBS
7/7/2020	0.444	0.961	0.209

TW12D

Date	PFOS	PFOA	PFBS
7/9/2020	0.198	0.570	0.0982

TW25D

Date	PFOS	PFOA	PFBS
7/6/2020	0.0111	0.437	0.0259

TW15D

Date	PFOS	PFOA	PFBS
7/10/2020	0.00226 J	0.00266 J	0.00176 U

I003EW03D

Date	PFOS	PFOA	PFBS
9/16/2019	1.10	7.34	0.395
3/26/2020	1.29	9.66	0.513
9/29/2020	0.514	4.07	0.263 J

TW26D

Date	PFOS	PFOA	PFBS
7/6/2020	0.00179 U	0.00448	0.00179 U

I001MW50D

Date	PFOS	PFOA	PFBS
11/14/2017	0.00579 U	0.00884 J	0.00292 J
Duplicate	0.00247 J	0.0101	0.00387 J
12/9/2020	0.0084	0.0164	0.0047 J

I001MW52D

Date	PFOS	PFOA	PFBS
11/14/2017	0.00573 U	0.137	0.0325
12/9/2020	0.0129	0.166	0.0215

TW16D

Date	PFOS	PFOA	PFBS
7/10/2020	0.00271 J	0.00114 J	0.00142 U

I001MW47D

Date	PFOS	PFOA	PFBS
11/15/2017	0.00548 U	0.00631 J	0.00280 J
12/10/2020	0.0049 J	0.0091 UJ	0.0039 J

TW21D

Date	PFOS	PFOA	PFBS
7/7/2020	0.00245 J	0.0157	0.00455

I003MW05D

Date	PFOS	PFOA	PFBS
7/1/2020	0.0570	0.0109	0.00356 J

TW07D

Date	PFOS	PFOA	PFBS
7/2/2020	0.0402	0.00616	0.00185 U

TW05D

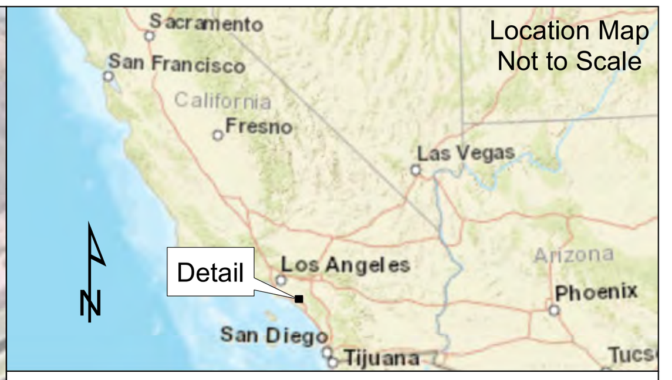
Date	PFOS	PFOA	PFBS
7/2/2020	0.0172	0.352	0.00677

TW17D

Date	PFOS	PFOA	PFBS
7/8/2020	0.334 J	3.87	0.169 J

TW06D

Date	PFOS	PFOA	PFBS
7/6/2020	0.00643	0.0390	0.00191 U



LEGEND

- Groundwater Monitoring Well (previously sampled for PFAS)
- Temporary Groundwater Monitoring Well (previously sampled for PFAS)
- Groundwater Remedial Extraction Well (previously sampled for PFAS)
- General Groundwater Flow Direction
- Carve-Out Boundary (Navy Property)
- Former Carve-Out – Transferred September 2021
- OU-3 Boundary
- Former MCAS Tustin Boundary

Estimated Extent of PFOA, PFOS and/or PFBS Concentrations in Groundwater Exceeding DoD Screening Levels
(dashed where inferred or uncertain)

- ≥ 100x
- ≥ 10x
- > 1x
- TCE > 5 µg/L
- 1,2,3-TCP > 0.5 µg/L
- 1,2,3-TCP > 0.005 µg/L

DoD Groundwater Screening Levels for PFAS (HQ = 0.1)

PFAS Analyte	PFOA[1]	PFOS[1]	PFBS[2]
Concentration (µg/L)	0.04	0.04	0.6

TW06D ← Well Identification

Date	PFOS	PFOA	PFBS
7/6/2020	0.00643	0.0390	0.00191 U

Sample Date; Result in µg/L

References:
1) U.S. Department of Defense. 2019. *Memorandum: Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program.* October 15.
2) U.S. Environmental Protection Agency. 2021b. *Regional Screening Levels.* May. Available at: https://www.epa.gov/risk/regional-screeninglevels-rsls-generic-tables
3) AECOM-Energy Solutions Joint Venture (AEST JV). 2019. *Final 2019 Semiannual Data Update, Installation Restoration Program Sites 5S(a), 6, and the Mingled Plumes Area, Operable Unit 4B, Former Marine Corps Air Station Tustin, Tustin, California.* December.
4) AEST JV. 2020. *Final 2019 Annual Institutional Control Compliance Monitoring Report for Installation Restoration Program Sites 11 and 13W, Operable Unit 4B, Former Marine Corps Air Station Tustin, Tustin, California.* July.
5) APTIM. 2019. *Final 2019 Semiannual Groundwater Monitoring Data Summary, Groundwater Remedy at Operable Units 1A (IRP-13S) and 1B (IRP-3 and -12), Former Marine Corps Air Station Tustin, Tustin, California.* November.
6) APTIM. 2020. *Final 2020 Semiannual Groundwater Monitoring Data Summary, Groundwater Remedy at Operable Units 1A (IRP-13S) and 1B (IRP-3 and -12), Former Marine Corps Air Station Tustin, Tustin, California.* August.
7) Multimedia Environmental Compliance Group (MMEC Group). 2018a. *Final Summary Report for November 2017 Per- and Polyfluoroalkyl Substances Sampling at Operable Unit 3, Installation Restoration Program Site 1, Former Marine Corps Air Station Tustin, Tustin, California.* April.
8) MMEC Group. 2018b. *Final Summary Report for Per- and Polyfluoroalkyl Substances Presence/Absence Sampling in Groundwater in Carve-Outs 5 and 6, Former Marine Corps Air Station Tustin, Tustin, California.* November.
9) MMEC Group. 2020a. *Final Summary Report, Additional Assessment of Per- and Polyfluoroalkyl Substances in Groundwater in Carve-Outs 2, 5, 6, and 9 and Groundwater and Surface Water Near Operable Unit 3 (Phase 1), Former Marine Corps Air Station Tustin, Tustin, California.* June.
10) MMEC Group. 2020b. *Final Summary Report, Additional Assessment of Per- and Polyfluoroalkyl Substances in Groundwater in Carve-Outs 2, 5, 6, and 9 and Groundwater and Surface Water Near Operable Unit 3 (Phase 2), Former Marine Corps Air Station Tustin, Tustin, California.* October.

Notes:
1) PFAS data were collected by the Navy from November 2017 through December 2020 (References 3-10). Shaded concentrations exceed DoD groundwater screening levels.
2) To support PA/SI recommendations, PFAS exceedances of the DoD groundwater screening levels were used to estimate the extent of groundwater requiring further investigation for PFOA, PFOS, and PFBS. The estimated plumes were delineated by dividing the PFOA, PFOS, and PFBS concentrations at each location by their respective DoD screening levels, resulting in a unitless multiple of the DoD screening levels for each PFAS. The maximum exceedance at each location was then used for plume delineation regardless of when the sample was collected or which PFAS had the highest exceedance. **Therefore, the interpreted plume shown is not representative of a single PFAS, the total PFAS in groundwater, or a particular sampling event and should be used for screening purposes only.**

µg/l = micrograms per liter
DoD = Department of Defense
HQ = hazard quotient
IRP = Installation Restoration Program
J = estimated result
MCAS = Marine Corps Air Station
OU = Operable Unit
PA/SI = Preliminary Assessment/Site Investigation
PFAS = per- and polyfluoroalkyl substances
PFOS = perfluorooctane sulfonate
PFOA = perfluorooctanoic acid
PFBS = perfluorobutane sulfonic acid
TCE = trichloroethene
TCP = trichloropropane
U = not detected at the indicated limit
UJ = not detected estimated

Basemap Source/Aerial Photo: ESRI ArcGIS online service 2021

Graphic Scale: 0, 300, 600, 1,200 Feet

Preliminary Assessment/Site Inspection Report,
Basewide Investigation of Per- and Polyfluoroalkyl Substances,
Former Marine Corps Air Station Tustin, Tustin California

Estimated Lateral Extent of PFOA/PFOS/PFBS Concentrations Exceeding DoD Groundwater Screening Levels in the Second Water-Bearing Zone

PROJECT NO.:	5026-19-4022	FIGURE
DATE:	December 2021	8
DRAWN BY:	KOB	
CHECKED BY:	KS	

NAVFAC

Date Saved: 12/17/2021 12:29:29 AM Path: D:\FilesFromWork\5026-19\4022_PFAS_PA_Tustin\GIS\Figs_Tustin_PFAS_PASI_May2021\Fig08_Tustin_PFAS_PASI_SWBZ.mxd

This page is intentionally blank.

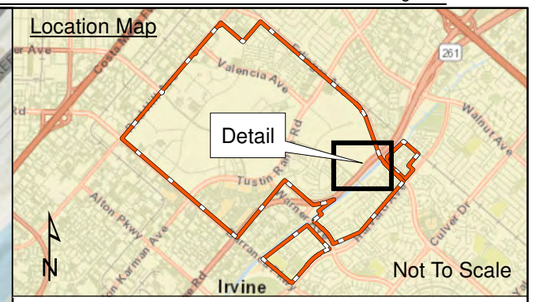
ISW03			
Date	PFOS	PFOA	PFBS
12/9/2020	0.0185	0.0275	0.0268

ISW04			
Date	PFOS	PFOA	PFBS
12/9/2020	0.0174	0.0269	0.0229

ISW07			
Date	PFOS	PFOA	PFBS
12/9/2020	0.0161	0.0254	0.0134

ISW06			
Date	PFOS	PFOA	PFBS
12/9/2020	0.0199	0.0270	0.0473 J

Location Map



LEGEND

- Surface Water Sample Location
- Drainage Flow Direction
- OU-3 Boundary
- Former MCAS Tustin Boundary

Surface Water Sample Identification

ISW03			
Date	PFOS	PFOA	PFBS
12/9/2020	0.0185	0.0275	0.0268

Result in µg/L

Sample Date

Notes:
Results in µg/L
µg/l = micrograms per liter
J = estimated result
MCAS = Marine Corps Air Station
OU = Operable Unit
PA/SI = Preliminary Assessment/Site Inspection
PFAS = per- and polyfluoroalkyl substances
PFOS = perfluorooctane sulfonate
PFOA = perfluorooctanoic acid
PFBS = perfluorobutane sulfonic acid

Reference:
APTIM 2021b *Final 2020 Annual Long-Term Monitoring Report, Operable Unit 3, Installation Restoration Program Site 1, Former Marine Corps Air Station Tustin, Tustin, California.* August..

Basemap Source/Aerial Photo: ESRI ArcGIS online service 2021

N

0 100 200 400
In Feet
1 Inch = 200 Feet

Preliminary Assessment/Site Inspection Report,
Basewide Investigation of Per- and Polyfluoroalkyl Substances,
Former Marine Corps Air Station Tustin, Tustin California

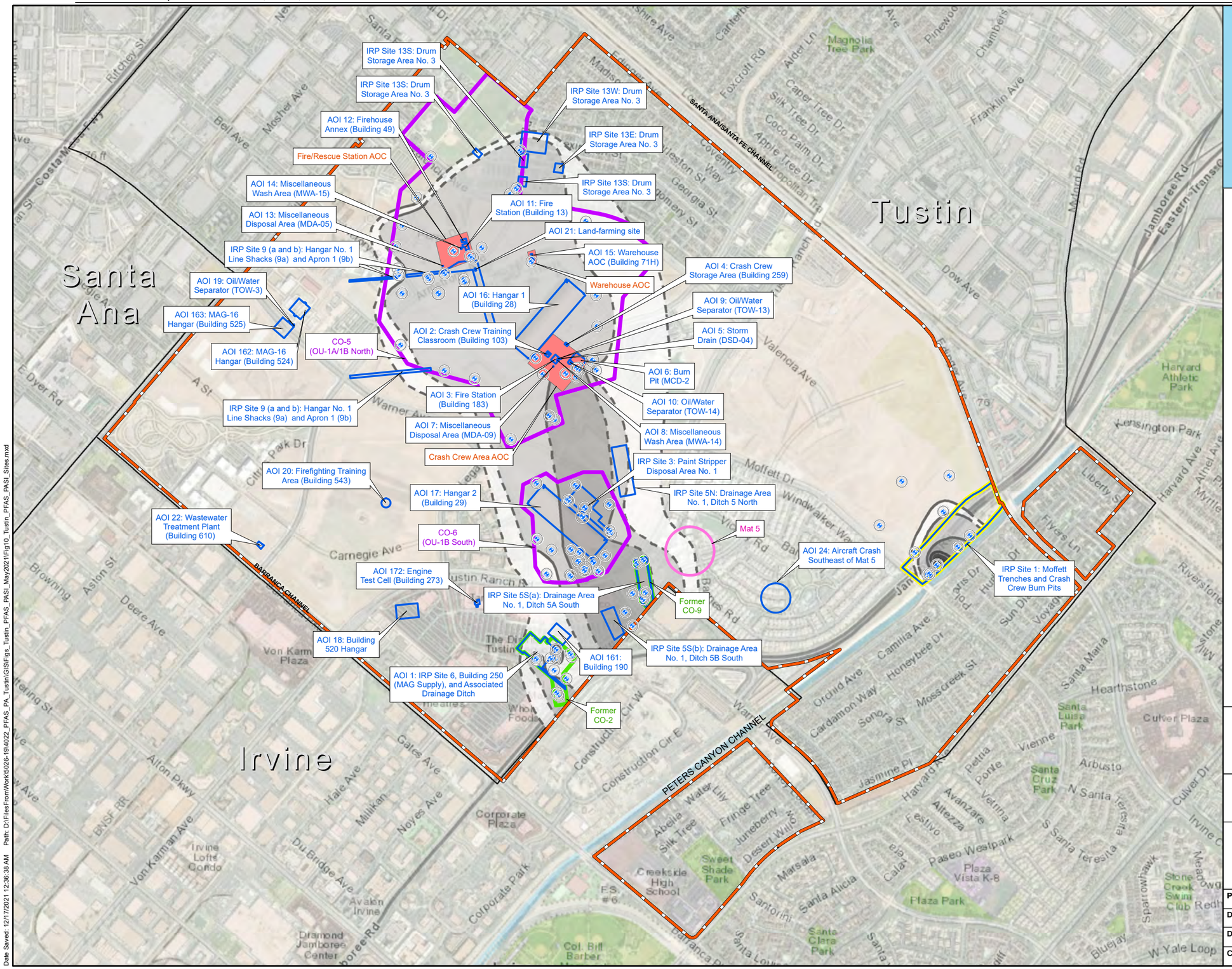
Surface Water Sampling Results for PFAS at IRP Site 1 (OU 3)

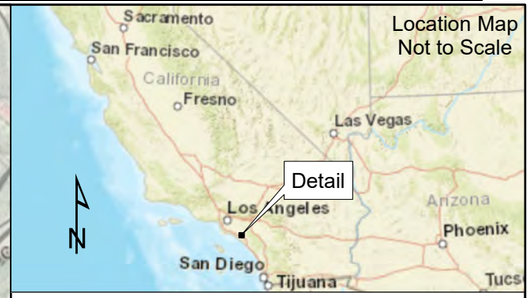
PROJECT NO.:	5026-16-7008
DATE:	December 2021
DRAWN BY:	KOB
CHECKED BY:	KS

FIGURE 9

Date Saved: 12/16/2021 6:50:18 PM Document Path: D:\FilesFromWork\5026-19\4022_PFAS_PA_Tustin\GIS\Figs_Tustin_PFAS_PASI_May2021\Fig09_Tustin_PFAS_PASI_SurfaceWater.mxd

This page is intentionally blank.





LEGEND

- Groundwater Monitoring Well (previously sampled for PFAS)
- PFAS AOI
- Carve-Out Boundary (Navy Property)
- Former Carve-Out – Transferred September 2021
- AOC
- Mat 5
- OU-3 Boundary
- Former MCAS Tustin Boundary

Estimated Extent of PFOA, PFOS and/or PFBS Concentrations in Groundwater Exceeding DoD Screening Levels in the FWBZ (dashed where inferred or uncertain)

- ≥ 10,000x
- ≥ 1,000x
- ≥ 100x
- ≥ 10x
- >1x

Notes:
AOC = Area of Concern
AOI = Area of Interest
CO = Carve-Out
DoD = Department of Defense
FWBZ = First Water-Bearing Zone
IRP - Installation Restoration Program
MAG = Marine Aircraft Group
MCAS = Marine Corps Air Station
MCD = Miscellaneous, Crash Drill Site
MWA = Miscellaneous Wash Area
OU = Operable Unit
PFAS = per- and polyfluoroalkyl substances
PFOS = perfluorooctane sulfonate
PFOA = perfluorooctanoic acid
PFBS = perfluorobutanesulfonic acid
TOW = Treatment, Oil/Water Separator Sites

Basemap Source/Aerial Photo: ESRI ArcGIS online service 2021

0 600 1,200 2,400
Feet
1 Inch = 1,200 Feet

Preliminary Assessment/Site Inspection Report,
Basewide Investigation of Per- and Polyfluoroalkyl Substances,
Former Marine Corps Air Station Tustin, Tustin California

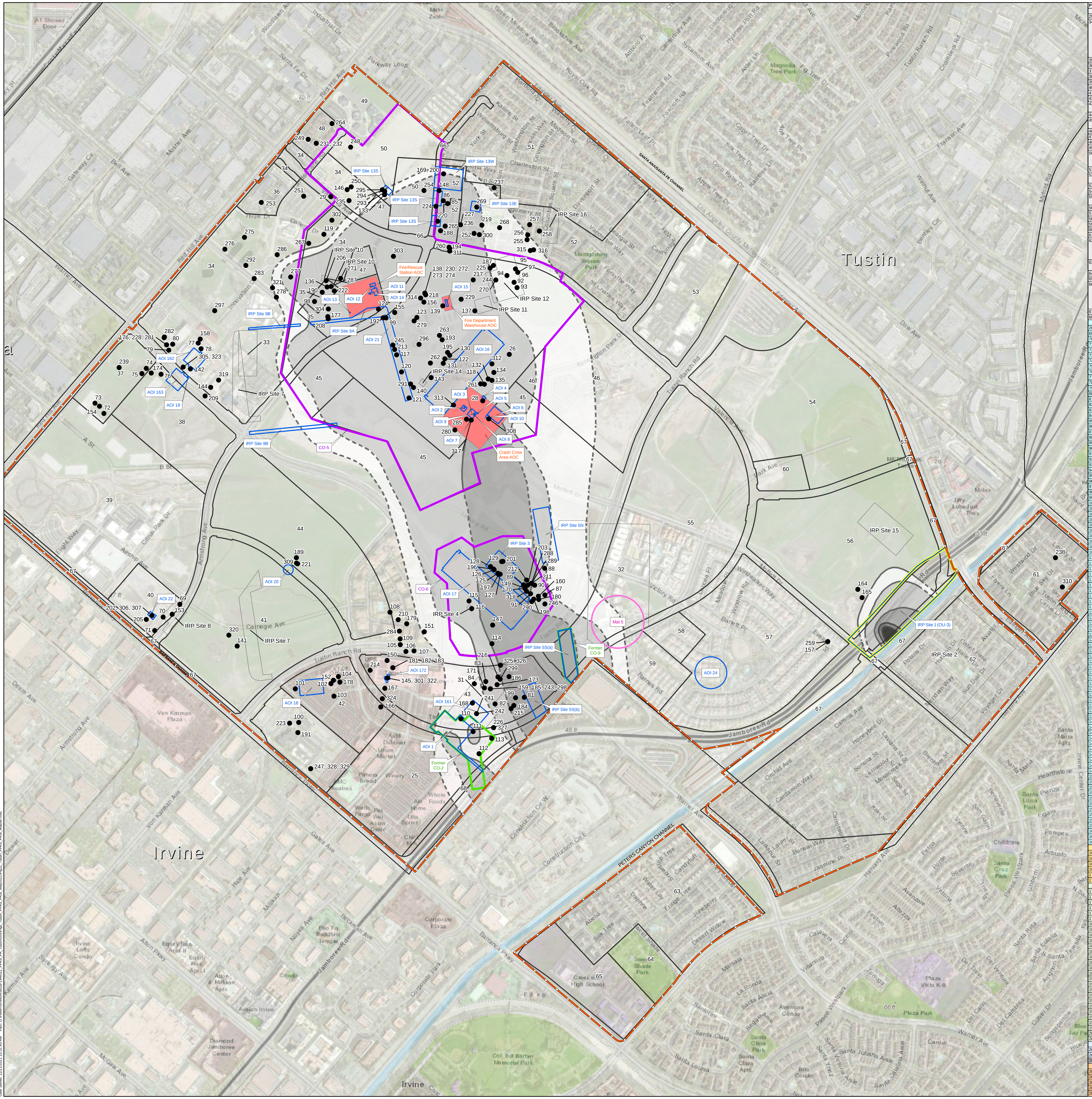
Areas of Interest Where Further Investigation May Be Warranted

PROJECT NO.:	5026-19-4022
DATE:	December 2021
DRAWN BY:	KOB
CHECKED BY:	KS

NAVFAC

FIGURE 10

This page is intentionally blank.



