

**FACT SHEET/STATEMENT OF BASIS FOR APPROVAL
OF
CORRECTIVE ACTION COMPLETE
FOR FOUR SOLID WASTE MANAGEMENT UNITS AND
EIGHT AREAS OF CONCERN**

**HOLLOMAN AIR FORCE BASE
NEW MEXICO**

RCRA PERMIT No. NM6572124422

June 21, 2018

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ATTACHMENT

Draft Permit - Modified Tables, Permit Appendix 4-A, Summary of Solid Waste Management Units/Areas of Concern, Table A, Table B, and Table C

ACRONYMS AND ABBREVIATIONS

±	Plus or minus
AAF	Army Air Field
ACM	Accelerated Corrective Measures
ACC	Air Combat Command
AFB	Air Force Base
amsl	Above mean sea level
AOC	Area of Concern
AS	Air sparging
AST	Aboveground storage tank
ASTM	American Society for Testing and Materials
bgs	Below ground surface
Bhate	Bhate Environmental Associates, Inc.
BN/AE	Base, neutral, and acid extractable
BRA	Baseline risk assessment
BTEX	Benzene, toluene, ethylbenzene, and total xylenes
CA	Corrective Action
CAC	Corrective Action Complete
CB&I	Chicago Bridge & Iron Company
CFR	Code of Federal Regulations
COPC	Chemical of potential concern
COPEC	Chemical of potential ecological concern
CSM	Conceptual Site Model
CSIA	Compound-specific isotopic analysis
cy	Cubic yards
DCE	Dichloroethene
DERA	Defense Environmental Restoration Account
DQO	Data quality objectives
DPT	Direct push technology
DRMO	Defense Reutilization Management Office
DRO	Diesel-range organic
ESL	Ecological screening levels
EM	Exposure model
EPA	United States Environmental Protection Agency
ERP	Environmental Restoration Program
ERPIMS	Environmental Resources Program Information Management System
°F	Degrees Fahrenheit
ft	Feet or foot
FS/SOB	Fact Sheet/Statement of Basis
GRO	Gasoline-range organic

HAFB	Holloman Air Force Base
HHRA	Human health risk assessment
HSWA	Hazardous and Solid Waste Amendments
IDL	Instrument detection limit
IM	Interim measure
IRP	Installation Restoration Program
J&E	Johnson and Ettinger
JP-4	Jet Fuel (Formula 4)
LNAPL	Light non-aqueous phase liquid
LTM	Long term monitoring
MCL	Maximum contaminant level
MDL	Method detection limit
$\mu\text{g}/\text{m}^3$	Micrograms per cubic meter
$\mu\text{g}/\text{g}$	Micrograms per gram
$\mu\text{g}/\text{kg}$	Micrograms per kilogram
$\mu\text{g}/\text{L}$	Micrograms per liter
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
MRS	Munitions Response Site
MTBE	Methyl tertiary butyl ether
NCS	Nitrate Characterization Study (Basewide)
ND	Non-detect or not detected
NFA	No further action
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NMGWQ	New Mexico Groundwater Quality
NMRBDM	New Mexico Risk Based Decision Making
NMWQCC	New Mexico Water Quality Control Commission
NOD	Notice of Disapproval
ORO	Oil range organics
OWS	Oil/water separator
PCB	Polychlorinated biphenyl
pCi/g	PicoCuries per gram
PCS	Petroleum-contaminated soil
PID	Photoionization detector
PMR	Permit modification request
ppm	Parts per million
PRG	Preliminary remediation goals
PRI	Primate Research Institute
PSTB	Petroleum Storage Tank Bureau

RAR	Release Assessment Report
RATSCAT	National Radar Test Facility
RBSL	Risk-based screening level
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI	Remedial Investigation
ROEs	Routes of exposure
RSL	Regional Screening Level
SI	Site Investigation
SLERA	Screening level ecological risk assessment
SSL	Soil Screening Level
SSTLs	Site-specific Target Levels
SVE	Soil vapor extraction
SVOC	Semi-volatile organic compounds
SWMU	Solid Waste Management Unit
TAL	Target Analyte List
TCE	Trichloroethylene
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total dissolved solids
TOC	Total organic carbon
TOX	Total organic halide
TPH	Total petroleum hydrocarbon
TRPH	Total recoverable petroleum hydrocarbons
UDMH	Unsymmetrical dimethylhydrazine
USAF	United States Air Force
USEPA	United States Environmental Protection Agency
UST	Underground storage tank
UTL	Upper tolerance limit
VCM	Voluntary Corrective Measures
VOC	Volatile organic compound

**STATEMENT OF BASIS FOR APPROVAL OF
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EIGHT AREAS OF CONCERN
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HOLLOMAN AIR FORCE BASE
NEW MEXICO**

INTRODUCTION

Under authority of the New Mexico Hazardous Waste Act (Section 74-4-1 et seq., NMSA 1978, as amended, 1992) and the New Mexico Hazardous Waste Management Regulations (20.4.1 NMAC), the New Mexico Environment Department (NMED) can approve or deny hazardous waste permits, closure plans, permit modifications, and amendments.