PFAS AOI	Site Name and Status	Associated Buildings
Parcels		
25	Parcel 11	568, 595
34	Parcel 1	2, 3, 4, 5, 10M, 77, 86, 87, 88, 132, 134, 159, 160, 165, 166, 167, 168, 172, 177, 184, 213, 218, 225, 227, 236, 238, 239, 245, 246, 249, 254, 278, 279, 300, 306, 505, 506, 516, 524, 526, 538, 539, 549, 550, 561, 563, 573, 574, 594, 602, 603
35	Parcel 2	11,12, 13, 49, 185, 230, 509
36	Parcel 3	553, 554, 557, 10E
37	Parcel 4	176, 527, 531, 532, 237, 571, 572, 601
38	Parcel 5	525, 536, 535
39	Parcel 6	None
40	Parcel 7	528, 529, 530, 566, 610, 611
41	Parcel 8	255
42	Parcel 10	508, 520, 537, 517, 581, 599
43	Parcel 12	220, 273, 537, 544, 545, 546, 568, 205, 231, 559, 565, 586, 591
44	Parcel 14	543
45	Parcel 16	10G, 29, 29A, 40B, 174, 175, 204, 265, 514, 515, 569, 592, 607, 609
46	Parcel 17	608
47	Parcel 19	189, 199, 547
48	Parcel 20	1, 42
49	Parcel 21	A, B, C
50	Parcel 22	C3, C4, 93, 128, 131, 143, 144, 145, 146, 148, 150, 163, 164, 202, 208, 216, 221, 256, 258
51	Parcel 23	162, 6798, Housing
52	Parcel 24	16, 17, 17T, 41, 53, 66, 89, 228, 247, 3005T
53	Parcel 25	604, 605
54	Parcel 26	None
55	Parcel 27	29, 39, 149, 186, 187, 233, 303, 562, 590, 596
56	Parcel 28	23A, 23B, 541, 542, 567
57	Parcel 29	10P, 23C, 23D, 23E, 23F, 6168
58	Parcel 30	None
59	Parcel 31	None
60	Parcel 32	None
61	Parcel 33 (Parcel D)	None
62	Parcel 34 -- Parcel 36	Parcel 34: 6480, 6877, 6878, 6879, 6880, Housing; Parcel 35: 215, 6873, 6874, 6875, 6876, Housing; Parcel 36: Housing
63	Parcel 37	6857, Marble Mountain Park housing community
64	Parcel 38	3003T
65	Parcel 39	None
66	Parcel 40	10B, 16, 27, 29, 77, 162, 180, 181, 182, 219, 225, 229, 231, 244, 250, 266, 303, 507, 514, 516, 525, 537, 551, 563, 568, 570, 577, 583, 589, 598, 606, 3000T, 3002T, 6480
67	Parcel 41	6873, 6874, 6877, 6878
68	Parcel 42	None
Storage, temporary (ST) and Storage, designated hazardous waste storage area (STD)		
26	STD-1 NFA 11/10/99	248
69	ST-1A; NFA 09/24/99	570
70	ST-1B; NFA 09/24/99	219
71	ST-2; NFA 09/24/99	611
72	ST-3; NFA 07/24/97	527
73	ST-4 (A, B); NFA 09/24/99	571
74	ST-5A; NFA 05/18/00	572
75	ST-5B; NFA 09/24/99	572
76	ST-6; NFA 09/24/99	536
77	ST-7; NFA 02/24/00	574
78	ST-8; NFA 02/24/00	574
79	ST-9 (A, B); NFA 09/24/99	172
80	ST-10; NFA 09/24/99	573
81	ST-11A; NFA 09/24/99	586
82	ST-11B; NFA 09/24/19	546
83	ST-12; NFA 05/18/00	252
84	ST-13 (A, B); NFA 04/21/00	585
85	ST-14 (A-C); Open	575
86	ST-15; Open	575
87	ST-16 (A, B); Open	590
88	ST-17; NFA 09/24/99	562
89	ST-18 (A-C); NFA 09/24/99	589, 186
90	ST-19; Open	186
91	ST-20 (A, B); Open	596
92	ST-21A	576
93	ST-21B; NFA 09/24/99	576
94	ST-21C; NFA 02/24/00	90
95	ST-21D; NFA 02/24/00	90
96	ST-21E; NFA 02/24/00	90
97	ST-21F; NFA 02/24/00	90
98	ST-22; NFA 05/18/00	134
99	ST-23; NFA 09/24/99	577
100	ST-24; Proposed to transfer to the Army	None
101	ST-25; NFA 09/24/99	520
102	ST-26 (A, B); ST-26A, NFA 04/21/00; ST-26B, NFA 09/24/99	581
103	ST-27; NFA 09/24/99	581
104	ST-28(A, B); NFA 09/24/99	582
105	ST-29; NFA 09/24/99	583
106	ST-30; NFA 09/24/99	182, 29
107	ST-31(A, B); NFA 09/24/99	584
108	ST-32(A-C); NFA 09/24/99	598
109	ST-33; NFA 09/24/99	583
110	ST-34A; NFA 04/21/00	591
111	ST-34B; NFA 09/24/99	591
112	ST-35; Open	556
113	ST-36; Open	267
114	ST-37(A, B); NFA 09/24/99	588
115	ST-38(A, B); NFA 09/24/99	587
116	ST-39; NFA 05/18/00	266
117	ST-40(A-C); NFA 10/31/00	578
118	ST-41(A, B); NFA 09/24/99	580
119	ST-42; NFA 05/18/00	306
120	ST-43; NFA 10/31/00	261
121	ST-44; NFA 10/31/00	201A
122	ST-45; NFA 05/18/00	263
123	ST-46; NFA 04/21/00	262
124	ST-47(A, B); NFA 10/31/00	206
125	ST-48; Open	265
126	ST-49; Open	408
127	ST-50; Open	29A
128	ST-51; Open	174
129	ST-52; Open	175
130	ST-54; NFA 09/24/99	28A
131	ST-55; NFA 04/21/00	40A
132	ST-56; NFA 04/21/00	264
133	ST-58; NFA 04/22/96	222
134	ST-59A; NFA 09/24/99	579
135	ST-59B; NFA 09/24/99	100
136	ST-60(A, B); NFA 09/24/99	185
137	ST-61; NFA 07/09/98	20A, 71F
138	ST-62 (MWA-16); NFA 04/22/96	106
139	ST-63; NFA 04/22/96	71G
140	ST-64; NFA 04/22/96	203
141	ST-65; NFA 04/22/96	71J
142	ST-66; NFA 04/22/96	526
143	ST-67; Draft Final Focused FS for OU-4	63, 78
144	ST-68(A-F); NFA 04/22/96	None
145	ST-69; NFA 04/22/96	273
146	ST-70; NFA 04/22/96	3
147	ST-71; NFA 04/22/96	62B
148	ST-72(A, B) (MWA-23); Open	16, 50
149	ST-73 (MAE-5) (MAE-4A), NFA 09/16/96	187
150	ST-74; NFA 09/16/96	None
151	ST-75(A, B), NFA 09/24/99	597
152	ST-76, NFA 09/24/99	599
153	ST-77, NFA 09/24/99	600
154	ST-78, NFA 09/24/99	601
155	ST-79, NFA 02/24/00	173
156	ST-80,NFA 04/21/00	173
157	ST-81, Open	23C
158	ST-82, NFA 02/24/00	602
159	ST-86, Open	251
160	ST-87, Open	186
164	STD-2 (formerly known as ST-53), NFA 11/10/99	23A
165	STD-3(A, B) (formerly known as ST-57 [A, B]), NFA 11/10/99	567
Miscellaneous, Air Emissions (MAE)		
166	MAE-1, Open	537
167	MAE-2, Open	537
168	MAE-3, Open	190
169	MAE-4, Open	98
170	MAE-5 (MAE-4A, ST-73), NFA 12/09/99	187
171	MAE-6, NFA 12/09/99	251
Treatment, oil/water separator Sites (TOW)		
173	TOW-1, NFA 11/16/00	566, 610
174	TOW-2, NFA 05/18/00	535, 536
176	TOW-4, NFA 06/06/97	172
177	TOW-5, NFA 05/18/00	230
178	TOW-6, NFA 03/0900	508
179	TOW-7, NFA 11/16/00	181, 551
180	TOW- 8 (A, B), NFA 04/21/00	186
181	TOW-09A, Open	273
182	TOW-09B, Open	
183	TOW-09C, Open	
184	TOW-10, NFA 06/22/00	546
185	TOW-11, NFA 03/09/00	251
186	TOW-12, NFA 03/09/00	555, 560
187	TOW-15, NFA 06/22/00	533
188	TOW-16, NFA 09/16/96	NA
189	TOW-17, Open	543
190	TOW-18-1, NFA 01/13/00	185
191	TOW-20, See Parcel 9	Organization Reserve Center
192	TOW-21, NFA 05/18/00	206
193	TOW-22, NFA 10/14/99	35A
194	TOW-X1, NFA 12/09/99	27
195	TOW-X2, NFA 01/13/00	28A
196	TOW-X3, Open	174
197	TOW-X4, Open	29A
198	TOW-X5, NFA 09/16/96	NA
199	TOW-X6, NFA 06/22/00	586
200	TOW-X7, Open	98
201	TOW-X8, NFA 12/09/99	175
Miscellaneous, Grease Rack Sites (MGR)		
202	MGR-01, Building 566, Open	530, 566
203	MGR-02, Building 149, NFA 04/21/00	149, 186, 187
204	**MGR-03, Proposed for transfer to the Army**	**Unknown**
Miscellaneous Wash Area (MWA)		
205	MWA-1, Building 610, NFA 12/9/99	530, 610
206	MWA-2, Building 535, NFA 05/18/00	535
207	MWA-3, NFA 04/08/99, ROD 09/28/00	172
208	MWA-4, Building 230, NFA 05/18/00	None
209	MWA-5, Building 517, NFA 03/09/00	508, 517

PFAS AOI	Site Name and Status	Associated Buildings
Miscellaneous Wash Area (MWA) Cont.		
210	MWA-6, Building 229, NFA 10/14/99	229, 551
211	MWA-7, Building 233, NFA 04/21/00	233
212	MWA-8, NFA 04/21/00	507
213	MWA-9, NFA 10/14/99	Apron
214	MWA-10, Building 231, Open	231
215	MWA-11, NFA 06/22/00	546
216	MWA-12, NFA 03/09/00	251
217	MWA-13, Building 560, NFA 03/09/00	555
218	MWA-16, NFA 10/14/99	106
219	MWA-17, Open	53
220	MWA-18, Open	47
221	MWA-19, Building 543, Open	543
222	MWA-20, NFA 01/13/00	185
223	MWA-22, Proposed for transfer to the Army	Army Service Reserve Center
224	MWA-23, NFA 09/16/96	NA
225	MWA-24NFA 06/22/00	533
226	MWA-25, NFA 06/22/00	568
Other Sites		
28	Log Cabin Area	NA
23	Valencia Road out of crash area	NA
30	**Marine Air Wing Main Building**	**NA**
31	Arsenic Area of Concern, Closed	190, 251, 251A, 252, 269, 555, 560, 585, 593 (all buildings and structures within this CO were demolished)
32	NA	303
33	NA	NA
227	Marine Air Base Squadron 16	17
228	Electronic Maintenance	172
229	Materials Division	20A
230	Exchange Gas Station	105: 1954–1977, 222: 1977–Unknown
231	Dental Clinic	1
232	Medical Clinic	1
233	**Station Motor Transport**	**Unknown**
234	**Building Trades Branch**	**Northwestern corner of station/exact location unknown**
235	Metals Trades Branch	66
236	Electrical Trades Branch	17
237	General Services	Northwestern corner of station, 41
238	Air Traffic Control Squadron 48	24
239	Naval Calibration Laboratory	176
240	**Mobile Calibration Complex 3**	**Unknown**
241	Headquarters and Maintenance Squadron 16 Power Plants	190, Hangar 2
242	Headquarters and Maintenance Squadron 16 Ordnance	190
243	Marine Air Base Squadron 16 Ground Support Equipment	Public Works Compound: 1970–1984, 251: 1984–Unknown
244	Marine Air Base Squadron 16 Supply	90: 1950s–1984, 250: 1984–Unknown
245	Marine Air Group 38	176
246	Marine Wing Support Group 37 Detachment	186, 187
247	Sewer Lift Stations	6168, 6169, B212, 204, 205
Underground Storage Tank (UST) Sites		
248	UST C4 and C5	NA
249	UST 1, NFA 05/14/97	NA
250	UST 3 (NFA 09/03/97), and 4A (NFA 10/28/96)	NA
251	UST 4B (NFA 10/28/96), 5 (NFA 03/31/97), 7 (NFA 08/11/97)	NA
252	UST 4C (NFA 10/28/96), 18A (Open), and 18B (Open),	NA
253	UST 10A (NFA 01/27/97)	NA
254	UST 16 (See IRP Site-13W), 22A-1 (NFA 03/03/97), and 26 (NFA 10/18/97)	NA
255	UST 22A-2	NA
256	USTs 22B-1, 22B-2, 22B-3, 22C-1, 22C-2, 22C-3, 22H-1, 22H-2, 22H-3, 22I-1, 22I-2, 22I-3, 22J-1, 22J-2, 22J-3, 22K-1, 22K-2, 22K-3, 22L-2, 22L-3, 22M-1, 22M-2, and 22M-3, All NFA 03/03/97	NA
257	USTs 22D-1, 22D-2, 22D-3, 22D-4, 22E-1, 22E-2, 22E-3, 22F-1, 22F-2, 22F-, 22G-1, 22G-1, 22G-2, and 22G-3, All NFA 03/03/97	NA
258	UST 22L-1, NFA 03/03/97	NA
259	UST 23C, NFA 03/22/99	NA
260	UST 27A (Open), and 27B (Open)	NA
261	UST 28 (NFA 06/06/97), 28A (NFA 01/27/97), and 29A (See I	NA
262	UST 32, NFA 04/11/97	NA
263	UST 35, NFA 03/31/97	NA
264	UST 42, NFA 04/02/99	NA
265	UST 47, NFA 06/17/98	NA
267	UST 58, NFA 01/07/98	NA
268	UST 66, NFA 01/21/98	NA
269	UST 89, Open	NA
270	UST 90 (See IRP Site-12) and 93 (NFA 05/14/97)	NA
271	UST 91 (NFA 08/11/97)	NA
272	USTs 105A (Open) and 105B (Open)	NA
273	USTs 105C (Open) and 105D (Open)	NA
274	USTs 105E (Open) and 105F (Open)	NA
275	UST 132 NFA 01/27/97)	NA
276	UST 133 (133B), NFA 04/13/99	NA
277	UST 134, NFA 06/06/97	NA
278	UST 135, Open	NA
279	UST 161, NFA 01/27/97	NA
280	UST 171, NFA 10/21/97	NA
281	UST 172A, NFA 06/06/97	NA
282	UST 172B, NFA 06/06/97	NA
283	UST 177, NFA 01/21/98	NA
284	UST 181, NFA 01/21/98	NA
285	UST 183, NFA 01/21/97	NA
286	UST 184, NFA 06/06/97	NA
287	UST 185, NFA 04/02/99	NA
288	UST 186A (NFA 01/27/97) and 186C (NFA 01/27/97)	NA
289	UST 186B, NFA 01/27/97	NA
290	UST 186D, NFA 02/21/00	NA
291	UST 203A (NFA 06/02/97) and 203B (NFA 06/02/97)	NA
292	UST 213, NFA 06/06/97	NA
293	UST 222A, 222B, 222C, 222D, Open	NA
294	UST 222G, 222H, Open	222
295	UST 222I, Open	222L
296	UST 226, NFA 08/11/97	NA
297	UST 249, NFA 06/06/97	NA
298	UST 251, NFA 03/09/00	NA
299	UST 252,, NFA 03/09/00	NA
300	UST 268, Open	NA
301	UST 273 (SI-3A), Open	NA
302	UST 300, NFA 09/18/98	NA
303	UST 506, NFA 01/27/97	NA
304	UST 508 (SI-2A) (NFA 03/09/00) and 509 (SI-1A) (NFA 05/18/00)	NA
305	UST 526A (NFA 11/16/00) and 526B (NFA 11/16/00)	NA
306	UST 530A, NFA 03/18//98	NA
307	UST 530B, NFA 12/09/99	NA
308	UST 534A, NFA 04/21/00	NA
309	UST 536 and 543	NA
Aboveground Storage Tank (AST) Sites		
310	AST 24C, NFA 11/26/97	NA
311	AST 27, NFA 05/15/00	NA
312	AST 28A, Open	NA
313	AST 28B, Open	NA
314	AST 106, NFA 02/24/97	NA
315	AST 169, NFA 09/28/00	NA
316	AST 170, NFA 09/28/00	NA
317	AST 183, Open	NA
318	AST 186, NFA 05/13/00	NA
319	AST 194A and 194B (Formerly IRP Site-7N), Closed	NA
320	AST 198A and 198B, Open	NA
321	AST 227, NFA 05/15/00	NA
322	AST 273A and 273B, Open	NA
323	AST 526, Open	NA
324	AST 537, NFA 05/15/00	NA
325	AST 558A, Open	NA
326	AST 558B, Open	NA
327	AST 568B, Open	NA
328	AST 6169A	NA
329	AST 6169B, NFA 05/15/00	NA
IRP Sites		
IRP Site 2	Oil Disposal Area, Closed	NA
IRP Site 10	Auto Hobby Shop Closed	185
IRP Site 11	Drum Storage Area No. 1, Closed	Hangar 1 (Building 28)
IRP Site 12	Drum Storage Area No. 2, Open	20B, 90, 104
IRP Site 14	Paint Stripper Disposal Area No. 2 Open	Hangar 1 (Building 28)
IRP Site 15	Blimp Hangar Wood Disposal Area Closed	NA
IRP Site 16	VOC Solvent Contamination Area/Fuel Farm, Closed	NA
IRP Site 4	Liquid Disposal Pit, Closed)	Hangar 2 (Building 29)
IRP Site 7	Apron Areas Closed	191, 192, 193, 195, 196, 197
IRP Site 8	Drainage Area No. 2, Closed	212, 219, 610
Sites Recommended for RI		
IRP Site 1 (OU-3)	Moffett Trenches and Crash Crew Burn Pits, Open CERCLA Site/LTM	NA
IRP Site 3	Paint Stripper Disposal Area No. 1, Open CERCLA Site/RA-O	29, 29A, 40B, 174, 175, 265, E-12
IRP Site 5N (Former CO-7)	Drainage No. 1, Ditch 5 North, Closed CERCLA Site	Hangar 1 (Building 28), Hangar 2 (Building 29)
IRP Site 5S(a) (Former CO-9)	Drainage Area No. 1, Ditch 5A South, Open CERCLA Site/RA-O	Hangar 1 (Building 28), Hangar 2 (Building 29)
IRP Site 5S(b) (Former CO-1)	Drainage Area No. 1, Ditch 5B South, Closed CERCLA Site	Hangar 1 (Building 28), Hangar 2 (Building 29)
IRP Site 9a	Hangar No.1 Line Shacks, Closed	207, 260, 178, 179, 261, 201
IRP Site 9b	Apron 1 Closed	NA
IRP Site 13E	Drum Storage Area No. 3, Closed CERCLA Site	NA
IRP Site 13S	Drum Storage Area No. 3, Open CERCLA Site/RA-O	NA
IRP Site 13W	Drum Storage Area No. 3, Open CERCLA Site/RA-O	NA
1	Open CERCLA Site (IRP Site 6)/RA-O	250, 267, 556 (all buildings and structures within this site were demolished)
2	Building 103 (CO-5)	103
3	Fire Station (CO-5)	183
4	Building 259 (CO-5)	259
5	DSD-04 (CO-5)	NA
6	Burn Pit Near Hangar (MCD-02) (CO-5)	NA
7	MDA-09 (CO-5)	NA
8	MWA-14 (CO-5)	183
9	TOW-13 (CO-5)	183
10	TOW-14 (CO-5)	183
11	Fire Station (CO-5)	13
12	Building 49 (CO-5)	49
13	MDA-05 (CO-5)	NA
14	MWA-15 (CO-5)	13
15	Warehouse AOC/Building 71H (CO-5)	71H
16	Hangar 1 (CO-5)	28
17	Hangar 2 (CO-6)	29
18	Building 520	520
19	TOW-3	526
20	Firefighter Training Area	543
21	Land-farming Site	207
22	Wastewater Treatment Plant	610
24	Aircraft Crash – Mat 5	NA
161	Building 190/ST-88	190
162	MAG-16 Hangar (Building 524)	524
163	MAG-16 Hangar (Building 525)	525
172	Building 273/MAE-7	273

LEGEND

- ● Approximate AOI Location
- PFAS AOI
- Carve-Out Boundary (Navy Property)
- Former Carve-Out – Transferred September 2021
- AOC
- Mat 5
- OU-3 Boundary
- Former MCAS Tustin Boundary

Estimated Extent of PFOA, PFOS and/or PFBS Concentrations in Groundwater Exceeding DoD Screening Levels in the FWBZ (dashed where inferred or uncertain)

- ≥ 10,000x
- ≥ 1,000x
- ≥ 100x
- ≥ 10x
- >1x

Notes:
Grey Shaded and bold AOIs are not located

AOC = Area of Concern
AOI = Area of Interest
AST = Aboveground Storage Tank
CERCLA = Comprehensive Environmental Response, Compensation and Liability Act
CO = Carve-Out
DoD = Department of Defense
FWBZ = First Water-Bearing Zone
IRP - Installation Restoration Program
MAE = Miscellaneous, Air Emissions
MAG = Marine Aircraft Group
MCAS = Marine Corps Air Station
MCD = Miscellaneous, Crash Drill Site
MGR – Miscellaneous, Grease Rack Sites
MWA = Miscellaneous Wash Area
NA = Not Applicable
NFA = No Further Action
OU = Operable Unit
PFAS = Per- and Polyfluoroalkyl Substances
PFBS = perfluorobutanesulfonic acid
PFOA = perfluorooctanoic acid
PFOS = perfluorooctane sulfonate
RA-O = Remedial Action Operation
RI = Remedial Investigation
TOW = Treatment, Oil/Water Separator Sites
UST = Underground Storage Tank

Basemap Source/Aerial Photo: ESRI ArcGIS online service 2021

0 300 600 1,200
Feet
1 Inch = 600 Feet

Preliminary Assessment/Site Inspection Report,
Basewide Investigation of Per- and Polyfluoroalkyl Substances,
Former Marine Corps Air Station Tustin, Tustin California

Areas of Interest Evaluated in the Preliminary Assessment/Site Inspection

PROJECT NO.: 5026-19-4022
DATE: December 2021
DRAWN BY: KOB
CHECKED BY: KS

FIGURE 11

This page is intentionally blank.

Appendix A:
Interview Logs

This page is intentionally blank.

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
Former MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date:

Interviewer: **Katy Robinson**

Name of Contact: **Doug Childers**

Position/Role: **[REDACTED]**

Phone Number: **[REDACTED]**

Email Address: **[REDACTED]**

Years at or familiar with the installation (dates, if possible): **1 Dec 1986 to 1 Dec 1992**

If a question below is not applicable, please enter "NA" in the space provided.

Please list all former firefighter training areas, electroplating operations, crash sites, landfills, active and closed environmental sites, and any areas where waste material biosolids and sludge from wastewater treatment plants may have been spread. Specifically, focus on any of the sites above where AFFF or materials known to contain PFAS were used, stored, and/or disposed of.

Firefighting training was conducted outside of Building 543

No electroplating operations on site, all work requiring electroplating were conducted at El Toro or with an outside vendor

No known crashes during the time frame I was on site (other than CH-46 off-site crash into Santiago Mountain Range)

Land farming was conducted north of Building 577

Building 610 was the on-site wastewater treatment plant and may have had AFFF pass through it.

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
Former MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Have previous investigations of soil, surface water, groundwater, and/or wastewater been performed for PFAS? If so, were PFAS detected?

MTBE and TCE sampling were the only sampling conducted on site

Were there any on-base fire stations? If so, where were they located?

Fire Station 1 located at Building 207

Fire Station 2 located at Building 93

CFR Bldg 171

Are there any known former firefighting equipment calibration or testing areas at the base other than the training areas and the fire station? If so, where were they located?

Calibration was conducted at Bldg. 207 and excess was dumped into pit outside of building.

Were there any truck washing stations/areas at the base for fire trucks or emergency vehicles? If so, where were they located?

Emergency vehicles were cleaned at each fire house, no other vehicles allowed to clean in those areas.

Please list any areas (e.g., buildings, warehouses, hangars, fuel farms, gas stations) that contained fire suppression systems. Was aqueous film forming foam (AFFF) used in these systems? Were annual tests conducted? Are relevant as-built drawings available?

Incoming AFFF was stored outside of supply warehouse located at Bldg. 568

Bldg 250, 520, 29, and 28 had AFFF fire suppression systems. Annual testing was conducted. No other buildings with AFFF fire suppression systems on site.

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
Former MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Was AFFF present at the Installation and, if so, where was it used, stored and/or disposed of?

TSDF located at Bldg 248

Material stored at Bldg 568, outside warehouse on asphalt.

Are there any known spill/crash sites/fires at the base where AFFF could have been used?

Only fires at the training pit used AFFF, all other structure fires were handled with hydrant water.

Are Accident and/or Fire Reports available for the known spill/crash sites/fires at the base where AFFF was used?

All fire reports were maintained by El Toro Fire Dispatch, those records were then kept at Facilities Management at El Toro. During my time frame no spills/crash sites/fires (other than at the fire pit) happened.

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
Former MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Are there specific relevant documents available (include Administrative Record document number if possible)?

All documentation was kept by El Toro Facilities Management

Are there any drainage systems or body of water that may have received AFFF or runoff from any of the activities listed above? Are relevant as-built drawings available?

All water related to run off from the facility (to include storm drains) emptied into the channel south of the facility, running along the outside perimeter of the base.

Were there any oil-water separators present at hangers or along runways?

OWS were located at Bldgs 520 and 250 for flight line operations

Are maps of the Installation (past and/or present) available, specifically with building numbers/function (i.e., industrial operation buildings)?

All maps of the area were kept with the Facilities Engineer [REDACTED].

Are any maps or reports on nearby drinking water or irrigation wells available?

All reports of nearby drinking water and/or irrigation wells were maintained by Facilities Engineer [REDACTED]

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
Former MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Are geographic information system shape files of the Installation available?

All geographic information was maintained by Facilities Engineer.

List of any additional potential interviewees and contact information:

Location of Facilities Engineer unknown, all others have passed.

Additional comments or relevant information?

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
Former MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 3/4/20

Interviewer: Katy Robinson

Name of Contact: [REDACTED]

Position/Role: Former Commanding Officer

Phone Number: [REDACTED]

Email Address: [REDACTED]

Years at or familiar with the installation (dates, if possible): 1993-1996

If a question below is not applicable, please enter "NA" in the space provided.

Please list all former firefighter training areas, electroplating operations, crash sites, landfills, active and closed environmental sites, and any areas where waste material biosolids and sludge from wastewater treatment plants may have been spread. Specifically, focus on any of the sites above where AFFF or materials known to contain PFAS were used, stored, and/or disposed of.

- Burn pit near hangar,
- Grass areas between hangars – occasional burns east of north hangar
- Near crash fire rescue
- Log cabin area near main entrance
- Valencia out of crash area??
- MAWS Main Building

Have previous investigations of soil, surface water, groundwater, and/or wastewater been performed for PFAS? If so, were PFAS detected?

NA

Were there any on-base fire stations? If so, where were they located?

[REDACTED] was not sure if they used AFFF or not. Potentially used at the MAWS Units.

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
Former MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Are there any known former firefighting equipment calibration or testing areas at the base other than the training areas and the fire station? If so, where were they located?

NA

Were there any truck washing stations/areas at the base for fire trucks or emergency vehicles? If so, where were they located?

[REDACTED] said he was unsure of any specific cases, potentially near crash crew/fire station

Please list any areas (e.g., buildings, warehouses, hangars, fuel farms, gas stations) that contained fire suppression systems. Was aqueous film forming foam (AFFF) used in these systems? Were annual tests conducted? Are relevant as-built drawings available?

- Not blimp areas
- MAWS potentially,
- Not sure about aviation squadron??

Was AFFF present at the Installation and, if so, where was it used, stored and/or disposed of?

NA

Are there any known spill/crash sites/fires at the base where AFFF could have been used?

No

Are Accident and/or Fire Reports available for the known spill/crash sites/fires at the base where AFFF was used?

NA

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
Former MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Are there specific relevant documents available (include Administrative Record document number if possible)?

NA

Are there any drainage systems or body of water that may have received AFFF or runoff from any of the activities listed above? Are relevant as-built drawings available?

NA

Were there any oil-water separators present at hangers or along runways?

These are documented in the EWS

Are maps of the Installation (past and/or present) available, specifically with building numbers/function (i.e., industrial operation buildings)?

NA

Are any maps or reports on nearby drinking water or irrigation wells available?

NA

Are geographic information system shape files of the Installation available?

NA

List of any additional potential interviewees and contact information:

[REDACTED] - BEC

[REDACTED]

Additional comments or relevant information?

NA</S1A-Q1>

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
Former MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 2/15/20

Interviewer: Katy Robinson

Name of Contact: [REDACTED]

Position/Role: Former Pilot

Phone Number: [REDACTED]

Email Address: [REDACTED]

Years at or familiar with the installation (dates, if possible): Jun 95- Mar 98.

If a question below is not applicable, please enter "NA" in the space provided.

Please list all former firefighter training areas, electroplating operations, crash sites, landfills, active and closed environmental sites, and any areas where waste material biosolids and sludge from wastewater treatment plants may have been spread. Specifically, focus on any of the sites above where AFFF or materials known to contain PFAS were used, stored, and/or disposed of.

Most Operations were on or at the runway and the helo spots abeam the runway.

Fuel Pits obviously had no flight ops but heavy taxi traffic. Located on north side of runways, the pits were dug up where the soil washed.

- Electroplating - possible on south side hangars 2 and 53. 1 new and 1 old hangar of south hangar and logistics NALS 16.
- Landfills – between airfield and base housing
- Biosolids – COLs captured, spilled POLs
- Crash sites – no
- Fire station hangars used pressurized water, not AFF, oxygen used in aircraft. JP-4 and JP-5 and oil at parking spots.

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
Former MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Have previous investigations of soil, surface water, groundwater, and/or wastewater been performed for PFAS? If so, were PFAS detected?

Base housing northeast side of Tustin.

Tower and Base Ops

2 hangars at south side and runway splits north of hangar.

Were there any on-base fire stations? If so, where were they located?

Yes…several. Not sure…

1. Base Ops
2. Mainside by base housing

Are there any known former firefighting equipment calibration or testing areas at the base other than the training areas and the fire station? If so, where were they located?

CFR would every morning, run up and down the runway, they did a precursory sweep for FOD, check their radios and gear set up midfield or approach end of the runways and start ops. If the duals were Runway 26 then they would set up at the approach end of 26 and switch to spots for helo ops. They would check their hoses and systems in morning, and once a month fight a static controlled fire on the airframe simulator.

Were there any truck washing stations/areas at the base for fire trucks or emergency vehicles? If so, where were they located?

- Aircraft were washed every 14 days at wash racks at north side parking ramp on west side.
- POL/Water separators, but not sure where the discharge went.
- There may have been a separate wash rack for support equipment and ground, but not sure where it was located

Please list any areas (e.g., buildings, warehouses, hangars, fuel farms, gas stations) that contained fire suppression systems. Was aqueous film forming foam (AFFF) used in these systems? Were annual tests conducted? Are relevant as-built drawings available?

Water in hangars

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
Former MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Was AFFF present at the Installation and, if so, where was it used, stored and/or disposed of?

Not sure

Are there any known spill/crash sites/fires at the base where AFFF could have been used?

No

Are Accident and/or Fire Reports available for the known spill/crash sites/fires at the base where AFFF was used?

N/A Naval Safety Center? Detailed for EV AV shop

Are there specific relevant documents available (include Administrative Record document number if possible)?

N/A

Are there any drainage systems or body of water that may have received AFFF or runoff from any of the activities listed above? Are relevant as-built drawings available?

Mid field was where the CFR parked for ops.

Were there any oil-water separators present at hangers or along runways?

Base Hangar 4….there was a flight line shack at the end of the concrete parking ramp to the northwest of the western door of Hangar 4…(the North side blimp) hangar.

Are maps of the Installation (past and/or present) available, specifically with building numbers/function (i.e., industrial operation buildings)?

N/A

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
Former MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Are any maps or reports on nearby drinking water or irrigation wells available?

N/A

Are geographic information system shape files of the Installation available?

N/A

List of any additional potential interviewees and contact information:

Provided in email communications

Additional comments or relevant information?

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
Former MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date:	**4/1/2020**
Interviewer:	**[REDACTED]**
Name of Contact:	**[REDACTED]**
Position/Role:	**Former Consultant**
Phone Number:	**[REDACTED]**
Email Address:	**[REDACTED]**
Years at or familiar with the installation (dates, if possible):	**1991-1994 Corp. Sub to Jacobs. 1994-1995 OHM RAC 1 contract. Base active until 2005, base closed in 1999.**

If a question below is not applicable, please enter "NA" in the space provided.

Please list all former firefighter training areas, electroplating operations, crash sites, landfills, active and closed environmental sites, and any areas where waste material biosolids and sludge from wastewater treatment plants may have been spread. Specifically, focus on any of the sites above where AFFF or materials known to contain PFAS were used, stored, and/or disposed of.

Main one

Crash crew training facility – was still active then landfill under Jamboree, IRP-1.

Have previous investigations of soil, surface water, groundwater, and/or wastewater been performed for PFAS? If so, were PFAS detected?

Not aware

Were there any on-base fire stations? If so, where were they located?

Yes there but I wouldn't be able to ID them on a map

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
Former MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Are there any known former firefighting equipment calibration or testing areas at the base other than the training areas and the fire station? If so, where were they located?

I am not aware of any.

Were there any truck washing stations/areas at the base for fire trucks or emergency vehicles? If so, where were they located?

There are several RAC facilities/wash racks. Some of the older base documents may have their locations.

Please list any areas (e.g., buildings, warehouses, hangars, fuel farms, gas stations) that contained fire suppression systems. Was aqueous film forming foam (AFFF) used in these systems? Were annual tests conducted? Are relevant as-built drawings available?

I'm not aware of any specific areas.

Was AFFF present at the Installation and, if so, where was it used, stored and/or disposed of?

I don't recall any areas.

Are there any known spill/crash sites/fires at the base where AFFF could have been used?

Other than the crash crew training site I don't recall any.

Are Accident and/or Fire Reports available for the known spill/crash sites/fires at the base where AFFF was used?

I am not aware of any/don't have access.

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
Former MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Are there specific relevant documents available (include Administrative Record document number if possible)?

RFA – VFI/VSI report – interviews and should include 1990's use.

FOST/FOSL

Are there any drainage systems or body of water that may have received AFFF or runoff from any of the activities listed above? Are relevant as-built drawings available?

Tustin drains, IRP Site 5. Not sure how close but the system has been investigated. I wouldn't be able to ID them on a map.

Some utility trenches related to the crash crew training facility.

Were there any oil-water separators present at hangers or along runways?

There were several, look in the SI and RFA and also later base documents.

Are maps of the Installation (past and/or present) available, specifically with building numbers/function (i.e., industrial operation buildings)?

They are not, I don't have any Tustin related docs anymore

Are any maps or reports on nearby drinking water or irrigation wells available?

I'm not aware of any.

Are geographic information system shape files of the Installation available?

I'm not aware of any.

List of any additional potential interviewees and contact information:

Provided in email

Additional comments or relevant information?

No

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date:	**4/14/20**
Interviewer:	**Katy Robinson**
Name of Contact:	**[REDACTED]**
Position/Role:	**Former Site Manager**
Phone Number:	**[REDACTED]**
Email Address:	**[REDACTED]**
Years at or familiar with the installation (dates, if possible):	**Aptim- May 1995- April 2004 Site Manager at Tustin- projects related to remediation; PM from 2006- 2016; Now working on O&M**

If a question below is not applicable, please enter "NA" in the space provided.

Please list all former firefighter training areas, electroplating operations, crash sites, landfills, active and closed environmental sites, and any areas where waste material biosolids and sludge from wastewater treatment plants may have been spread.

Been 15 years since he has looked at this data. Biggest area, crash crew area adjacent to Building 28, FD there (bldg. # unknown) concrete lined area there where they had a water area, light it on fire and FD would put it out. AFFF was used (and water) to extinguish fire. His role was to do additional analysis. Moffett Trench- heard of burial pits, but nothing specific. There were newer hangars adjacent to aprons 1 and 2. Buildings were more modern and had active fire suppression systems that may have been AFFF. Floors had to be decontaminated, site was an AOC. Might have just been areas where there were hazardous materials stored. Sometimes they would have to wash surface with hot steam and take rinsate samples. Only related to surface contamination. Disposal would have been brought to off site disposal facility.

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Have previous investigations of soil, surface water, groundwater, and/or wastewater been performed for PFAS? If so, were PFAS detected?

No known testing of PFAS. Knew they were using foam at the crash pit. But no other knowledge. Other hangars he knew about were based on information from base personnel.

Were there any on-base fire stations? If so, where were they located?

Building 183. Directly east of Building 28. May be called Building 13. Closer to main Building 4. Really close to burn pad. Station Building 13, closer to HQ West of Hangar 28.

Are there any known former firefighting equipment calibration or testing areas at the base other than the training areas and the fire station? If so, where were they located?

No. Only two known.

Were there any truck washing stations/areas at the base for fire trucks or emergency vehicles? If so, where were they located?

Probably would have done things by the pits, they had OWS to get out JP-5. No other areas. Could have done something at Building 13, doesn't remember if there was a wash rack. No testing.

Please list any areas (e.g., buildings, warehouses, hangars, fuel farms, gas stations) that contained fire suppression systems. Was aqueous film forming foam (AFFF) used in these systems? Were annual tests conducted? Are relevant as-built drawings available?

No as-builts.

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Was AFFF present at the Installation and, if so, where was it used, stored and/or disposed of?

Oxygen tank looking vessels, utility room on a concrete pad, close to back wall of hangar, routed to suppression system in hangar. Always stored in use area.

Are there any known spill/crash sites/fires at the base where AFFF could have been used?