The NMED initially received two separate Class 3 Permit Modification Requests (PMRs) petitioning for Corrective Action Complete (CAC) status for a total of seven sites at Holloman Air Force Base (HAFB). The first request, received on July 29, 2016, addressed six sites. The second request, received on August 2, 2016, addressed one site. After NMED determined these submittals to be administratively incomplete in a letter dated February 7, 2017, these two PMRs were combined into one revised PMR addressing seven sites which was submitted on June 6, 2017 (URS 2017b). A separate PMR for five additional sites was submitted on July 13, 2017 (URS 2017c).

The two PMRs were submitted to NMED to modify the U.S. Air Force/HAFB (Permittee) Hazardous Waste Facility Resource Conservation and Recovery Act (RCRA) Permit No. NM6572124422 (the Permit) pursuant to 20.4.1.900 NMAC [incorporating 40 CFR §270.42(c)]. If approved, the proposed permit modifications would grant CAC Without Controls status for eight Solid Waste Management Units/Areas of Concern (SWMUs/AOCs), and modify Part 4 of the Permit to move these SWMUs/AOCs from Part 4, Appendix 4-A, Table A (Summary of Solid Waste Management Units and Areas of Concern Requiring Corrective Action) to Appendix 4-A, Table B (Summary of Solid Waste Management Units and Areas of Concern with Corrective Action Complete Without Controls). One site, AOC-PRI-A, is proposed to remain on Table B, where it currently resides. NMED had required further investigation of potential new groundwater impacts at AOC-PRI-A and intended to move this site to Table A of the Permit. However, the required site investigation was conducted before it could be officially moved to Table A, and NMED has since deemed it suitable for a request for CAC without controls status.

The proposed permit modifications would also grant CAC With Controls status for three SWMUs/AOCs and move those sites from Table A to Table C (Summary of Solid Waste Management Units and Areas of Concern with Corrective Action Complete With Controls).

In addition, the Permittee has recently changed the way they designate Environmental Restoration Program (ERP) site numbers (e.g. “OT-38” is now “OT038”). The Permittee has requested that these changes be shown on Table A. Also, the Unit Name for AOC-H on Table A will be changed from “Chromic Acid Spill Area” to “VOC Spill Site” to more accurately reflect the site status.

Proposed changes to Tables A, B and C are shown in underline/strike-through in the tables provided in the **Attachment** of this Fact Sheet/Statement of Basis (FS/SOB), which has been compiled from the two separate PMRs. All figures and tables presented herein were culled from the various referenced corrective action reports.

The sites addressed have been under investigation since the 1980s. Based on the information collected, NMED has concurred that the twelve sites qualify for CAC, either with or without controls, since the available data for the sites indicates that any contaminants do not pose an unacceptable level of risk under current and projected future land use. Therefore, NMED intends, pending public input, to approve the permit modification requests.

The following sites, with SWMU/AOC designations and corresponding current ERP Site designations, are proposed for CAC and will be moved from Table A to Table B or Table C, or will remain on Table B, as noted:

SWMU/AOC ID Number	ERP Site ID	SWMU/AOC Name
SWMU 19	SS-59	Building 638 Oil/Water Separator (<i>Move to Table C</i>)
SWMU 20	SS-59	Building 639 Oil/Water Separator (<i>Move to Table C</i>)
SWMU 137	OT-38	Building 1166 Test Track Drain Field
SWMU 165	SS-39	Building 1176 Pond
AOC-J	SS-13	Herbicide Sodium Arsenite Spill Area
AOC L	OT-37	Early Missile Test Site
AOC-PRI-A	OT-32	Primate Research Lab Sewer Line (<i>To Remain on Table B</i>)
AOC-UST-221	TU/US-C503	Building 221 UST
AOC-UST-298	TU/US-C508	Building 298 UST (<i>Move to Table C</i>)
AOC-UST-901	TU/US-C506	Building 901 UST
AOC-UST-1097	TU/US-C505	Building 1097 UST
AOC-UST-7003	TU/US-C518	National Radar Test Facility UST

A. FACILITY DESCRIPTION

HAFB is in south central New Mexico, in the north-central portion of Otero County, approximately 75 miles north-northeast of El Paso, Texas (see **Figure A.1**). HAFB occupies approximately 59,830 acres in the northeast quarter of Section 1, Township 17 South, Range 8 East. The U.S. Army's White Sands Missile Range testing facilities and White Sands National Monument occupy additional land extending north and west from the base. Private and publicly-owned lands border the remainder of HAFB. The major highway servicing HAFB is U.S. Highway 70, which runs southwest from the town of Alamogordo and separates HAFB from publicly-owned lands to the south. Alamogordo, which has a population of approximately 31,000, is located approximately seven miles east of the base.