Round asphalt pads that were central to the site. Going south on Moffett Drive there were two asphalt helicopter landing areas; had heard those areas were used (two reported crashes); unknown if there was an actual fire that needed to be suppressed. One helicopter pad they had an area where they were doing their remediation activities

Are Accident and/or Fire Reports available for the known spill/crash sites/fires at the base where AFFF was used?

Not aware; familiar with more VOCs, metals, TPH

Are there specific relevant documents available (include Administrative Record document number if possible)?

OHM, temporary storage facilities, groups of AOCs that they did, but nothing relative to AFFF. One for hangars, crash pit. Can't specifically remember.

Are there any drainage systems or body of water that may have received AFFF or runoff from any of the activities listed above? Are relevant as-built drawings available?

Wash pit

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Were there any oil-water separators present at hangers or along runways?

OWS would separate out JP-5

Only one associated with receiving AFFF mixture. Work on putting fire out with water, see if they could suppress the heat. Once done they would put AFFF to ensure fire was out.

Are maps of the Installation (past and/or present) available, specifically with building numbers/function (i.e., industrial operation buildings)?

Will mark a map, if provided

Are any maps or reports on nearby drinking water or irrigation wells available?

No, never related to any irrigation wells

Are geographic information system shape files of the Installation available?

Does not have any old files

List of any additional potential interviewees and contact information:

Provided in email

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Additional comments or relevant information?

No.

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
Former MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 5 MAR 20, 0835-0850

Interviewer: Katy Robinson

Name of Contact: [REDACTED]

Position/Role: MCI West Aviation

Phone Number: [REDACTED]

Email Address: [REDACTED]

Years at or familiar with the installation (dates, if possible): 1983-1987 & 1988-1995

If a question below is not applicable, please enter "NA" in the space provided.

Please list all former firefighter training areas, electroplating operations, crash sites, landfills, active and closed environmental sites, and any areas where waste material biosolids and sludge from wastewater treatment plants may have been spread. Specifically, focus on any of the sites above where AFFF or materials known to contain PFAS were used, stored, and/or disposed of.

I recall there was a fire pit used for CFR training near Hangar 1. I don't remember it being used very often due to the AQMD restrictions. Electroplating operation possible at the MAWS Hangar.

Have previous investigations of soil, surface water, groundwater, and/or wastewater been performed for PFAS? If so, were PFAS detected?

Unknown

Were there any on-base fire stations? If so, where were they located?

Yes. CFR by Hangar 1.

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
Former MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Are there any known former firefighting equipment calibration or testing areas at the base other than the training areas and the fire station? If so, where were they located?

CFR next to the tower, nsn stayed there, midfield at 8 FR pad

Were there any truck washing stations/areas at the base for fire trucks or emergency vehicles? If so, where were they located?

Unknown

Please list any areas (e.g., buildings, warehouses, hangars, fuel farms, gas stations) that contained fire suppression systems. Was aqueous film forming foam (AFFF) used in these systems? Were annual tests conducted? Are relevant as-built drawings available?

I don't remember any automatic AFFF fire suppression systems in the hangars. We always seemed to have 50-gallon halon bottles standing by. There were no fire suppression systems at Hangars 1 and 2 and newer Hangar 53.

Was AFFF present at the Installation and, if so, where was it used, stored and/or disposed of?

I only remember AFFF being mentioned during shipboard operations never while shore-based.

Are there any known spill/crash sites/fires at the base where AFFF could have been used?

There was one midair collision over Mat 5 in 1981 (before I got there). If CFR was using AFFF it would have been used there. I believe the aircraft crashed into the corn fields close to Mat 5 inside the base boundary south of Hangar 2.

Are Accident and/or Fire Reports available for the known spill/crash sites/fires at the base where AFFF was used?

Unknown.

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
Former MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Are there specific relevant documents available (include Administrative Record document number if possible)?

Unknown

Are there any drainage systems or body of water that may have received AFFF or runoff from any of the activities listed above? Are relevant as-built drawings available?

There were several irrigation/drainage ditches that surrounded the bisected the airfield. They mostly ran next to the main roads.

Were there any oil-water separators present at hangers or along runways?

I believe there were only oil-water separators at the wash racks.

Are maps of the Installation (past and/or present) available, specifically with building numbers/function (i.e., industrial operation buildings)?

Unknown.

Are any maps or reports on nearby drinking water or irrigation wells available?

Unknown.

Are geographic information system shape files of the Installation available?

Unknown

List of any additional potential interviewees and contact information:

CFR guy at El Toro, will send contact info in due course.

Additional comments or relevant information?

Hazmat storage, assume at the CFR, figure to mark locations will be sent in due course.Q1>

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
Former MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 4/13/2020

Interviewer: Katy Robsinson

Name of Contact: [REDACTED]

Position/Role: Current RAB Member

Phone Number: [REDACTED]

Email Address: [REDACTED]

Years at or familiar with the installation (dates, if possible): May 1991 to Present

If a question below is not applicable, please enter "NA" in the space provided.

Please list all former firefighter training areas, electroplating operations, crash sites, landfills, active and closed environmental sites, and any areas where waste material biosolids and sludge from wastewater treatment plants may have been spread. Specifically, focus on any of the sites above where AFFF or materials known to contain PFAS were used, stored, and/or disposed of.

See Basewide Environmental Survey performed in the 1990s under the BRAC Cleanup Plan.

Have previous investigations of soil, surface water, groundwater, and/or wastewater been performed for PFAS? If so, were PFAS detected?

See Basewide Environmental Survey performed in the 1990s under the BRAC Cleanup Plan.

Were there any on-base fire stations? If so, where were they located?

See Basewide Environmental Survey performed in the 1990s under the BRAC Cleanup Plan.

Are there any known former firefighting equipment calibration or testing areas at the base other than the training areas and the fire station? If so, where were they located?

See Basewide Environmental Survey performed in the 1990s under the BRAC Cleanup Plan.

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
Former MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Were there any truck washing stations/areas at the base for fire trucks or emergency vehicles? If so, where were they located?

See Basewide Environmental Survey performed in the 1990s under the BRAC Cleanup Plan.

Please list any areas (e.g., buildings, warehouses, hangars, fuel farms, gas stations) that contained fire suppression systems. Was aqueous film forming foam (AFFF) used in these systems? Were annual tests conducted? Are relevant as-built drawings available?

See Basewide Environmental Survey performed in the 1990s under the BRAC Cleanup Plan.

Was AFFF present at the Installation and, if so, where was it used, stored and/or disposed of?

See Basewide Environmental Survey performed in the 1990s under the BRAC Cleanup Plan.

Are there any known spill/crash sites/fires at the base where AFFF could have been used?

See Basewide Environmental Survey performed in the 1990s under the BRAC Cleanup Plan.

Are Accident and/or Fire Reports available for the known spill/crash sites/fires at the base where AFFF was used?

See Basewide Environmental Survey performed in the 1990s under the BRAC Cleanup Plan.

Are there specific relevant documents available (include Administrative Record document number if possible)?

See Basewide Environmental Survey performed in the 1990s under the BRAC Cleanup Plan.

Are there any drainage systems or body of water that may have received AFFF or runoff from any of the activities listed above? Are relevant as-built drawings available?

See Basewide Environmental Survey performed in the 1990s under the BRAC Cleanup Plan.

Were there any oil-water separators present at hangers or along runways?

See Basewide Environmental Survey performed in the 1990s under the BRAC Cleanup Plan.

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
Former MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Are maps of the Installation (past and/or present) available, specifically with building numbers/function (i.e., industrial operation buildings)?

I do not possess these items; ask the Navy BRAC Office for the latest.

Are any maps or reports on nearby drinking water or irrigation wells available?

I do not possess these items; ask the Navy BRAC Office for the latest.

Are geographic information system shape files of the Installation available?

I do not possess these items; ask the Navy BRAC Office for the latest.

List of any additional potential interviewees and contact information:

See the RAB membership list from years past and present.

General Information Questionnaire

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
Former MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Additional comments or relevant information?

This page is intentionally blank.

Appendix B:
Research Logs

This page is intentionally blank.

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name: Final Summary Report for Per- and Polyfluoroalkyl Substances Presence/Absence Sampling in Groundwater in Carve-Outs 5 and 6.

Document Author: Multi-Media Environmental Compliance Group (MMEC Group)

Document Date: November 2018

File Name: Final Tustin Summary Report for PFAS in Carve-Outs 5 and 6

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

Previous investigation information for Section 3.0

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 05/08/2020 **Researcher:** Charles Hackel

Type of Research:

	Administrative Record/NIRIS
X	Online Research
	Miscellaneous Document Review

Document Name: Resolution No. 88063 Adoption of Policy Entitled “Sources of Drinking Water.”

Document Author: California State Water Resources Control Board

Document Date: January 1988

File Name: 1988_State_Water_Board_88-63

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

Groundwater beneficial use exemption information for Table 5-3.

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

	Administrative Record/NIRIS
	Online Research
X	Miscellaneous Document Review

Document Name:	BRAC Cleanup Plan
Document Author:	United States Department of the Navy (DON) BRAC Realignment and Closure Act (BRAC)
Document Date:	March 14, 1994
File Name:	1994_NAVFAC_SW_BRAC_Cleanup_Plan

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

The Shady Canyon, Pelican Hill, Newport-Inglewood, Whittier-Elsinore, and San Andreas faults are seismically active faults near former MCAS Tustin. The Shady Canyon, Pelican Hill, and Newport-Inglewood faults are 2, 5, and 9 miles southwest of former MCAS El Toro, respectively. The Whitter-Elsinore and San Andreas faults are 13 and 30 miles north of the former station, respectively.

The Newport-Inglewood Fault is located approximately 9 miles southwest of former MCAS Tustin and has a potential earthquake magnitude of 7.5 on the Richter scale. In the event of an earthquake, some potential ground failure, including liquefaction, may be expected at the site, considering the soil and shallow groundwater conditions.

Multi-MACJv

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name: BRAC Cleanup Plan Marine Corps Air Station Tustin, California

Document Author: Naval Facilities Engineering Command Southwest (NAVFAC SW).

Document Date: March 1994

File Name: 1994_NAVFAC_SW_BRAC_Cleanup_Plan

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

Information for Table 5-2.

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name: Final RCRA Facility Assessment Report, Marine Corps Air Station Tustin, California

Document Author: Bechtel National, Inc

Document Date: June 1997

File Name: N/A

Was a copy of the report obtained?

	Yes
X	No (Referenced in another report, unable to find original report)

Notes:

Wash water from equipment-cleaning activities several hundred feet north of MWA-18 was observed to drain across an asphalt-covered parking lot toward MWA-18.

Exposure pathways for contaminants of potential concern (COPCs) in soil at OU-1B include ingestion, inhalation, and dermal contact.

Multi-MACJv

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name:	Final 1999 Annual Basewide Groundwater Monitoring Plan, Former Marine Corps Air Facility Tustin, California
Document Author:	Bechtel National, Inc
Document Date:	November 2000
File Name:	20001114_Bechtel_Groundwater_Monitoring_Plan

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

A 500-gallon underground storage tank (UST) (UST-90), removed in 1993, was formerly located between Building 90 and Copeland Street. It was installed in 1953 and stored No. 2 fuel oil (similar to diesel fuel) for heating Building 90. Petroleum contamination was discovered both around the tank excavation zone and upgradient near Building 90.

Multi-MACJv

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name:	Final Amended Site Management Plan, 2002 Update, Marine Corps Air Station Tustin, California
Document Author:	Bechtel National, Inc
Document Date:	November 2002
File Name:	M62535_000373_2002_Bechtel_Final SMP 2002 update

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

A federal facility site remediation agreement (FFSRA) between the DON and DTSC was signed in August 1999. This legal agreement defines the DON's corrective action and response action obligations under CERCLA and the Resource Conservation and Recovery Act (RCRA) for 16 IRP sites and 288 areas of concern (AOCs) that have been identified at former MCAS Tustin. A site management plan is used to establish schedules and deadlines for remaining environmental restoration activities and reports

Multi-MACJv

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name:	Final Record of Decision/Remedial Action Plan, Operable Unit-3, Moffett Trenches and Crash Crew Burn Pits Site, Marine Corps Air Station, Tustin, California
Document Author:	United States Department of the Navy
Document Date:	December 2001
File Name:	12-31-2001_MCAS-Tustin-OU3_FinalROD-RAP_Parts 1-3

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

The landfill trenches, which reportedly contained approximately 5,000 cubic yards of material, were used from the late 1940s or early 1950s until 1971. The trenches are suspected of containing a mixture of former MCAS Tustin-generated municipal solid waste and industrial waste consisting of paints, oils, solvents, and transformers

Multi-MACJv

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name:	Lease in Furtherance of Conveyance (LIFOC) Between the United States of America and the City of Tustin, California for Portions of Former Marine Corps Air Station Tustin
Document Author:	United States Department of the Navy
Document Date:	May 2002
File Name:	LIFOC (Lease in Furtherance of Conveyance)

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

OU-1B North is located within CO-5, which is retained by the DON. OU-1B North includes undeveloped land and former MCAS Tustin buildings. To expedite the transfer process, a LIFOC has been established between the City of Tustin and the DON.

Most of IRP-13W is undeveloped land within CO-5 and has been leased to the City of Tustin under a LIFOC.

A portion of IRP-5S(a) is located within CO-9 and has been leased to the City of Tustin under a LIFOC.

The main 1,1- dichloroethene (DCE) plume at IRP-6 is located within CO-2, which has been leased to the City of Tustin under a LIFOC.

The Mingled Plumes Area (MPA) is located within CO-5 and consists of undeveloped property, including vacant buildings and Hangar No. 1 (Building 28). A portion of the MPA has been leased to the City of Tustin under a LIFOC

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name: Final Record of Decision/Remedial Action Plan for Operable Unit 4B

Document Author: United States Department of the Navy

Document Date: January 2010

File Name: 201001_DON_ROD_OU4B

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

Currently, only groundwater in the Irvine Groundwater Management Zone lying below a depth of approximately 40 feet below msl is used for drinking water supply or the other assigned beneficial uses. Shallow groundwater in the first three WBZs is not currently used; it is not expected to be used as a drinking water source in the future because of limitations such as high total dissolved solids content and selenium and nitrate impacts from natural and/or agricultural activities that render it unsuitable as a potential source of drinking water, according to state and federal water quality criteria.

No impact on ecological receptors would be expected via this potential pathway according to the Record of Decision (ROD) for OU-4B.

Multi-MACJv

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

	Administrative Record/NIRIS
X	Online Research
	Miscellaneous Document Review

Document Name:	Frequently Asked Questions: Perfluorinated Compounds (PFCs)/Perfluoroalkyl Substances (PFAS).Tustin, California. December.
Document Author:	United States Department of the Navy
Document Date:	June 2016
File Name:	201606_DON_PFAS_FAQS

Was a copy of the report obtained?

X	Yes available at http://www.secnav.navy.mil/eie/pages/pfc-pfas.aspx
	No (provide reason)

Notes:

The Revised Draft Final LUC RD Amendment No. 1 proposes a vapor intrusion (VI) area requiring institutional controls (ARIC) that covers the entire area of CO-6. The DON is working with regulatory agencies to conduct a VI assessment in CO 6 to provide multiple lines of evidence to support VI ICs.

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

	Administrative Record/NIRIS
	Online Research
X	Miscellaneous Document Review

Document Name:	Drinking Water Health Advisory for Perfluorooctane Sulfonate (PFOA). 822-R-16-005
Document Author:	United States Environmental Protection Agency (U.S. EPA)
Document Date:	May 2016
File Name:	201605_EPA_Drinking_Water_Advisory_PFOA

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

70 ppt drinking water screening criteria.

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

	Administrative Record/NIRIS
	Online Research
X	Miscellaneous Document Review

Document Name:	Drinking Water Health Advisory for Perfluorooctane Sulfonate (PFOS). 822-R-16-004
Document Author:	United States Environmental Protection Agency (U.S. EPA)
Document Date:	May 2016
File Name:	201605_EPA_Drinking_Water_Advisory_PFOS

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

70 ppt drinking water screening criteria.

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

	Administrative Record/NIRIS
	Online Research
X	Miscellaneous Document Review

Document Name:	Drinking Water Health Advisory for Perfluorooctane Sulfonate (PFOA). 822-R-16-005
Document Author:	United States Environmental Protection Agency (U.S. EPA)
Document Date:	May 2016
File Name:	201605_EPA_Drinking_Water_Advisory_PFOA

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

70 ppt drinking water screening criteria.

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

	Administrative Record/NIRIS
	Online Research
X	Miscellaneous Document Review

Document Name:	Interim Per- And Polyfluoroalkyl Substances (PFAS) Site Guidance for NAVFAC Remedial Project Managers
Document Author:	United States Department of the Navy
Document Date:	September 2017
File Name:	201709_DON_PFAS_Guidance_For_RPMs

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

According to the DON, historical documentation of AFFF use and releases is often incomplete because records were historically not required. Therefore, in addition to document reviews, interviews are important for understanding past practices and identifying the potential for environmental releases.

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

	Administrative Record/NIRIS
	Online Research
X	Miscellaneous Document Review

Document Name:	EPA's Non-CBI Summary Tables for 2015 Company Progress Reports (Final Progress Reports)
Document Author:	United States Environmental Protection Agency (U.S. EPA)
Document Date:	February 2017
File Name:	201702_EPA_CBI_Summary_Tables

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

In 2006, U.S. EPA initiated the global PFOA Stewardship Program: eight major manufacturing companies of PFOA and other longer-chain perfluorinated carboxylates committed to achieving a 95 percent reduction in both facility emissions and product content levels by 2010, and elimination by 2015. All companies met the established goals.

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

	Administrative Record/NIRIS
	Online Research
X	Miscellaneous Document Review

Document Name:	Technical Fact Sheet – Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA). EPA 505-F-17-001
Document Author:	United States Environmental Protection Agency (U.S. EPA)
Document Date:	November 2017
File Name:	201711_EPA_Tech_Factsheet_PFOA_PFOS

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

PFAS have been identified by U.S. EPA as “emerging contaminants” and are of environmental concern because of their persistence in the environment and in organisms, migration potential in aqueous systems (e.g., groundwater), historically ubiquitous use in commercial products, and possible adverse health effects at low levels of exposure.

Multi-MACJv

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name:	Final Summary Report for Per- and Polyfluoroalkyl Substances Sampling for Groundwater Remedial Action at OU 3
Document Author:	Multi-Media Environmental Compliance Group (MMEC Group)
Document Date:	October, 2017
File Name:	201710_MMEC_Final_Summary_PFAS_GW_OU3

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

Previous investigation information for Section 3.0

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 05/08/2020 **Researcher:** **Charles Hackel**

Type of Research:

	Administrative Record/NIRIS
X	Online Research
	Miscellaneous Document Review

Document Name: **Choosing and using fire extinguishers**

Document Author: United States Fire Administration

Document Date: December 12, 2017

File Name: 2017_USFA_Fire_Types.

Was a copy of the report obtained?

X	**Yes**

Notes:
Class A fires are associated with materials such as cloth, wood, and paper. Suitable firefighting agents for Class A fires penetrate the burning material to extinguish the fire, such as water. Class B fires have combustible liquid or gas as a fuel. Firefighting agents used on Class B fires will either inhibit the chemical reactions, such as dry chemical or Halon, or will smother the fire using carbon dioxide gas or foam

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name: Water Quality Control Plan

Document Author: California Regional Water Quality Control Board, Santa Ana Region (RWQCB)

Document Date: 1995

File Name: 1995_RWQCB_Water_Quality_Plan

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

The Water Quality Control Plan, Santa Ana River Basin lists the following beneficial use designations for groundwater underlying former MCAS Tustin:

- Municipal and domestic supply (including drinking water supply)
- Agricultural supply
- Industrial service supply
- Industrial process supply

The Basin Plan does not differentiate groundwater beneficial uses on the basis of depth

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: May 7, 2020 **Researcher:** Kim Shiroodi

Type of Research:

	Administrative Record/NIRIS
X	Online Research
	Miscellaneous Document Review

Document Name:	Interim recommendations for addressing groundwater contaminated with PFOA and PFOS
Document Author:	US EPA
Document Date:	12/19/19
File Name:	20191219_USEPA_Interim recommendations for addressing GW contaminated with PFOA and PFOS

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

Recommends that the U.S. EPA LHA of 70 ppt be used as the preliminary remediation goal (PRG) for groundwater that is a current or potential source of drinking water where no state or tribal maximum contaminant level or other applicable or relevant or appropriate requirements are available or sufficiently protective.

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 05/08/2020 **Researcher:** **Charles Hackel**

Type of Research:

	Administrative Record/NIRIS
X	Online Research
	Miscellaneous Document Review

Document Name: Regional Screening Level

Document Author: United States Environmental Protection Agency (U.S. EPA)

Document Date: November, 2019

File Name:

Was a copy of the report obtained?

	Yes
X	No; Available online at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables

Notes:
Regional Screening Level for PFBS.

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name:	Preliminary Draft Summary Report Phase 1 – Additional Initial Basewide Assessment of Per and Polyfluoroalkyl Substances in Groundwater, MCAS Tustin, Tustin, California
Document Author:	Multi-Media Environmental Compliance Group (MMEC Group)
Document Date:	2020
File Name:	2020_MMEC_Predraft_Summary_PFAS_GW

Was a copy of the report obtained?

	Yes
X	No (report has not been published yet)

Notes:

Previous investigation information for Section 3.0

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 05/08/2020 **Researcher:** Charles Hackel

Type of Research:

	Administrative Record/NIRIS
x	Online Research
	Miscellaneous Document Review

Document Name: Groundwater Ambient Monitoring and Assessment Program (GAMA) Groundwater Information System Website

Document Author: California State Water Resources Control Board

Document Date: May 2020

File Name:

Was a copy of the report obtained?

	Yes
X	No (provide reason) Well viewer available online at http://geotracker.waterboards.ca.gov/gama/gamamap/public/

Notes:

Drinking water well information.

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 5/7/020 **Researcher:** Kim Shiroodi

Type of Research:

	Administrative Record/NIRIS
X	Online Research
	Miscellaneous Document Review

Document Name:	Long-Chain Perfluoroalkyl Carboxylate and Perfluoroalkyl Sulfonate Chemical Substances; Significant New Use Rule; Supplemental Proposal
Document Author:	United States Environmental Protection Agency
Document Date:	February 20, 2020
File Name:	2020_USEPA_Long-Chain Perfluoroalkyl carboxylate and PFCs

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

U.S. EPA released a pre-publication notice of a SNUR proposal to eliminate the exemption for long-chain perfluoroalkyl carboxylates as part of surface coatings in a variety of articles

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 05/08/2020 **Researcher:** Charles Hackel

Type of Research:

	Administrative Record/NIRIS
x	Online Research
	Miscellaneous Document Review

Document Name: California Water Science Center

Document Author: United States Geological Survey (USGS)

Document Date: May 2020

File Name:

Was a copy of the report obtained?

	Yes
X	No (provide reason) Well viewer available online at https://ca.water.usgs.gov/

Notes:

Drinking water well information.

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name: MCAS Tustin Specific Plan/Reuse Plan

Document Author: City of Tustin

Document Date: November 2014

File Name: 201411_CityofTustin_Reuse_Plan

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

OU-1B North is designated for reuse as park and open space.

OU-1B South is designated for reuse as "general office" (commercial) use. No residences are planned at OU-1B South

Future development of currently vacant land adjoining OU-3 to the west as medium- to high density residential use.

IRP-11 is located in an area designated for reuse as an urban regional park.

The northern portion of OU-1A is designated for reuse as a community park.

Irvine Ranch Water District (IRWD) currently supplies domestic water to the areas around the base through a north-south 16-inch diameter pipeline. It also supplies reclaimed (nonpotable) water to the areas around the base through a 16-inch-diameter pipeline down Barranca Way

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name:	Final CERCLA Five-Year Review Report, Operable Units 1A, 1B North, 1B South, 3, and 4B, Former Marine Corps Air Station Tustin, Tustin, California
Document Author:	Multi-Media Environmental Compliance Group (MMEC Group)
Document Date:	October 2016
File Name:	201610_MMEC_Five_Year_Review

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

OU-1A early transfer parcel has been developed as a multifamily residential development named Columbus Square

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name:	Final CERCLA Five-Year Review Report, Operable Units 1A, 1B North, 1B South, 3, and 4B, Former Marine Corps Air Station Tustin, Tustin, California
Document Author:	Multi-Media Environmental Compliance Group (MMEC Group)
Document Date:	October 2016
File Name:	201610_MMEC_Five_Year_Review

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

OU-1A early transfer parcel has been developed as a multifamily residential development named Columbus Square

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name:	Final Summary Report for November 2017 Per- and Polyfluoroalkyl Substances Sampling at Operable Unit 3, Installation Restoration Program Site 1, Former Marine Corps Air Station Tustin, Tustin, California
Document Author:	Multi-Media Environmental Compliance Group (MMEC Group)
Document Date:	April 2018
File Name:	201710_MMEC_Final_Summary_PFAS_GW_OU3

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

Previous sampling results for Section 3.

Multi-MACJv

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name:	Final Summary Report for Per- and Polyfluoroalkyl Substances Presence/Absence Sampling in Groundwater in Carve-Outs 5 and 6.
Document Author:	Multi-Media Environmental Compliance Group (MMEC Group)
Document Date:	November 2018
File Name:	Final_Tustin_Summary Report for PFAS in Carve-Outs 5 and 6

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

Previous investigation information for Section 3.0

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name: Technical/Regulatory Guidance Per- and Polyfluoroalkyl Substances (PFAS).

Document Author: Interstate Technology & Regulatory Council (ITRC)

Document Date: April 2020

File Name: 202004_Tech_Guideance_PFAS

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

Legacy PFOS AFFF was manufactured exclusively by 3M and branded as “Lightwater” from the late 1960s until 2002. This formulation of AFFF contained PFOS and perflouroalkane sulfonates (PFSAs), such as perfluorohexane sulfonate (PFHxS). Legacy fluorotelomer AFFF was manufactured and sold from the 1970s until 2016 and encompass all other brands of AFFF besides 3M Lightwater. The formulation of fluorotelomer AFFF contained polyfluorinated precursors, which are known to degrade to perfluorinated carboxylic acids (PFCAs), including PFOA. The legacy AFFF formulations are long-chained (C8) fluorosurfactants.

In response to the PFOA Stewardship Program, modern fluorotelomer AFFF contain only short-chain (C6) fluorotelomer based fluorosurfactants, which do not break down in the environment to PFOS or PFOA. Typical breakdown products of C6 AFFF include perfluorohexanoic acid (PFHxA), perfluoro-n-pentanoic acid (PFPeA), and 5:3 fluorotelomer carboxylic acid (FTCA).

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: January 15, 2020 **Researcher:** Tyler Patel

Type of Research:

x	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name: Initial Assessment Study of Marine Corps Air Station, Tustin California

Document Author: Brown and Caldwell

Document Date: September 1, 1985

File Name: 19850901_Brown and Caldwell_IAS

Was a copy of the report obtained?

x	Yes
	No (provide reason)

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Notes:

"*(Executive Summary)* The purpose of an IAS is to identify and assess sites posing a potential threat to human health or to the environment due to contamination from past hazardous materials operations.

(2.2.1 Site 1. Moffett Trenches and Crash Crew Pits) This site consists of a series of three trenches used for the disposal of municipal solid waste and trash, over which two pits were constructed to burn flammable liquids … The estimated total amount of flammable liquids disposed of in the crash crew pits is 253,000 to 349,000 gallons. Of the total gallons disposed of for burning at the crash crew pits up to 10 percent are suspected to have percolated to the soil.

(2.2.2 Site 2 Oil Disposal Area) From 1970 to 1981, Site 2 was used by the squadrons as an area to dispose of excess liquid wastes when the crash crew storage tanks were full … These wastes include hydraulic fluid, JP-5, and crankcase oil.

(2.2.6 Site 12, Drum Storage Area No. 2) This site is comprised of three distinct locations (grid B-5, Plate 1) at which drums were stored and allegedly leaked material to the ground (reference Table 2-1 for leaked materials). Stained soil was observed at these locations. South of Building 20B, approximately 660 to 880 gallons, from 55 gallon POL drums containing crankcase oil and hydraulic fluids, leaked into the soil in a 50-by 100-foot area. This occurred over a 6 to 8 year period from the mid 1960's to the early 1970's while used by the supply department of Training Group 30.

(2.2.7 Site 13, Drum Storage Area No. 3) The second area includes a large stain area 140 by 45 feet where drums of chemical were stored. This area lies between buildings 41 and 94 and is also a current drum storage area though reportedly different materials are stored there now … These materials would include hydraulic fluid, diesel fuel, gasoline (leaded), oil, paint stripper, battery acids, solvents and various waste oils.

(2.4.2 Site 6, Paint Locker and Drum Storage Area) Approximately 100 drums were stored there at any given time that contained crankcase oil, JP-5 fuel, dry cleaning solvent, PD-680, polyurethane thinner, paint stripper, MEK, MEKP, polyester resin, penetrating oil, naptha, and isobutyl alcohol. Leakage from these drums occurred over the 9-year period and is estimate to total 50 gallons, the vast majority of which is primarily composed of JP-5 fuel, crankcase oil, and hydraulic fluid.

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Multi-MACJv

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/06/2020 **Researcher:** Sherry Zheng

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name:	Final EBS for Community Environmental Response Facilitation Act Report
Document Author:	Jacobs Engineering Group
Document Date:	April 14, 1994
File Name:	19940414_Jacobs_Final EBS for Community Environmental Response Faccilitation Act Report

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Multi-MACJv

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Notes:

This report presents the results of an environmental baseline survey (EBS) conducted by the Southwest Division Naval Facilities Engineering Command (Navy) in accordance with the U.S. Department of Defense (DoD) Policy on the Implementation of the Community Environmental Response Facilitation Act (CERFA) of 1992.

Table 3-3: Summary of Environmental Responses at IR Sites.

Appendix C: Descriptions of CERFA Parcels Inspected In 1992.

--CERFA Parcels are different from the parcels used in the other FOST reports. It only has 5 parcels.

Multi-MAC JV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 2/20/2020 **Researcher:** Emily Glensky

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name:	Final Finding of Suitability to Lease (FOSL), Interim Lease, Building 29, Hangar 2 (Public Document)
Document Author:	Bechtel
Document Date:	June 1, 1997
File Name:	- 19970601_Bechtel_Final FOSL Interim Lease Building 29 Hangar 2

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

Hangar 2 (Building 29), with approximately 298,000 square feet of floor space, and the surrounding 50-foot zone, is located in the south-central section of MCAS Tustin between Johnson and Dunn Streets. The hangar, built in 1943, was used to support operations and house airships (blimps) during World War II. The building has since been used for maintenance and helicopter support activities. The building has been vacant since March 1996. However, a portion (47,700 square feet) of the building was temporarily (September 1996 through 13 December 1996) used by the U. S. Department of the Navy, Applied Technology Test and Simulation, Have Gaze Program for airship maintenance purposes.

IRP-3, Paint Stripper Disposal Area Number 3, is located approximately 100 feet north of Hangar 2. The IRP site consists of stained zones around Buildings 29A, 40B, 174, 175, and 265, which were used for chemical storage and painting operations. Solvents, paint stripping compounds, and battery acid were disposed in this area. A Remedial Investigation (RI) was conducted at the site in 1996. Based on results of the RI, soil at IRP-3 has been recommended for no further action. However, a groundwater plume of trichloroethene (TCE) has been identified both north and south of Hangar 2. Therefore, it has been concluded that the TCE runs beneath Hangar 2.

Multi-MACJv

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: January 20, 2020 **Researcher:** Tyler Patel

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name:	Final Record of Decision/Remedial Action Plan Operable Unit 2 No Action Sites and Area of Concern
Document Author:	Bechtel National Inc. (Bechtel)
Document Date:	July 7, 2000
File Name:	2000_Bechtel_Final ROD.RAP

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

"*(Statement of Basis and Purpose)* This decision document presents the selected final remedial action for IRP-2, IRP-9, and IRP-13E and AOCs AD-04, AS-06, AS-08, AST-02, AST-04, MDA-04, MDA-07, MMS-01, and MWA-03 …

(5.3.9 MWA-03, Former Wash Pad) MWA-03 is located at the western boundary of MCAF Tustin, off Bumblebee Road. The AOC is a former wash pad at the Fuels Branch, operated by Marine Wing Support Squadron (MWSS)-374 for fueling equipment maintenance and inventory (Jacobs Engineering 1992b; SCS 1979). The former wash area consisted of a 40- by 16-foot concrete pad sloped to drains discharging to an oil/water (O/W) separator (TOW-04). The integrity of the concrete pad was poor and cracks were present (Jacobs Engineering 1992b). The unit was decommissioned in 1993, the O/W separator wash was removed and the former location of the O/W separator was paved over with asphalt…

Multi-MACJv

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

However, the area beneath the wash pad was not included in the closure activities for TOW-04 …

MWA-03 is a former vehicle wash pad, and the expected COPCs were limited to components of fuels, lubricants, waste oils, and solvents.

(5.4 RI Site IRP-13E, Drum Storage Area No. 3) IRP-13E is located in the northwestern portion of MCAF Tustin between Buildings 41 and 66. The site includes a large stained area (approximately 140 feet by 45 feet) where drums of chemicals were stored. Materials formerly stored in the area include hydraulic fluid, diesel fuel, leaded gasoline, oil, paint stripper, battery acids, and solvents. “

Multi-MACJv

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 2/20/2020 **Researcher:** Emily Glensky

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name: Final Finding of Suitability to Lease (FOSL) for Parcels 1, 2, 18, 19, 20, 21, and 22 (Public Document)

Document Author: Bechtel National, Inc.

Document Date: September 1, 2000

File Name: -2000_final finding of suitability to lease for parcels 1.2.18.19.20.21 and 22

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Multi-MACJv

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Notes:

MDA-5: The site is an open area containing one or more open pits used during the 1960s. This site was identified by the Second Addendum to Revised PR/Draft VSI (Site 30). This site is 100 to 150 feet from the southwest corner of the current fire station and may represent a burn pit or crash crew sump pond. Historical aerial photographs reveal a 30- by 30-foot depression with two piles of dirt along the edge (berms) within the AOC.

MDA-9: The site is a circular pit approximately 40 feet in diameter that was used as a crash crew sump pond during the 1960s. This site was identified by the Second Addendum to the Revised PR/Draft VSI (Site 32). This site is located off the southern corner of Building 183 at the end of Hangar No. 1 (Bldg. 28). The location is now paved. Interviews indicated that AV fas and D-fuel may have been disposed of in this pond.

MWA-15: The unit was a wash area located southwest of Building 13 operated by the Fire Department for washing and degreasing vehicles. The unit was not connected to an O/W separator; wastewater drained directly into the surrounding soil through French drains. The overall integrity of the system appeared to be poor. Water was not observed draining from the wash rack during the site inspection.

TOW-3: OW SEP-526 is a 1,000-gallon steel unit located east of Building 526 in an underground vault operated by Aircraft maintenance. It is used only to treat wastewater from any fire fighting action in the case of a fire in the hangars. The O/W separator is connected to two 580-gallon USTs (UST-526A and 526B), one for storage of waste oil and the other for storage of waste fuel prior to offsite disposal. The system is equipped with an overflow alarm to warn of waste oil and waste fuel discharge into the sanitary sewer system. The unit is used only in the case of an emergency and no waste is generated unless fire extinguishers are used.

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/03/2020 **Researcher:** Sherry Zheng

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name: Final Basewide Environmental Baseline Survey

Document Author: Bechtel National Inc.

Document Date: March 21, 2001

File Name: Enviromental Baseline Survey Part 1 (PDF)

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

Table 5-3 Hazardous Material/Waste Storage Areas (ST-1A through ST-91, STD 1-3)

Table 5-4 Air Emission Units (MAE 1-7)

Table 5-5 UST Summary

Table 5-6 AST Summary

Table 5-8 OWS Summary

Table 5-9 Wash Areas/ Grease Racks (MGR, MWA)

Multi-MACJv

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 2/20/2020 **Researcher:** Emily Glensky

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name:	Final Finding of Suitability to Transfer (FOST) # 1 for Parcels 3, 21, 38, 39, and portions of 40 (Public Document)
Document Author:	NAVFAC – Southwest Division
Document Date:	August 1, 2001
File Name:	2001_NAVFAC_Final Finding of suitability to transfer 1 for parcels 3.21.38.39 and portions of 40

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Notes:

Title X requires that federally-owned residential real property scheduled for transfer conduct:

- Inspection, risk assessment, and abatement of lead-based paint hazards (lead-based paint, soil, and dust) in target housing constructed prior to 1960.
- Inspections and risk assessments for target housing constructed between 1960 and 1978.

DoD policy includes additional requirements that go beyond the Title X statutory requirements related to LBP including:

- Soil lead hazards surrounding target housing constructed between 1960 and 1978 will be abated by DON or will be abated by the transferee as part of the transfer agreement.
- For child-occupied facilities (i.e., day care centers, preschools) located on residential real property that will be reused as child occupied facilities after transfer, DON will evaluate for lead-based paint hazards.
- The soil adjacent to target housing scheduled for demolition and planned for redevelopment after transfer will be evaluated for soil-lead hazards by the transferee after demolition of the existing target housing units. The transferee will conduct abatement of soil-lead hazards identified in the evaluation prior to occupancy of the new housing units.

2.1 Parcel 3: Parcel 3 (Figure 3) consists of about 6 acres located along the western boundary of MCAS Tustin within the city of Tustin. It is anticipated that Parcel 3 will be transferred for emergency housing needs.

2.2 Parcel 21: Parcel 21 (Figure 3) consists of about l0 acres in the northwestern corner of MCAS Tustin within the city of Tustin. Buildings A and B, constructed in 1946, were formerly commanding officers' quarters and executive officers' quarters, respectively. They are approximately 2,800 and 2,200 square feet in area, respectively (Table 1). Building C, constructed in 1946, was used as VIP quarters and is approximately 972 square feet in area. Buildings A, B, and C are currently vacant and are planned for demolition after transfer. It is anticipated that Parcel 21 will be transferred to become a new elementary school site (kindergarten through sixth grade).

Multi-MACJv

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

2.3 Parcel 38: Parcel 38 (Figure 4) consists of about 9 acres in the southeastern corner of MCAS Tustin within the city of Irvine. Parcel 38 was historically used for agricultural purposes since at least 1939 (GeoRemediation 1992). In 1988, DON acquired land from The Irvine Company, which included the area that is now designated as Parcel 38 as well as a portion of Parcel 39, for development of a family housing project (JEG 1994). Since that time, the parcels have not been farmed, and pesticides and herbicides have not been applied to the property (BNI 2001). Development of these areas was not implemented because base closure was scheduled. In the interim, Osumi Farms periodically plowed the property to control the weeds (BNI 1997a). It is anticipated that Parcel 38 will be transferred for use as a neighborhood park. The neighborhood park plans include facilities for childcare programs.

2.4 Parcel 39: Parcel 39 (Figure 4) consists of about 20 acres in the southern portion of MCAS Tustin within the city of Irvine. This parcel has historically been used for agricultural purposes since at least 1939 (GeoRemediation 1992). In 1988 and 1991, DON acquired land from The Irvine Company and the county of Orange, respectively, that included the area that is now designated as Parcel 39 for development of a family housing project (JEG 1994). Since that time, the parcel has not been farmed, and pesticides and herbicides have not been applied to the property (BNI 2001). Development of the property was not implemented due to the scheduled base closure. In the interim, Osumi Farms periodically plowed the property to control the weeds (BNI 1997a).

2.5 Parcel 40: The portions of Parcel 40 (circulation facilities) included in this FOST consist of about 1.0 acres and are located on the west side of Parcels 3 and 21 and on the east side of Redhill Drive (Figure 3).