HAFB was first established in 1942 as Alamogordo Army Air Field (AAF). From 1942 through 1945, AAF served as the training grounds for over 20 different flight groups, flying primarily B-17s, B-24s, and B-29s. After World War II, most operations had ceased at the base. In 1947, Air Material Command announced the air field would be its primary site for the testing and development of un-manned aircraft, guided missiles, and other research programs. On January 13, 1948, the Alamogordo installation was renamed Holloman Air Force Base. In 1968, the 49th Tactical Fighter Wing arrived at HAFB and has remained, under differing iterations, ever since. Today, HAFB also serves as the location of the German Air Force Tactical Training Center.

The Permittee is located at the following address: Department of the Air Force, Headquarters, 49th Wing, Holloman Air Force Base, New Mexico, 88330-8458. The Permittee's primary contact for the action is Mr. Adam Kusmak, Chief, Installation Management Flight, 49 CES/CEI, 550 Tabosa Avenue, Holloman AFB, NM 88330

B. HISTORY OF ENVIRONMENTAL COMPLIANCE

Investigation and remediation of SWMUs and AOCs at HAFB is conducted under the RCRA Permit. A Hazardous and Solid Waste Amendments (HSWA) permit was issued to HAFB by the United States Environmental Protection Agency (EPA) in 1991 and became effective on September 25, 1991. It was reissued by the NMED on February 24, 2004. A Permit renewal application was submitted to NMED on February 26, 2015 and is currently under review. Initially, a total of 265 sites were identified and investigated during the assessment process and listed on Table A. Currently, 38 sites remain on Table A. The remaining sites have been transferred to Table B or Table C.

Section F below briefly describes the location, history, evaluation of relevant information, and the basis for determination for each SWMU/AOC proposed for CAC. More detailed descriptions of the investigative activities for each SWMU/AOC can be found in the accompanying references found in Section G, which are included in the Administrative Record. SWMU/AOC locations are shown on **Figures B.1 through B.6**.

C. ADMINISTRATIVE RECORD

The Administrative Record for this proposed action consists of the two Class 3 Permit Modification Requests, this FS/SOB, the Public Notice, the draft Permit, consisting of revised Tables A, B and C, and supporting documentation received for each site. The complete Administrative Record may be reviewed at the following location during the public comment period:

NMED – Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6313
Telephone: (505) 476-6000
Monday-Friday: 8:00 am – 5:00 pm

A copy of the FS/SOB, the Public Notice, and the November 2004 Permit that contains Appendix 4, Tables A, B, and C and the Class 3 Permit Modification Requests dated June 6, 2017 and July 13, 2017 and revised Permit Tables A through C are also available electronically on the NMED website at: <https://www.env.nm.gov/hazardous-waste/hafb/>.

To obtain a copy of the Administrative Record or a portion thereof, in addition to further information, please contact Ms. Pamela Allen at (505) 476-6000 at the address given above. NMED will provide copies, or portions thereof, of the administrative record at a cost to the requestor.

D. PUBLIC PARTICIPATION

The Permittee issued a public notice for the proposed modification request on July 31, 2016 for the following seven AOCs: AOC-J, AOC-PRI-A, AOC-UST-221, AOC-UST-298, AOC-UST-901, AOC-UST-1097 and AOC-UST-7003. This began a 60-day public comment period on the PMR, which continued until September 29, 2016.

The Permittee also issued a public notice for the proposed modification request on July 16, 2017 for the following five SWMUs/AOCs: SWMU 19 SWMU 20, SWMU 137, SWMU 165 and AOC L, for which the 60-day comment period continued until September 14, 2016.

Persons who wished to comment on the proposed modifications or request a public hearing had an opportunity to submit written and/or electronic mail (e-mail) comment(s) during these periods. Additionally, public meetings were held on August 15, 2016 and August 2, 2017 in Alamogordo in accordance with NMAC 20.4.1.901 as part of the 60-day public comment period on the PMR required by the regulations at 40 CFR §270.42(c)(5). There were no attendees at the public meetings and no comments were received during the comment periods.