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: January 23, 2020 **Researcher:** Tyler Patel

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name:	Final Finding of Suitability to Lease (FOSL) for Carve-Out Areas 5, 6, 7, 8, 9, 10 and 11 (Public Document)
Document Author:	Department of the Navy Naval Facilities Engineering Command Southwest Division (NAVFAC SW)
Document Date:	April 26, 2002
File Name:	20020426_NAVFAC SW_Final FOSL for CO Areas 5, 6, 7, 8, 9 10, and 11

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

"*(1.0 Purpose)* The purpose of this Finding of Suitability to Lease (FOSL) for the United States Department of the Navy (DON) is to document environmentally related findings that supposed the conclusion that seven areas in the northern, central, and eastern portions of Marine Corps Air Station (MCAS) Tustin, California …

(3.1 Area Types) OU-3 includes one area type 5 IRP (IRP-1), formerly consisting of unlined shallow landfill trenches and pits constructed to burn flammable liquids for firefighter training exercises. These activities resulted in VOC and polynuclear aromatic hydrocarbon (PAH) contamination of soil and groundwater.

(3.2.1.1 IRP Sites in CO-5; IRP-11) IRP-11 is part of the study area designated as OU-4. IRP-11, known as Drum Storage Area number (No.) 1, was used for drum storage from 1975 to 1984 and is located in Parcels 18 and 40 (Figure 6). Materials stored at the site included hydraulic fluids, crankcase oils, solvents, and aviation parts.

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

(3.2.1.1 IRP Sites in CO-5; IRP-12) IRP-12 is part of the study area designated as OU-1B. IRP-12, also known as Drum Storage Area No. 2, operated from the mid-1960s until 1975 and is located in Parcels 16, 17, 18 and 40 (Figure 6). The site contains three subareas where various solvents, crankcase oil, and hydraulic fluids leaked from storage drums and containers.

(3.2.1.1 IRP Sites in CO-5; IRP-13S) IRP-13S is part of the study area designated as OU-1A. IRP-13S is part of the area known as Drum Storage Area No. 3, and is located on portions of Parcels 1, 2, 16,18, 19, 22, 24, and 40 (Figure 6). This IRP site includes two AOCs (MWA-18 and ST-72B), an inactive wash area formerly used for cleaning small generators, and an inactive vehicle maintenance facility that formerly consisted of a garage and a lubrication facility.

(3.2.1.1 IRP Sites in CO-5; IRP-13W) IRP-13W (Figure 6) is part of the area known as Drum Storage Area No. 3. IRP-13W consists of two past disposal areas located in the northwest portion of Parcel 24 and contains portions of Parcel 40. IRP-13W is being evaluated under OU-4. Hydraulic fluid, diesel fuel, leaded gasoline, oil, paint strippers, battery acids, solvents and solvent-contaminated washwater were disposed onto IRP-13W soils.

Multi-MACJv

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: January 23, 2020 **Researcher:** Tyler Patel

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name:	Revised Final Finding of Suitability to Lease (FOSL) For Southern Parcels Carve-Out Areas 1, 2, 3, and 4 (Public Document)
Document Author:	CDM Federal Programs Corp. (CDM)
Document Date:	April 30, 2002
File Name:	20020430_CDM_Revised Final FOSL for Southern Parcels CO Areas 1, 2, 3, and 4

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

"*(1.0 Purpose)* The purpose of this Finding of Suitability to Lease (FOSL) for the United States Department of the Navy (DON) is to document environmentally related findings that supposed the conclusion that seven areas in the northern, central, and eastern portions of Marine Corps Air Station (MCAS) Tustin, California …

(3.1 Area Types) OU-3 includes one area type 5 IRP (IRP-1), formerly consisting of unlined shallow landfill trenches and pits constructed to burn flammable liquids for firefighter training exercises. These activities resulted in VOC and polynuclear aromatic hydrocarbon (PAH) contamination of soil and groundwater.

(3.2.1.1 IRP Sites in CO-5; IRP-11) IRP-11 is part of the study area designated as OU-4. IRP-11, known as Drum Storage Area number (No.) 1, was used for drum storage from 1975 to 1984 and is located in Parcels 18 and 40 (Figure 6). Materials stored at the site included hydraulic fluids, crankcase oils, solvents, and aviation parts.

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

(3.2.1.1 IRP Sites in CO-5; IRP-12) IRP-12 is part of the study area designated as OU-1B. IRP-12, also known as Drum Storage Area No. 2, operated from the mid-1960s until 1975 and is located in Parcels 16, 17, 18 and 40 (Figure 6). The site contains three subareas where various solvents, crankcase oil, and hydraulic fluids leaked from storage drums and containers.

(3.2.1.1 IRP Sites in CO-5; IRP-13S) IRP-13S is part of the study area designated as OU-1A. IRP-13S is part of the area known as Drum Storage Area No. 3, and is located on portions of Parcels 1, 2, 16,18, 19, 22, 24, and 40 (Figure 6). This IRP site includes two AOCs (MWA-18 and ST-72B), an inactive wash area formerly used for cleaning small generators, and an inactive vehicle maintenance facility that formerly consisted of a garage and a lubrication facility.

(3.2.1.1 IRP Sites in CO-5; IRP-13W) IRP-13W (Figure 6) is part of the area known as Drum Storage Area No. 3. IRP-13W consists of two past disposal areas located in the northwest portion of Parcel 24 and contains portions of Parcel 40. IRP-13W is being evaluated under OU-4. Hydraulic fluid, diesel fuel, leaded gasoline, oil, paint strippers, battery acids, solvents and solvent-contaminated washwater were disposed onto IRP-13W soils.

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: January 23, 2020 **Researcher:** Tyler Patel

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name: Final Finding of Suitability to Transfer (FOST) #4 for a Portion of Parcel 24 (Public Document)

Document Author: Bechtel National, Inc. (Bechtel)

Document Date: September 26, 2002

File Name: 20020926_Bechtel _Final FOST 4 Parcel 24

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

"*(1.0 Purpose)* This FOST is for a portion of the City of Tustin Reuse Plan Parcel 24 at the former MCAS Tustin that was found suitable to lease under the Finding of Suitability to Lease (FOSL) For Carve-Out (CO) Areas 5, 6, 7, 8, 9, 10, and 11, dated April 26, 2002 (herein called "FOSL 3").

(2.1 Parcel 24 (Portion)) Parcel 24 in its entirety consists of approximately 50 acres and is located in the northern portion of the former MCAS Tustin. Parcel 24 is bordered by Parcel 23 to the north and by portions of Parcel 40 to the east, south, and west. The boundaries of the transfer portion of Parcel 24 considered in this FOST, encompassing approximately 16 acres …

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

(7.1 Environmental Findings in Adjacent Properties Within Parcel 24) IRP-13S, which is approximately 3.3 acres of Parcel 24, is one of three parts of Drum Storage Area No. 3 located on the northern portion of Parcel 40 and the most western portion of Parcel 24 (Figure 4). This site is part of the study area designated as operable unit (OU)-IA. IRP-13S includes two AOCs (MWA-18 and ST-72B), an inactive wash area formerly used for cleaning small generators, and an inactive vehicle maintenance facility that formerly consisted of a garage and a lubrication facility, respectively."

(Table 2 Former Areas of Concern Within Transfer Portion of Parcel 24) Parcel 24, AOC MWA-17, Description: Inactive. This wash rack, located south of Bldg. 53, was installed in the 1940s. The unit was used for washing vehicles. The wash rack drained through a 12-inch-diameter pipe below the grill. The pipe was connected to the storm drain and the wastewater was discharged directly into Peters Canyon Channel. No O/W SEP was associated with this wash rack. The overall integrity of the unit appeared to be good. Dates of operation were the 1940s to 1996.

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: January 23, 2020 **Researcher:** Tyler Patel

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name: Final Finding of Suitability to Transfer (FOST) #5 for a Portion of Parcel 1 (Carve Out-11) and Portions of Parcel 16, 27, and 40 (Carve Out-8) (Public Documents)

Document Author: Bechtel National, Inc. (Bechtel)

Document Date: December 17, 2002

File Name: 20021217_Bechtel _Final FOST 5 CO-11 and Portions of Parcel 16, 27, and 40.PDF

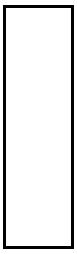
Was a copy of the report obtained?

X	Yes
	No (provide reason)

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022



Multi-MAC JV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Notes:

"*(1.0 Purpose)* This FOST was prepared for approximately 23.5 acres of land comprising a portion of Parcel 1 (Carve-Out [CO]-11) and portions of Parcels 16, 27, and 40 (CO-8) on the City of Tustin Reuse Plan for the Former MCAS Tustin (Figure 2). These CO areas were found suitable to lease under the Finding of Suitability to Lease (FOSL) for Carve-Out Areas 5, 6, 7, 8, 9, 10, and 11, dated 26 April 2002 (DON 2002a) (herein called "FOSL 3").

(2.1 Carve-Out Area 8) CO-8 occupies approximately 21 acres of land consisting of parts of Parcels 16, 27, and -10 in the central portion of the station (Figure 2). C0-8 includes areas of investigation (AOIs) Mooring Pads 4 and 5 and area of concern (AOC) MAW-11, identified as abandoned well #28 …

Mooring Pad 4 and a portion of Mooring Pad 5 were areas previously used to moor lighter-than-air blimps until 1949. Between 1949 and 1995, the pads did not have a specific use. From May 1995 to April 2001, the pads were used to store the treat contaminated soil.

The only building located within CO-8 is Building 303, a former storage shed scheduled for demolition …

(2.2 Carve-Out Area 11) CO-11 (Figure 2) occupies approximately 2.5 acres of land within Parcel 1, which is located in the western portion of Former MCAS Tustin. CO-11 was a former refueling area located at the end of Aircraft Parking Apron 1. The source for the refueling activity was two aboveground storage tanks (ASTs), 194A and 194B, approximately 100 yards from the carve-out area.

(6.1 Carve-Out Area 8) From May 1995 to April 2001, soil contaminated with total petroleum hydrocarbons (TPH) was stored on Mooring Pad 4 before being treated using a low-temperature thermal desorption unit (TDU) mobilized to the site …

This site is has received regulatory approval for no further action (NFA) (Attachment 2).

From August 1996 to May 2001, Mooring Pad 5 was periodically used as a storage area for TPH-contaminated soil before it was treated at Mooring Pad 4.

(6.2 Carve-Out Area 11) CO-11 is the location of a former rapid refueling facility at the end of Aircraft Apron 1. The fuel source for this activity was two former 30,000-gallon tanks (AST 194A and B) that were approximately 100 yards from Aircraft Apron 1 …

This received regulatory approval for NFA

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: January 22, 2020 **Researcher:** Tyler Patel

Type of Research:

- [ ] Administrative Record/NIRIS
- [ ] Online Research
- [ ] Miscellaneous Document Review

Document Name:	Final Finding of Suitability to Transfer (FOST) #7 Carve-Out 3, Portions of Carve-Out 5, and Carve-Out 8 (Public Document)
Document Author:	Bechtel National Inc. (Bechtel)
Document Date:	April 1, 2005
File Name:	20050401_Bechtel_FOST 7 Carve-Out 3, Portions of Carve-Out 5, and Carve-Out 8

Was a copy of the report obtained?

- [x] Yes
- [ ] No (provide reason)

Notes:

"*(1.0 Purpose)* This FOST, of approximately 12 acres, is for Carve-Out 3 (CO-3) (portions of Parcels 6, 7, 8, and 40) in FOSL 2; and from FOSL 3, portions of Carve-Out 5 (CO-5) (portions of Parcel 24), and Carve-Out 7 (CO-7) (portions of parcels 16 and 40)."

CO 3 contains multiple temporage drum storage areas including AOC ST-1A, AOC-ST-1B, and AOC ST-77

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: January 22, 2020 **Researcher:** Tyler Patel

Type of Research:

- [ ] Administrative Record/NIRIS
- [ ] Online Research
- [ ] Miscellaneous Document Review

Document Name:	Finding of Suitability to Transfer (FOST) #8 Carve-Outs 1 and 4 (Public Document)
Document Author:	Bechtel National Inc. (Bechtel)
Document Date:	February 1, 2006
File Name:	20060201_Bechtel_FOST 8 Carve-Outs 1 and 4

Was a copy of the report obtained?

- [x] Yes
- [ ] No (provide reason)

Notes:

"*(1.0 Purpose)* The purpose of this Finding of Suitability of Transfer (FOST) is to document the conclusion that real property at former Marine Corps Air Station (MCAS) Tustin made available through the Base Realignment and Closure (BRAC) process, is environmentally suitable to transfer …

(2.2 CO-4 Description) CO-4 contains the following areas of concern (AOCs); miscellaneous air emission (MAE) area-03, MAE-06, miscellaneous wash area (MWA)-12, MWA-13, storage temporary (ST)-12, ST-13A, ST-13B, ST-86, ST-88, treatment oil water separator (TOW)-11, TOW-12, and the Arsenic AOC …

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: January 22, 2020 **Researcher:** Tyler Patel

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name:	Final Well Searches Around Bases with Potential Perfluoroalkyl Substances Sites at Various Base Realignment and Closure (BRAC) Installations
Document Author:	Trevet, Inc.
Document Date:	October 28, 2016
File Name:	2016_Trevet_well search

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

"*(Section 1 Introduction and Method)* The primary objective was to identify all drinking water and other water supply wells within 3-mile perimeters around and within specific BRAC sites identified by the Navy and includes Naval Installations and Installation Restoration Sites identified on July 28, 2016 as potential perfluoroalkyl substance (PFAS) sites.

(Table 1-1. Potential PFOA/PFAS Priority Findings) Tustin MCAS, California; Site 1, Crash Crew Fire Fighting Pits; California Department of Water Resources records identified domestic use wells within one mile that are not in a downgradient direction. Domestic use wells were identified within one to three miles of the installation."

Report includes maps and tables of all wells identified around Tustin.

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 2/20/2020 **Researcher:** Emily Glensky

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name:	Final Finding of Suitability to Transfer (FOST) # 9 For Carve-Outs 2 and 9
Document Author:	Bechtel Environmental, Inc.
Document Date:	March 2, 2017
File Name:	20170302_Bechtel_Final Finding os suitability to transfer fost 9 for carve-outs 2 and 9

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:
Through the Base Realignment and Closure (BRAC) process, the DON transferred, by deed, certain Former MCAS Tustin real property in 2002 and subsequent years. Other real property known as COs was retained by the DON, pending further investigation and cleanup to support determinations that the property is environmentally suitable for transfer.

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

	Administrative Record/NIRIS
	Online Research
X	Miscellaneous Document Review

Document Name:	Memorandum on Investigating Per- and Polyfluoroalkyl Substances with the Department of Defense Cleanup Program
Document Author:	United States Department of the Navy
Document Date:	October 19, 2019
File Name:	2019_DON_Memo_Investigate_PFAS

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

On October 15, 2019, the DoD issued a memorandum for addressing PFAS in soil and groundwater within the Defense Environmental Restoration Program (DERP) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (DoD, 2019b). As indicated in the memorandum, screening levels for PFOA and PFOS were calculated using the U.S. EPA online calculator on April 6, 2018, and screening values for PFBS were derived from the U.S. EPA RSL table. For groundwater, residential screening levels of 0.04 µg/L for PFOA, 0.04 µg/L for PFOS, and 40 µg/L for PFBS were used to evaluate contamination in groundwater. Screening levels of 0.13 milligram per kilogram (mg/kg) for PFOA, 0.13 mg/kg for PFOS, and 130 mg/kg for PFBS were used to evaluate contamination in soil.

Multi-MACJV

Research Log

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Date: 04/28/2020 **Researcher:** Charles Hackel

Type of Research:

X	Administrative Record/NIRIS
	Online Research
	Miscellaneous Document Review

Document Name:	Response Levels Lowered for Water Systems Statewide as PFAS Investigation Continues
Document Author:	California State Water Resources Control Board (State Water Board)
Document Date:	February 6, 2020
File Name:	20200206_State_Water_Board_ResponseLevels

Was a copy of the report obtained?

X	Yes
	No (provide reason)

Notes:

Furthermore, on February 6, 2020, the State Water Board also lowered the Response Levels to 10 ppt for PFOA and 40 ppt for PFOS

Multi-MACJV

This page is intentionally blank.

Appendix C:
Research Checklist

This page is intentionally blank.

Preliminary Assessment Research Checklist

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Installation POC/Personnel Interviews	Yes	No (include reason)
Did installation point of contact (POC) complete General Information Questionnaire?	NA	
Was additional contact personnel provided by POC (i.e. Fire chief, longtime base employee). If yes, provide names and contact information (position/rank, phone number, e-mail address) below.	x	
former health and safety (H&S) director; Contact Information:	*REDACTED*	
former Commanding Officer, Contact Information:	*REDACTED*	
former pilot, Contact Information:	*REDACTED*	
former environmental consultant to the DON , Contact Information:	*REDACTED*	
former site manager, Contact Information:	*REDACTED*	
current employee of Marine Corps Installations (MCI) West Aviation, Contact Information:	*REDACTED*	
current Restoration Advisory Board (RAB) member, Contact Information:	*REDACTED*	
Was a General Information Questionnaire completed for each person contacted?	x	
Additional sources or information:		

Administrative Record Research	Yes	No (include reason)
Searched the Administrative Record for documents pertaining to the installation?	x	
Searched the following key words: AFFF, electroplating, wastewater treatment/sludge area (ponds), firefighting training area, landfill, oil/water separators, vehicle wash station, drum or soil storage, fire suppression systems, airfield, crash, and fire.	x	
List additional words searched in online AR:	*PFC, PFAS, foam, plating, disposal area, hangar, release, accident, burn*	
Reviewed the Environmental Baseline Survey?	x	
Located and reviewed Environmental Impact Statements and/or Environmental Assessments?	X	
Were Real Property Records (as-built drawings) located?		Not provided
Were installation maps with building functions located?	x	Some were found
Located and reviewed additional reports requested from or suggested by POC?	x	
Located historic aerial surveys (1970 - present)?		Not provided
Additional sources or information:		

Preliminary Assessment Research Checklist

Preliminary Assessment Report for Base-Wide Investigation of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances (PFAS)
MCAS Tustin, Tustin, CA
Contract N62470-19-D-4010, TO N6247320F4022

Online Research	Yes	No (include reason)
Internet search for installation and the following key words: crash, fire, as-build, master plan, real property, AFFF, PFC, and PFAS.	x	
List additional words searched in Index:	*Accident, burn*	
Performed a site search on GeoTracker and GeoTracker GAMA?	x	
Performed a site search on EnviroStor?	x	
Performed a Water Purveyor and Water Supply Well search?	X	Also, (Trevet, 2016) well search document
List sites searched:	*http://wdl.water.ca.gov/waterdatalibrary/* *https://www.water.ca.gov/Programs/Groundwater-Management/Data-and-Tools* *http://geotracker.waterboards.ca.gov/gama/* *https://ca.water.usgs.gov/* *https://hwts.dtsc.ca.gov/report_search.cfm* *https://www.sdcwa.org/*	
Searched the following websites:		
Environmental Protection Agency	X	
Notes:		
State Environmental Department	X	
Notes:		
Aviation Safety Network	X	
Notes:		
City and City Fire Department		Base provided Fire Department services
Notes:		
Agency for Toxic Substances and Disease Registry	X	
Notes:		
Department of Toxic Substance Control Hazardous Waste Tracking	x	
Notes:		
Office of Emergency Services	X	
Notes:		
State Environmental Department	X	
Notes:		
Additional sources or information:		

Signature: Kimberly Shiroodi Date: 08/072020

Multi-MACJV

Appendix D:
Response to Comments

This page is intentionally blank.

Responses to Comments
Draft Preliminary Assessment Report, Basewide Investigation of Per- and Polyfluoroalkyl Substances
Former Marine Corps Air Station Tustin, Tustin, California (August 2020)
Contract No. N62470-19-D-4010, Task Order No. N6247320F4022

Comment	Section	Comment	Response
Comments received from Christine Bucklin, PG, California Environmental Protection Agency, Department of Toxic Substances Control, Geological Services Branch (GSB), on October 16, 2020			
1	Table 5-1	GSB concurs with the AOIs identified on Table 5-1 for further investigation for PFAS under the forthcoming Site Investigation (SI) phase. Many AOIs are related to known source areas, usage or spill areas, and known disposal areas, such as unlined drainage ditches. In many cases, prior sampling in the areas detected PFAS concentrations in groundwater above screening levels.	Acknowledged. Given the results of the multiple rounds of groundwater sampling that have been conducted to date, the DON has elected to document such sampling in the attached *Preliminary Final Preliminary Assessment* (PA)/*Site Inspection* (SI) *Report* (appendices excluded) and proceed directly to a basewide Remedial Investigation (RI) for both soil and groundwater, as discussed previously with the BCT.
2	Table 5-2	GSB recommends further evaluation of the following AOIs: a) Based on interviews there are some AOIs (25, 26, 27, 28, 29, 30, 35) with no supporting documentation that do not match with the building number, or the exact location of the spill/release area could not be located on a map. Table 5-2 identifies these areas as having potentially used PFAS at some point in their history. It may be useful to attempt to match the proposed NFA-AOI with existing groundwater monitoring wells that were previously sampled for PFAS and/or show overlap of proposed additional work for an AOI with the proposed NFA-AOI such that the area would be generally covered. Figures should be provided. For example, Table 5-2 AOI 35, indicates that source areas in Parcel 2 will be	It should be noted that converting the PA Report into a PA/SI Report resulted in the addition of a new Section 5.0 that summarizes the SI findings. Therefore, Tables 5-1 and 5-2 have been renumbered Tables 6-1 and 6-2, respectively. a) The U.S. Department of the Navy (DON) attempted to corroborate and locate all AOIs that were identified based on the recollection of interviewees and completed the PA using all available information including historical use of areas and known or suspected releases of contaminants. The results of this analysis support the rationale for recommending no further action (NFA) for a particular AOI. If additional information becomes available that changes the probability of PFAS contamination at an AOI, then the DON will review that information and move forward as appropriate. The planned RI will assess PFAS impacts to soil and groundwater at the AOIs identified in Table 6-1, but because of the widespread PFAS impacts to groundwater and the potential for multiple AOIs to be contributing to the plume(s), the RI will further assess the nature and extent of PFAS impacts to basewide groundwater. The investigation of soil and groundwater at the 31 AOIs in Table 6-1 will result in incidental investigation of some of the AOIs in Table 6-2. Where specific AOIs included in Table 6-2 have the potential to be incidentally investigated in conjunction with nearby AOIs, Table 6-2 cross-references the associated

Responses to Comments
Draft Preliminary Assessment Report, Basewide Investigation of Per- and Polyfluoroalkyl Substances
Former Marine Corps Air Station Tustin, Tustin, California (August 2020)
Contract No. N62470-19-D-4010, Task Order No. N6247320F4022

Comment	Section	Comment	Response
		investigated as part of the AOIs listed in Table 5-1. b) It is not clear to GSB if areas identified as helicopter maintenance areas would have firefighting equipment available which contained AFFF. Additional information should be provided for AOI 161, 162, 163, 172 and any other listed helicopter repair/maintenance areas. If it remains unknown, these areas should be treated as above in Comment 2a. c) AOI 325 indicates Moffet [sic] Trench Waste as a location. Other AOIs that are related to the Moffet [sic] Trench Waste area were included as potential areas for further investigation. Unless additional information can be provided which excludes this AOI from further investigation, AOI 325 should be included in Table 5-1. d) AOI 42 lists AFFF as a type of material stored at Parcel 10, yet no further details were provided. Unless additional information can be provided to exclude this AOI from further investigation, it should be included in Table 5-1. e) AOIs 23, 24, 25: The AOI numbering for the Valencia Road crash and Mat 5 is not correct for some of the tables. Please double check tables 4-1, 5-1, and 5-2.	AOI(s). Thus, although the DON believes that the most likely PFAS sources have been identified and recommended for further investigation, the RI may reveal additional source areas that could not be located based on the records reviewed in the PA/SI. Figure 11 has been added to the *Preliminary Final PA/SI Report* to show the locations of all AOIs evaluated and highlight those sites recommended for further evaluation. Specifically regarding AOIs 25, 26, 27, 28, 30, and 35: • Several are based on parcel boundaries, which are typically associated with real estate transactions, not past use. When AOIs are based on parcel boundaries, the locations or activities within the parcel that may have included PFAS use or disposal are identified as separate AOIs. For example, AOI 25 is 38-acre Parcel 11. Building 568 was identified by an interviewee as a possible location where PFAS may have been stored, so it is included in the Parcel 11 description (as it is partially located in Parcel 11) and also identified separately as AOI 27. Similarly, AOI 35 (Parcel 2) did not serve as a source of contamination. AOI 11 (Fire Station) and AOI 12 (Building 49), which are located in Parcel 2, are proceeding to an RI. Therefore, parcel-based AOIs such as 25 and 35 do not need to be recommended for further assessment. • AOI 26 was a hazardous waste storage area located near the northeastern corner of Hangar 1 (AOI 16) that may have stored PFAS-containing wastes. Potential releases in this area will be investigated as part of AOI 16, so AOI 26 is not recommended for investigation separately. • AOI 27 (Building 568) was a storage warehouse that may have stored AFFF. Because the potential for release to the environment was deemed low from storage activities, AOI 27 has not been recommended for investigation. However, it is located just upgradient of AOI 1 in a portion of a PFAS plume that has not yet been fully delineated. Therefore, groundwater samples will likely be collected in the vicinity of AOI 27 as part of the planned RI. • AOIs 28 (Log Cabin) and 30 (Marine Air Wing Main Building) could not be located based on the description provided by the interviewee, and he could not identify their locations on a map. Therefore, these

Responses to Comments
Draft Preliminary Assessment Report, Basewide Investigation of Per- and Polyfluoroalkyl Substances
Former Marine Corps Air Station Tustin, Tustin, California (August 2020)
Contract No. N62470-19-D-4010, Task Order No. N6247320F4022

Comment	Section	Comment	Response
			AOIs are not recommended for investigation. As stated previously, if additional information becomes available that changes the potential for PFAS contamination, then the DON will review that information and move forward as appropriate. b) The location of AOIs 162 and 163 was misidentified in the *Draft PA Report*. It has now been determined that these AOIs are the helicopter hangars (Buildings 524 and 525) near Apron 1 that the former site manager thought may have used AFFF in their fire suppression systems. During research and interviews, evidence was found that indicated that Buildings 190 and 273 were equipped with AFFF-based fire suppression systems. Therefore, the recommendations for AOIs 161, 162, 163, and 172 have been changed, and the AOIs have been moved from Table 6-2 (formerly 5-2) to Table 6-1 (formerly 5-1). Please see the response to Comment 2a. c) Aboveground storage tanks 540A and 540B (AOI 325) were removed on June 10, 1997, and are not considered potential sources of PFAS-containing materials. The description of AOI 325 in Table 6-2 (formerly 5-2) has been updated to reflect this. However, the Moffett Trenches (OU-3) will continue to be investigated as recommended in Table 6-1 (formerly 5-1). Please refer to the attached *Preliminary Final PA/SI Report* (appendices excluded). d) Please see the response to Comment 2a regarding AOIs based on parcel boundaries. The AFFF mentioned in the AOI 42 description is associated with Building 520, which is identified separately as AOI 18 and was the only potential source of PFAS identified in Parcel 10. Therefore, Parcel 10 remains in Table 6-2 (formerly 5-1), but information has been added for Building 520 to cross-reference AOIs 18 and 42, which have been recommended for NFA. Please refer to the attached *Preliminary Final PA/SI Report* (appendices excluded). e) The misnumbering of the AOIs has been corrected. Valencia Road was mistakenly listed twice, as AOIs 23 and 29. AOI 29 has been removed throughout the document and a footnote has been added to AOI 23 in Table 6-2 (formerly 5-2) stating that AOI 29 was a duplicate entry and has been removed. Furthermore, when the former commanding officer was re-interviewed regarding the “crash near Valencia Ave.”, it became clear

Responses to Comments
Draft Preliminary Assessment Report, Basewide Investigation of Per- and Polyfluoroalkyl Substances
Former Marine Corps Air Station Tustin, Tustin, California (August 2020)
Contract No. N62470-19-D-4010, Task Order No. N6247320F4022

Comment	Section	Comment	Response
			that he had been misunderstood and had no knowledge of a crash in that area. Consequently, the recommendation for AOI 23 was changed to NFA, and AOI 23 was moved from Table 6-1 (formerly 5-1) to Table 6-2 (formerly 5-2). Please refer to the attached *Preliminary Final PA/SI Report* (appendices excluded).
Comments received from Patricia Hannon, PG, California Regional Water Quality Board, Santa Ana Region (RWQCB), on November 17, 2020			
1	Page 2-5	In the last paragraph, there is the statement "*Recent groundwater monitoring for OU-1A and OU-1B North indicated that the first and second WBZs generally flow toward Peters Canyon Channel along the southeastern boundary of Former MCAS Tustin."* The next sentence states "*The first, second, and third WBZs and Regional Aquifer all flow southwestern toward the Pacific Ocean (MMEC Group, 2018c)*. These sentences contradict each other. Please explain.	The cited text has been modified to the following: *Recent groundwater monitoring data collected in 2019 for OU-1A/1B North and OU-1B South indicate that the prevailing groundwater flow direction in the first and second WBZs was generally toward the south to southwest in the central portion of the Station, with flow deviations toward extraction wells within the hydraulic containment areas associated with the OU-1 remedy (Aptim Federal Services, LLC [APTIM], 2020b). Capture zone maps depicting the effects of the groundwater extraction systems, including cones of depression in groundwater elevations around the extraction wells, are provided in the Final 2019 Annual Performance Evaluation Report (APTIM, 2020b). Toward the eastern boundary of the Station, basewide groundwater elevation maps indicate that the groundwater flow direction is generally southeast toward Peters Canyon Channel (BNI, 1996a; DON, 2010). Groundwater in the third WBZ and regional aquifer flows southwesterly toward the Pacific Ocean (MMEC Group, 2018c).* Please refer to the attached *Preliminary Final PA/SI Report* (appendices excluded).
2	Page 2-6, Section 2.3.4 Groundwater	It states in the second paragraph of this Section, *However, according to the RWQCB (2019), "All surface waters in the Newport Bay Watershed are excepted from the MUN beneficial use, and surface waters. Furthermore, in the central part of the Newport Bay watershed, groundwater discharges to freshwater streams are unlikely to percolate to the deep regional*	The reference was corrected as follows. Please refer to the attached *Preliminary Final PA/SI Report* (appendices excluded). *California Regional Water Quality Control Board, Santa Ana Region (RWQCB). 2019b. General Waste Discharge Requirements for Discharges to Surface Waters Resulting from de minimis Discharges, Groundwater Dewatering Operations, and/or Groundwater Cleanup/Remediation Operations at Sites Within the Newport Bay Watershed, Order No. R8-2019-0061, NPDES No. CAG918002; Attachment F – Fact Sheet. November 6.*

Responses to Comments
Draft Preliminary Assessment Report, Basewide Investigation of Per- and Polyfluoroalkyl Substances
Former Marine Corps Air Station Tustin, Tustin, California (August 2020)
Contract No. N62470-19-D-4010, Task Order No. N6247320F4022

Comment	Section	Comment	Response
		aquifer (the Irvine GWMZ) because of the presence of an intervening, poorly transmissive shallow groundwater zone." The above quote could not be located in the document cited -- California Regional Water Quality Control Board, Santa Ana Region (RWQCB). 2019. Water Quality Control Plan, Santa Ana River Basin. June. Please check the source and provide the page number where the quote can be found. If this is not the correct source, please provide the title of the correct source and the page number where the quote can be found.	The quotation is from page 38 of the updated reference. The in-text references were updated globally.
3	Page 5-2	Please provide recommendations.	Please see the first paragraph of Section 6.0 in the attached *Preliminary Final PA/SI Report* (appendices excluded) where it is stated that, "*The 36 AOIs where further investigation may be warranted to determine or further assess the presence of PFAS are listed below, shown on Figure 10, and summarized in Table 6-1.*" Please also see the second paragraph, where it is stated that "*Based on the findings of this PA/SI Report, the DON is planning to complete a basewide RI for both soil and groundwater.*" Based on the conclusions presented in Table 6-2, the recommendation for AOIs listed therein is NFA. The text has been updated for clarity, and Table 6-3 has been added to summarize recommendations for AOIs where further investigation may be warranted.

Responses to Comments
Draft Preliminary Assessment Report, Basewide Investigation of Per- and Polyfluoroalkyl Substances
Former Marine Corps Air Station Tustin, Tustin, California (August 2020)
Contract No. N62470-19-D-4010, Task Order No. N6247320F4022

Comment	Section	Comment	Response
4	Page 5-3, Table 5-1: Areas of Interest Where Further Investigation May be Warranted	a) The presence of PFOA and PFOA [sic] at Site IRP-1 was confirmed in 2017 and in subsequent groundwater sampling events. Please explain if this Site will be included in the Site Inspection (SI) report. b) Please explain what will happen after the SI. c) Please explain what the Navy's plans are for the Sites listed in Table 5-1 that have not been designated to be included in the SI.	a) The DON assumes the RWQCB meant "PFOA and PFOS". IRP Site 1 will proceed to an RI to assess the extent of PFAS impacts in soil and groundwater as indicated in Table 6-3. The findings will be documented in the RI Report. b) Please refer to the response to DTSC Comment 1. For next steps, please refer to the updated version of Table 6-1 and newly developed Table 6-3 included in the attached *Preliminary Final PA/SI Report* (appendices excluded). c) It should be noted that Table 5-1 has been renumbered Table 6-1. Some of the sites listed in Table 6-1 are not located near the groundwater wells that have been sampled to date, and thus they were not discussed in Section 5.0 (SI Findings). All sites included in Table 6-1 (regardless of their previous sampling history) will enter the RI phase of investigation as described further in Table 6-3.

DON-Initiated Substantive Updates and Improvements
Draft Preliminary Assessment Report, Basewide Investigation of Per- and Polyfluoroalkyl Substances
Former Marine Corps Air Station Tustin, Tustin, California (August 2020)
Contract No. N62470-19-D-4010, Task Order No. N6247320F4022

Reference	Substantive Update/Improvement	Rationale
Entire Document	The document has been updated from a Preliminary Assessment (PA) Report to a PA/Site Inspection (SI) Report. Substantive edits have been made and highlighted in the attached preliminary final version (appendices excluded).	The DON proactively conducted multiple phases of groundwater investigation before bringing PFAS into the CERCLA program. These investigations resulted in the collection and analysis of over 200 groundwater samples (including duplicate and split samples) from different locations to not only assess the presence, but also the nature and initial extent, of PFAS impacts to groundwater associated with Former MCAS Tustin (Station). As previously discussed with the BCT, the DON originally planned to compile the results of those investigations in a separate, stand-alone SI Report, but has now elected to incorporate them in a combined PA/SI Report. Considering that the DON involved the BCT in the planning of the previous investigations, the data have already been reported under separate covers, and the Draft PA Report included a summary of the results of previous investigations, it makes sense to expand the scope from a PA to a PA/SI Report and streamline the reporting process.
Entire Document	The screening levels used for the evaluation of PFOA and PFOS impacts to groundwater have been updated to reflect current U.S. Department of Defense (DoD, 2019a) guidance. Additionally, the screening level used for the evaluation of PFBS impacts to groundwater has been updated to reflect the Regional Screening Level (RSL) issued by the U.S. Environmental Protection Agency (U.S. EPA) in May 2021.	Previous evaluations of PFOA and PFOS impacts to groundwater at and associated with the Station were partially based on the summed concentrations relative to the U.S. EPA (2016) Lifetime Health Advisory of 0.07 µg/L. This is because at the time the Draft PA Report was in preparation, the Lifetime Health Advisory represented the most conservative screening level considering the potential presence of multiple PFAS. The updated DoD (2019a) screening levels for PFOA and PFOS (both 0.04 µg/L), which are based on a hazard quotient of 0.1 and assume that more than one PFAS is present, are now used for data evaluation. The updated U.S. EPA (2021b) Regional Screening Level for PFBS in tap water (0.60 µg/L) is now used as it is more conservative than the previously used DoD (2019a) screening level (40 µg/L).

DON-Initiated Substantive Updates and Improvements
Draft Preliminary Assessment Report, Basewide Investigation of Per- and Polyfluoroalkyl Substances
Former Marine Corps Air Station Tustin, Tustin, California (August 2020)
Contract No. N62470-19-D-4010, Task Order No. N6247320F4022

Reference	Substantive Update/Improvement	Rationale
Figures	Six new figures have been added and the order of citation/presentation has been updated.	Figures 3, 5, 7, 8, 9, and 11 have been added. Figure 3 depicts the current reuse plan for the Station. Figure 5 represents the conceptual hydrogeologic model developed during the RI (Bechtel National, Inc., 1996). Figures 7 and 8 depict the estimated areal extents of PFOA, PFOS, and PFBS plumes in the first and second water-bearing zones (WBZs), respectively, based on the data collected by the DON to date. Figure 9 provides results for surface water sampling completed at IRP Site 1. Previous Figure 5 is now Figure 10, and the various areas discussed in the report (e.g., Carve-Out Boundary, PFAS Area of Interest, Area of Concern, Mat 5, and OU-3 boundary) have been color-coded for clarity. Figure 10 has also been updated to show updated list of AOIs recommended for further evaluation. Figure 11 has been added to show the locations of all potential AOIs evaluated and highlight those recommended for further evaluation. These figures support the change in the document from a PA Report to a PA/SI Report.
Tables 6-1 and 6-2	These tables have been revised to reflect new recommendations for seven AOIs. Table 6-1 lists the AOIs recommended for further evaluation, and Table 6-2 lists the AOIs recommended for NFA.	AOI 23 has been recommended for NFA and was moved from Table 6-1 (formerly 5-1) to Table 6-2 (formerly 5-2). Please see the response to Ms. Bucklin's Comment 2e for the rationale. The recommendations for IRP Sites 9a and 9b and AOIs 161, 162, 163, and 172 have been changed from NFA to further evaluation and the AOIs have been moved from Table 6-2 (formerly 5-2) to Table 6-1 (formerly 5-1). Please see the response to Ms. Bucklin's Comment 2b for the rationale.
Table 6-3	This new table was added.	This table serves as a succinct reference to the next steps in the CERCLA process for the AOIs that may warrant further investigation.
Figure 10 (Former Figure 5)	IRP Sites 9a and 9b and AOIs 161, 162, 163, and 172 were added to this figure.	Upon further review after the publication of the Draft PA Report, AOIs 161,162, 163, and 172 have been recommended for further investigation based on their historical use and/or the presence of AFFF-based fire suppression systems. Please see the response to Ms. Bucklin's Comment 2b

DON-Initiated Substantive Updates and Improvements
Draft Preliminary Assessment Report, Basewide Investigation of Per- and Polyfluoroalkyl Substances
Former Marine Corps Air Station Tustin, Tustin, California (August 2020)
Contract No. N62470-19-D-4010, Task Order No. N6247320F4022

Reference	Substantive Update/Improvement	Rationale
		for additional information. IRP Sites 9a and 9b were added based on PFOS detections downgradient from this area that suggested a different type of PFAS release may have occurred. Potential hydraulic fluid spills will be investigated as a potential source.
Section 1.1.2	The screening level for PFBS has been updated.	Based on updated toxicity data (U.S. EPA, 2021a), the screening level for PFBS in tap water was updated in the U.S. EPA (2021b) RSLs to 0.60 µg/L. This value is more conservative than the previously used DoD (2019a) screening level of 40 µg/L.
Section 1.1.2.3 and Table 1-1	The adjective “residential” was added before references to screening levels for “soil”.	There were no qualifiers previously to indicate what type of screening level was being referred to.
Section 1.3	The objectives have been updated to include reporting previous PFAS sampling results for groundwater.	The objective now includes an SI component to report the results of groundwater samples collected from key locations across the Station for PFAS.
Section 1.4	The scope of the PA was expanded to include SI components, including the evaluation of previously collected groundwater samples.	Previous groundwater samples associated with Operable Units 1A, 1B North, 1B South, and 4B and Carve-Outs 2, 5, 6, and 9 were evaluated to support the SI.
Section 3.0	Section 3.0 was renamed from “Previous PFAS Investigations” to “PFAS Investigations Conducted by Others”.	This section was modified to include sampling conducted by Irvine Ranch Water District in which sampling results were shared with the DON, but complete records documenting the sampling methods, laboratory analyses, and monitoring events were not provided. DON-sponsored sampling events, methodologies, and findings are now documented in Section 5.0.

DON-Initiated Substantive Updates and Improvements
Draft Preliminary Assessment Report, Basewide Investigation of Per- and Polyfluoroalkyl Substances
Former Marine Corps Air Station Tustin, Tustin, California (August 2020)
Contract No. N62470-19-D-4010, Task Order No. N6247320F4022

Reference	Substantive Update/Improvement	Rationale
Sections 4.2.1 and 4.2.2.5	MAG-16 Hangar (Building 524), MAG-16 (Building 525), and IRP Sites 9a and 9b were added as AOIs that may warrant further investigation.	AOIs 162 (MAG-16 Hangar [Building 524]) and 163 (MAG-16 Hangar [Building 525]) were added because after further evaluation of the historical use, there is potential for AFFF to be present in soil and groundwater. The MAG-16 hangars were used as helicopter maintenance areas (Buildings 524 and 525) and were potentially equipped with AFFF-based fire suppression systems. IRP Sites 9a and 9b may be impacted by spilled oil and hydraulic fluids that potentially contained PFAS. Please see the response to Ms. Bucklin's Comment 2b for additional information.
Section 5.0	This section entitled Site Inspection Methodology and Findings was added.	This section was added to document details of the SI activities associated with DON-sponsored sampling events.
Table 5-1	This table was added to document certain details of the monitoring wells previously sampled for PFAS.	Basic information regarding the monitoring wells that were previously sampled for PFAS needed to be provided to support to SI.
Table 5-2	Table 5-2 (formerly Table 3-1) was updated to include all available PFOA, PFOS, and PFBS results associated with the Station.	A summary of all available PFOA, PFOS, and PFBS data was needed.
Section 5.3.2.5	Findings associated with IRP Sites 9a and 9b were added.	The detection of PFAS in groundwater monitoring well IS72MW15S suggests that IRP Sites 9a and 9b may be the source.
Section 6.0	IRP Sites 9a and 9b and AOIs 161, 162, 163, and 172 were added to the list of AOIs where further investigation may be warranted. Table 6-3 was referenced.	IRP Sites 9a and 9b and AOIs 161, 162, 163, and 172 were reclassified as AOIs that may warrant further investigation after considering comments on the Draft PA Report and new information. The newly developed Table 6-3 providing additional information on the next steps in the CERCLA process needed to be cited.

DON-Initiated Substantive Updates and Improvements
Draft Preliminary Assessment Report, Basewide Investigation of Per- and Polyfluoroalkyl Substances
Former Marine Corps Air Station Tustin, Tustin, California (August 2020)
Contract No. N62470-19-D-4010, Task Order No. N6247320F4022

Sources:

Bechtel National, Inc. 1996. *Draft Remedial Investigation Report for Operable Unit 3, Volumes 1 and 2.* July. (Document is considered final.)

California Regional Water Quality Control Board, Santa Ana Region (RWQCB). 2019b. *General Waste Discharge Requirements for Discharges to Surface Waters Resulting from de minimius Discharges, Groundwater Dewatering Operations, and/or Groundwater Cleanup/Remediation Operations at Sites Within the Newport Bay Watershed, Order No. R8-2019-0061, NPDES No. CAG918002; Attachment F – Fact Sheet.* November 6.

Multi-Media Environmental Compliance Group (MMEC Group). 2018c. *Final Summary Report for Per- and Polyfluoroalkyl Substances Presence/Absence Sampling in Groundwater in Carve-Outs 5 and 6, Former Marine Corps Air Station Tustin, Tustin, California.* November.

Acronyms and Abbreviations:

AFFF = aqueous film-forming foam; AOI = Area of Interest; DoD = United States Department of Defense; DON = United States Department of the Navy; DTSC = California Environmental Protection Agency, Department of Toxic Substances Control; GSB = Geological Services Branch (DTSC); GWMZ = groundwater management zone; IRP = Installation Restoration Program; MCAS = Marine Corps Air Station; MMEC Group = Multi-Media Environmental Compliance Group; NFA = no further action; NPDES = National Pollutant Discharge Elimination System; OU = Operable Unit; PA = preliminary assessment; PFAS = per- and polyfluoroalkyl substances; PFBS = perfluorobutanesulfonic acid; PFOA = perfluorooctanoic acid; PFOS = perfluorooctane sulfonate; PG = Professional Geologist; RI = remedial investigation; RWQCB = California Regional Water Quality Control Board, Santa Ana Region; SI = site inspection; WBZ = water-bearing zone

This page is intentionally blank.

Response to Comments
Preliminary Final Preliminary Assessment/Site Inspection Report
Basewide Investigation of Per- and Polyfluoroalkyl Substances
Former Marine Corps Air Station Tustin, Tustin, California (October 2021)

Contract No. N62470-19-D-4010, Task Order No. N6247320F4022

No.	Reference	Comment	Response
Comments received from Kenneth Piguee, Senior Management Analyst, City of Tustin, via letter dated December 7, 2021			
1	Section 2.2.2	This section (and all subsequent sections) should be updated to reflect recent transfer of CO-2 and CO-9 to the City.	Section 2.2.2 has been updated to reflect the recent transfer of CO-2 and CO-9 to the City of Tustin and establish that they will be described as "former" COs in later discussions in the report. However, "former" COs have not been broken down to Installation Restoration Program (IRP) sites or other designations for current reporting consistency and associations with earlier reports. If/when IRP sites (i.e., 5S(a), 5S(b), etc.) are discussed in the future, they will refer to the former CO they are associated with, as applicable. For consistency, other previously transferred COs (e.g., CO-7) have been identified as "former" where applicable.
2	Section 2.2.2.2	1. Change "Orange County Sheriff's Department" to "County of Orange" 2. Please add the following to the end of the last sentence: "after an exchange agreement between the Army and the City for a new Reserve facility elsewhere on base."	1. Changed. 2. Added with minor technical edit.
3	Section 4.2.1	1. AOI 162: Change "Orange County Sherriff's Academy" to "United States Army Reserve" 2. Drainage Area No. 1, Ditch 5A South: change to "former CO-9."	1. Changed. 2. Subsection title unchanged; however, location reference changed to former CO-9.
4	Section 4.2.2.1	Last line on page 4-10: change to "former CO-2"	Changed.
5	Section 5.1.1	Change CO-2 and CO-9 to IRP designations	Please refer to the response to Comment No. 1.
6	Table 5-1	Change CO-2 and CO-9 to IRP designations	Please refer to the response to Comment No. 1. In addition, the IRP site cross-references for the former COs are already provided in the first column.
7	Section 5.2.5 (and subsections)	Includes references to CO-2 and CO-9. City understands if this is needed for clarity and consistency in the various reports, but a note should be added that these are former COs, at a minimum.	Please refer to the response to Comment No. 1. For clarity, a footnote and parenthetical text have been added to identify which COs are former.

Response to Comments
Preliminary Final Preliminary Assessment/Site Inspection Report
Basewide Investigation of Per- and Polyfluoroalkyl Substances
Former Marine Corps Air Station Tustin, Tustin, California (October 2021)
Contract No. N62470-19-D-4010, Task Order No. N6247320F4022

No.	Reference	Comment	Response
8	Table 5-2	1. Legend on page 5-18 should be included on pages 5-13 to 5-18 as this table takes up multiple pages. 2. Change CO-2 and CO-9 to IRP designations (or see comment on Section 5.2.5).	1. It is typical practice on tables with multiple pages to place the legend only at the end of the table. No changes were made. 2. Changed to former CO-2 and former CO-9, but not to IRP site designations (please refer to the response to Comment No. 1).
9	Section 5.3	1. Includes references to CO-2 and CO-9. City understands if this is needed for clarity and consistency in the various reports, but a note should be added that these are former COs, at a minimum. 2. Is it possible to bold and/or underline the last sentence in the second paragraph? This is a critical item to emphasize for those receiving the report.	1. Please refer to the response to Comment No. 1. 2. This sentence has been italicized for emphasis.
10	Section 5.3.1	Change CO-2 to IRP designation	References changed to former CO-2, but not to an IRP site designation (please refer to the response to Comment No. 1).
11	Section 5.3.2	Extra comma in second sentence	Corrected.
12	Section 5.3.5	Update reference to CO-9	Changed to former CO-9 and noted transfer in 2021.
13	Table 6-2	Change CO-2 and CO-9 to IRP designations	Changed to former CO-2 and former CO-9, but not to IRP site designations (please refer to the response to Comment No. 1).
14	Table 6-3	1. Update IRP 5S(a) to reflect City ownership 2. IRP 5S(b): While this site was transferred to the City originally, current ownership is Costco Wholesale Corporation after City transfer. 3. IRP 13E: Ownership is multiple (these are ownership residential units). It may be easier to designate this as “portions of Columbus Square.” Marble Mountain Partners was the original developer that received a direct conveyance from the Navy. 4. IRP 13S: Please confirm this site is owned entirely by the Navy. Figure 10 seems to indicate multiple ownerships. 5. IRP 13W: Ownership should be DON and “portions of	1. Please refer to the response to Comment No. 1. 2. Changed to Costco. 3. Changed to Multiple. 4. Changed to Multiple, including the DON. 5. Changed to Multiple, including the DON. 6. Created rows for AOIs 19 and 20 to implement changes. 6a. Changed property ownership to Vestar/Kimco LP. (This change was also made in Table 6-1.) 6b. Changed property ownership to Brookfield Homes Southern California LLC and included that DON will review due diligence data prior to making a recommendation. (This change was also made in Table 6-1.)

Response to Comments
Preliminary Final Preliminary Assessment/Site Inspection Report
Basewide Investigation of Per- and Polyfluoroalkyl Substances
Former Marine Corps Air Station Tustin, Tustin, California (October 2021)
Contract No. N62470-19-D-4010, Task Order No. N6247320F4022

No.	Reference	Comment	Response
		Columbus Square" per comment on IRP 13E. 6. AOI 18-20 a. 18: While this site was transferred to the City originally, current ownership is Vestar/Kimco LP after City transfer. b. 20: City recently transferred portions to Brookfield Homes Southern California LLC for "The Landing" residential project. City and Brookfield performed extensive due diligence on this site for PFAS in soil and groundwater that has been shared with the Navy for a potential NFA designation. 7. AOI 21: This is CO-5, not CO-6. 8. AOI 24: While this site was transferred to the City originally, current ownership is multiple (these are ownership residential units). It may be easier to designate this as "portions of Greenwood." 9. AOI 161: While this site was transferred to the City originally, current ownership is Costco Wholesale Corporation and/or Lowes HIW after City transfer, depending on exact location. 10. AOI 162: Ownership is Department of the Army. 11. AOI 163: Ownership is Department of the Army and/or City of Tustin, depending on exact location. 12. AOI 172: While this site was transferred to the City originally, current ownership is Lowes HIW after City transfer.	7. Corrected to CO-5. 8. Changed to Multiple. 9. Changed to Costco. 10. Changed to Army. 11. Changed to Army or City (exact location TBD). 12. Changed to Lowe's HIW, Inc.

Response to Comments
Preliminary Final Preliminary Assessment/Site Inspection Report
Basewide Investigation of Per- and Polyfluoroalkyl Substances
Former Marine Corps Air Station Tustin, Tustin, California (October 2021)
Contract No. N62470-19-D-4010, Task Order No. N6247320F4022

No.	Reference	Comment	Response
15	Figure 2	Remove CO-2 and CO-9 as Navy owned property.	Removed.
16	Figure 6	Remove CO-2 and CO-9 as a Carve Out.	Changed labels to Former CO-2 and Former CO-9.
17	Figure 7 and Figure 8	1. Remove CO-2 and CO-9 as a Carve Out. 2. Please add to the top of this figure in an easy to read font, color, and size that states “Inferred plume boundaries are not representative of a single PFAS analyte, the total PFAS in groundwater, or a particular sampling event, and the estimated plumes are presented for SI screening purposes only.” This matches Section 5.3 and provides a caveat for the Figure. City recognizes that this is in the “notes” but it is extremely hard to find and read. 3. Please provide an explanation on why there is an “inferred or uncertain” plume boundary for PFOA, PFOS, and PFBS. This has not been a standard practice in Navy documents for other contaminants of concern without supporting data. Almost all sampling to date has been done on Navy property, but these inferred or uncertain plume boundaries indicate that there is data to support the off-Navy property boundaries. 4. Please provide an explanation why all plume boundaries are inferred, except for the southern base boundary. Even the IRP 5S(a) plume extends beyond	1. Changed to Former CO-2 and Former CO-9. Updated Legend with alternate color and description for Former COs. 2. Changed formatting of last sentence in Notes to bold/underline per the response to Comment No. 9.2. 3. Inferred plume boundaries are a standard practice in environmental reporting when sampling data, historical conditions, geologic conditions, chemical characteristics, or professional judgement supports it. The current inferred PFOA, PFOS, and PFBS combined plume boundaries take all these elements into consideration. The TCE plumes within the central and southern portions of the station all exhibit shapes that support southerly groundwater flow direction. Additionally, the TCE and 1,2,3-TCP plumes in the north of CO-5 each support a southwesterly groundwater flow direction. Therefore, PFOA, PFOS, and PFBS combined plume shapes assume the same general paths of travel and shapes. Plume migration in crossgradient directions is slower than the downgradient direction and there is less uncertainty in the predicted travel, which is why the PFOA, PFOS, and PFBS combined plume is bounded on the sides and not at the distal southern end. The uncertainty in the plume size in the downgradient direction

Response to Comments
Preliminary Final Preliminary Assessment/Site Inspection Report
Basewide Investigation of Per- and Polyfluoroalkyl Substances
Former Marine Corps Air Station Tustin, Tustin, California (October 2021)
Contract No. N62470-19-D-4010, Task Order No. N6247320F4022

No.	Reference	Comment	Response
		the southern base boundary on this exhibit. The Navy should show all inferred/uncertain boundaries, or none.	does not allow relatively accurate inferences to be made. Additionally, it is not currently assumed that there are significant upgradient sources, so the upgradient portion of the PFAS plume is also bounded. 4. Please refer to the response to Comment No. 17.3.
18	Figure 10	1. Remove CO-2 and CO-9 as a Carve Out. 2. Please provide rationale for including Mat 5 in this Figure. 3. Please provide rationale for why plume boundaries are needed in this Figure.	1. Please refer to the response to Comment No. 17.1. 2. Mat 5 is included as a reference point for placement of AOI 24: Aircraft Crash Southeast of Mat 5. 3. Plumes are included because they corroborate suspected releases at several AOIs.
19	Figure 11	1. Remove CO-2 and CO-9 as a Carve Out. 2. Please provide rationale for including Mat 5 in the Figure. 3. Please provide rationale for why plume boundaries are needed in this Figure. 4. Tables on the right of this exhibit are extremely hard to read.	1. Please refer to the response to Comment No. 17.1. 2. Please refer to the response to Comment No. 18.2. 3. Please refer to the response to Comment No. 18.3. 4. Figure 11 is D size (22”x34”) and the table is readable at 100%.
Other Comments			
1	Groundwater Elevations	The report does not include figures or tables summarizing groundwater elevations in monitoring wells. The general groundwater flow direction is typically toward the south/southeast, but shallow groundwater flow directions are not well-defined. Shallow groundwater has been reported to flow to the south/southeast and also to the north or east, towards surface water channels. Page	Groundwater elevations are referenced only, as they appear in groundwater monitoring reports for each of the CERCLA sites at the Station and were not included for streamlined reporting. However, general groundwater flow directions are shown by blue arrows on Figures 7 and 8 for reference.

Response to Comments
Preliminary Final Preliminary Assessment/Site Inspection Report
Basewide Investigation of Per- and Polyfluoroalkyl Substances
Former Marine Corps Air Station Tustin, Tustin, California (October 2021)
Contract No. N62470-19-D-4010, Task Order No. N6247320F4022

No.	Reference	Comment	Response
		72 states that *"the direction of [shallow] groundwater flow changes somewhere upgradient of the Crash Crew AOC."* The lack of clarity in flow directions may impact the interpretation of PFAS source areas. In the northwestern area near the near the former base boundary, PFOA was detected at a concentration of 2.3 ug/L. The report states that this is not downgradient of the fire rescue station AOC and therefore data did not indicate a release associated with this AOC.	The text cited on Page 72 (below) has been removed because the actual lack of clarity in this statement is in regard to the exact location of the groundwater flow direction change from southwest to south/southeast. However, this is not a significant issue because the suspected transition area is between two areas within CO-5 with known flow directions. Deleted text: *"As can be seen on Figure 10, most of the samples collected in the vicinity of the Crash Crew AOC were collected downgradient or crossgradient of the AOIs identified within the AOC. The direction of groundwater flow changes somewhere upgradient of the Crash Crew AOC, so it is difficult to identify which wells might be most representative of upgradient concentrations."* PFOA was detected at 2.23 µg/L in temporary well TW08S at the northwestern base boundary, which is nearly due west of the Fire/Rescue Station AOC. This drastic crossgradient migration pattern does not suggest that the Fire/Rescue Station AOC is a source area. Also, the data from upgradient of TW08S does not directly link far upgradient IRP Site 13S as a source area either. However, additional step-out sampling is being planned in the Remedial Investigation to fill data gaps that will delineate the nature and extent of PFOA, PFOS, and PFBS in soil and groundwater.
2	PFAS Plume Contour	The Navy has contoured the PFAS plume in a manner that is not consistent with VOC plume shape in the same areas. The Navy does not present an explanation for the PFAS plume contour interpretation. The Navy should evaluate previously reported groundwater elevations/potentiometric surface figures, vertical gradients, and stratigraphy to prepare an informed assessment of groundwater flow directions, identify data gaps, and prepare a more realistic interpretation of likely	Please refer to the response to Comment No. 17.3 above. The fate and transport characteristics of VOCs are different than for PFAS, so plume shapes are not expected to absolutely correlate. The Navy is planning to conduct a more thorough assessment as part of the forthcoming Remedial Investigation. The additional data gathered will be used to prepare more accurate plume extents for PFOA, PFOS, and PFBS.

Response to Comments
Preliminary Final Preliminary Assessment/Site Inspection Report
Basewide Investigation of Per- and Polyfluoroalkyl Substances
Former Marine Corps Air Station Tustin, Tustin, California (October 2021)
Contract No. N62470-19-D-4010, Task Order No. N6247320F4022

No.	Reference	Comment	Response
		plume extent, thereby identifying priorities for off-site investigation.	
Comment received from Nicholas Ta, Senior Environmental Scientist, California Department of Toxic Substances Control (DTSC), via email dated December 8, 2021			
1	Not Applicable	DTSC has no additional comments for the RTC.	The DON appreciates DTSC's continued support.
Comment received from Patricia Hannon, Engineering Geologist, California Regional Water Quality Control Board, Santa Ana Region (Water Board), via email dated December 10, 2021			
1	Not Applicable	The Water Board accepts the Navy's responses to our comments on the *Draft Preliminary Assessment Report, Basewide Investigation of Per- and Polyfluoroalkyl Substances,* dated August 2020. We have also reviewed the *Preliminary Final Preliminary Assessment/Site Inspection Report, Basewide Investigation of Per- and Polyfluoroalkyl Substances,* dated October 2021 and concur with the Report.	The DON appreciates the Water Board's continued support.

Acronyms and Abbreviations:

AOI = Area of Interest; CO = Carve-Out; DON = United States Department of the Navy; IRP = Installation Restoration Program; NFA = no further action; PFAS = per- and polyfluoroalkyl substances; PFBS = perfluorobutanesulfonic acid; PFOA = perfluorooctanoic acid; PFOS = perfluorooctane sulfonate; SI = site inspection

This page is intentionally blank.