NMED issued a public notice on **June 21, 2018**, to announce the beginning of a 60-day comment period that will end at **5:00 p.m. MDT, August 20, 2018**. Any person who wishes to comment on this action or request a public hearing should submit written or e-mailed comment(s) with the commenter's name and address to the physical or e-mail address below. Only comments and/or requests received on or before **5:00 p.m. MDT, August 20, 2018** will be considered.

Dave Cobrain, Program Manager
Hazardous Waste Bureau - New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6313
Or via e-mail: dave.cobrain@state.nm.us
Ref: Proposals for CAC for 12 Sites at HAFB

Written comments must be based on the administrative record. Documents in the administrative record need not be re-submitted if expressly referenced by the commenter. Requests for a public hearing shall provide: (1) a clear and concise factual statement of the nature and scope of the interest of the person requesting the hearing; (2) the name and address of all persons whom the requestor represents; (3) a statement of any objections to the proposed action, including specific references; and (4) a statement of the issues which such persons propose to raise for consideration at the hearing. Written comments and requests for Public Hearing must be filed with Mr. Dave

Cobrain on or before **5:00 p.m. MDT, August 20, 2018**. NMED will provide a thirty (30) day notice of a public hearing, if scheduled.

All comments submitted will be considered in formulating a final decision and may cause the draft permit to be modified. NMED will respond in writing to the comments. This response will specify which provisions, if any, of the draft permit have been changed in the final decision and the reasons for the changes. All persons who have submitted written comments or who requested notification of the final decision will be notified of the decision by mail. These responses also will be posted on the NMED website.

After consideration of all written public comments received, NMED may issue a final permit. The NMED will make the final decision publicly available and will notify the Applicants by certified mail. All persons that submitted written comments, requested a hearing, or requested notification of the final decision will be notified of the decision by first class mail. NMED's decision will constitute a final agency decision and may be appealed as provided by the HWA (Chapter 74, Article 4 NMSA 1978).

For additional information from the NMED, or to request a public hearing, contact one of the following individual:

Dave Cobrain, Program Manager
NMED – Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
E-mail: dave.cobrain@state.nm.us
Telephone: (505) 476-6055

E. NEXT STEPS

NMED will notify the Permittee and each person on the public comment mailing list of the final decision. The final decision will become effective 30 days after service of the decision, unless a later date is specified or review is requested in accordance with NMAC 20.4.1.901.

Arrangements for Persons with Disabilities

Any person with a disability requiring assistance or auxiliary aid to participate in this process should contact Donna Wright by 10 days prior to the end of the public comment period at the following address: New Mexico Environment Department, P.O. Box 5469, 1190 St. Francis Drive, Santa Fe, New Mexico, 87502-6110, (505) 827-9769. TDD or TDY users please access Ms. Wright's number via the New Mexico Relay Network at 1 (800) 659-8331.

Non-Discrimination Statement

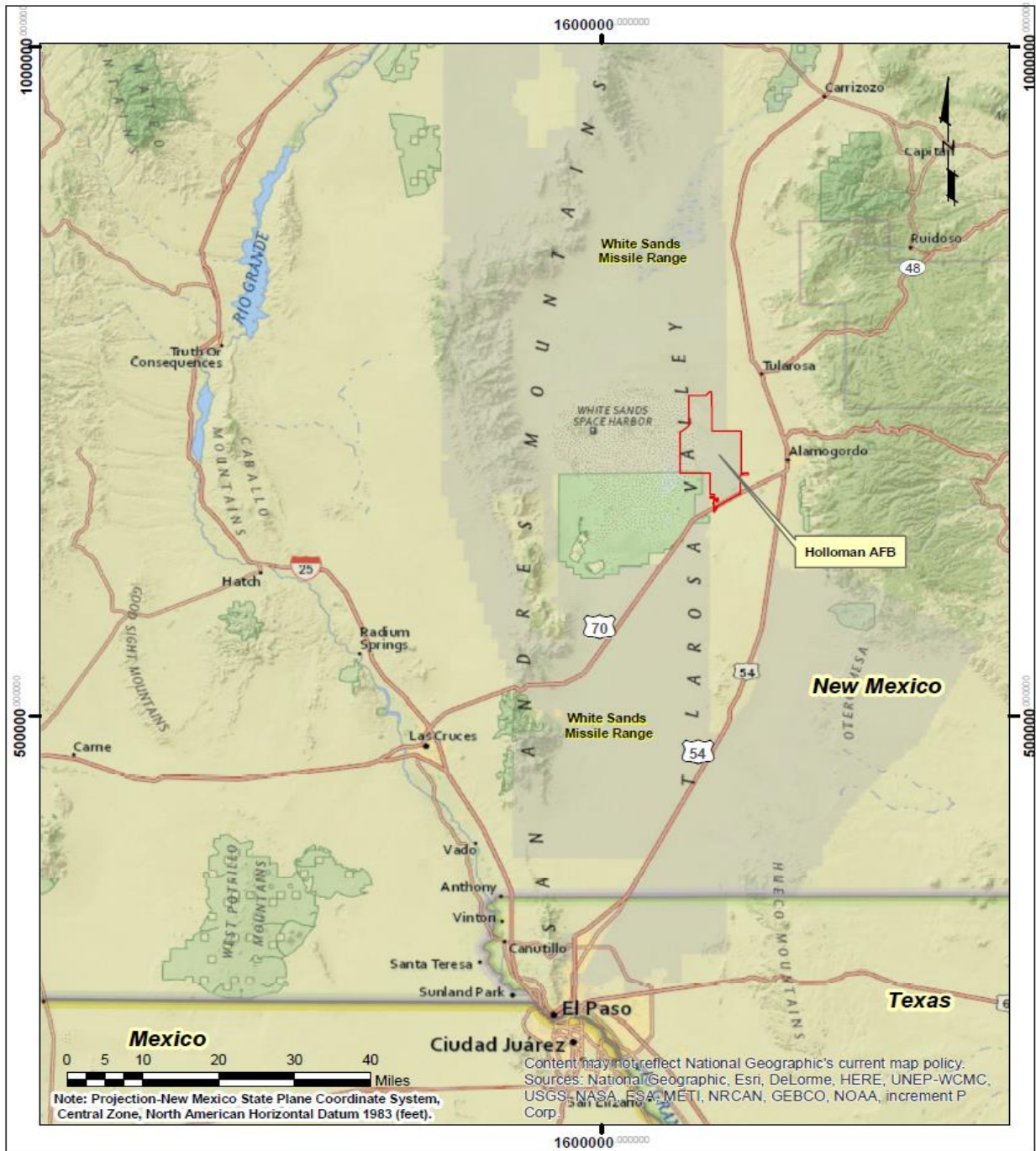
NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the

Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non-discrimination programs, policies or procedures, you may contact:

Kristine Pintado, Non-Discrimination Coordinator
New Mexico Environment Department
1190 St. Francis Dr., Suite N4050
P.O. Box 5469
Santa Fe, NM 87502
(505) 827-2855
NMED.NDC@state.nm.us

If you believe that you have been discriminated against with respect to a NMED program or activity, you may contact the Non-Discrimination Coordinator identified above or visit our website at <https://www.env.nm.gov/non-employee-discrimination-complaint-page/> to learn how and where to file a complaint of discrimination.

Figure A.1 Facility Location Map, Holloman AFB



CONSULTECH BHATE FEDERAL SERVICES JV, LLC SBA 8 (a) Certified	Holloman AFB, New Mexico Location Map			Corrective Action Complete Proposal Holloman AFB, New Mexico Figure A.1
	PROJECT NO. NWO1132 0002.401	SCALE Shown	DATE 5/20/2015	

Figure B.1 SWMUs 19, 20, 137 and 165 and AOC-L Location Map

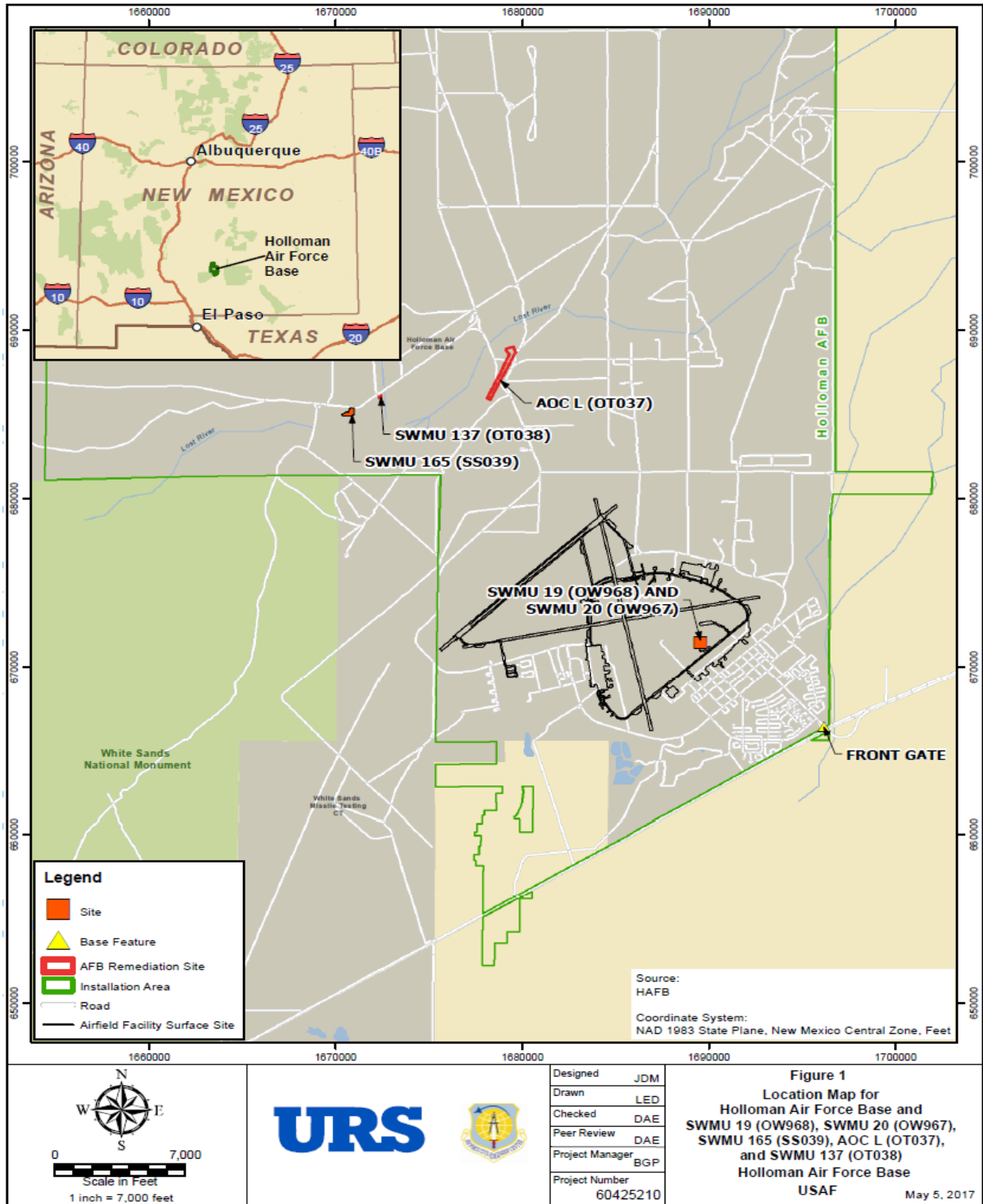


Figure B.2 AOC-J, AOC-UST-221 and AOC-UST-298 Location Map

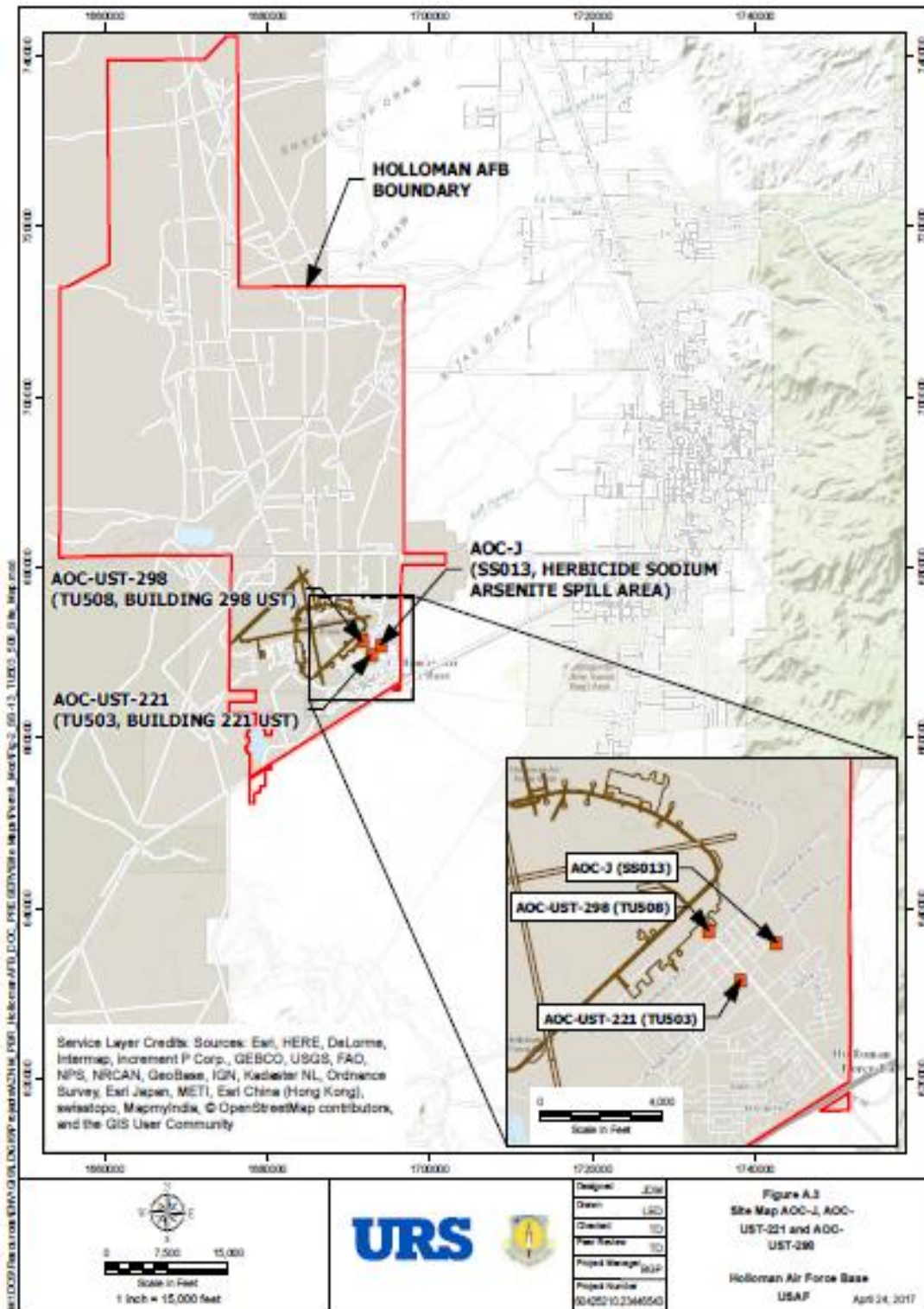


Figure B.3 AOC-PRI-A Location Map

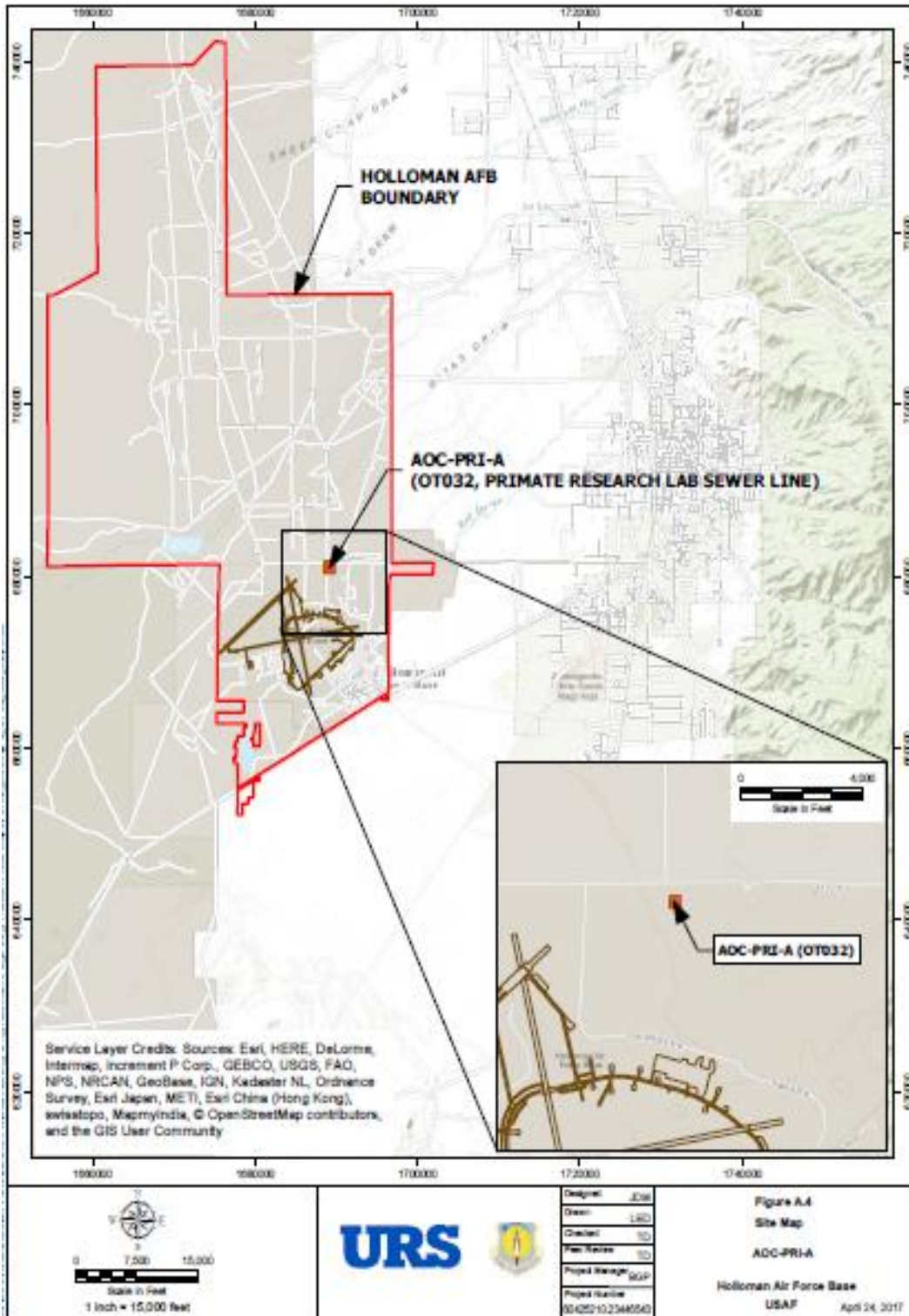


Figure B.4 AOC-UST-901 Location Map

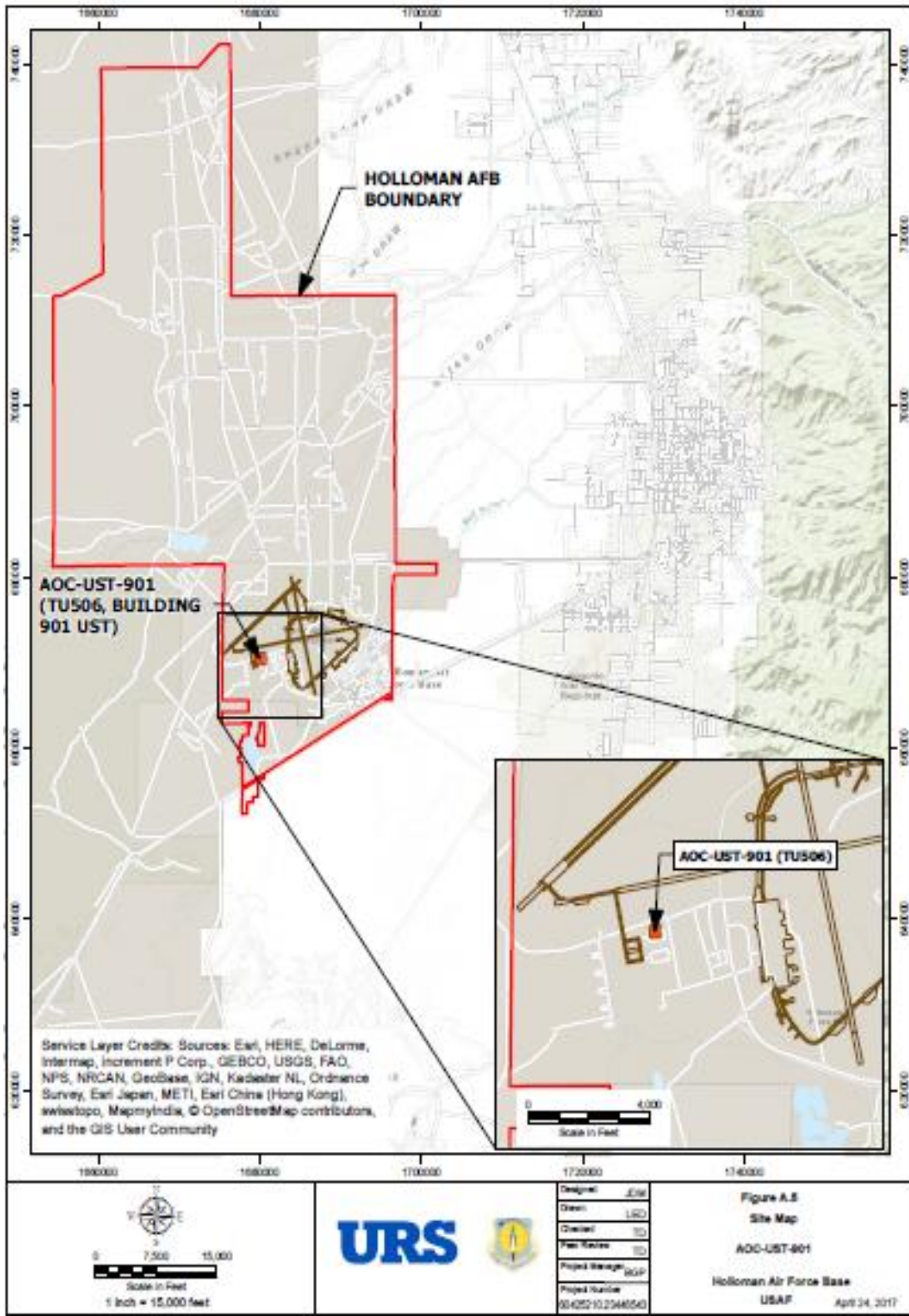
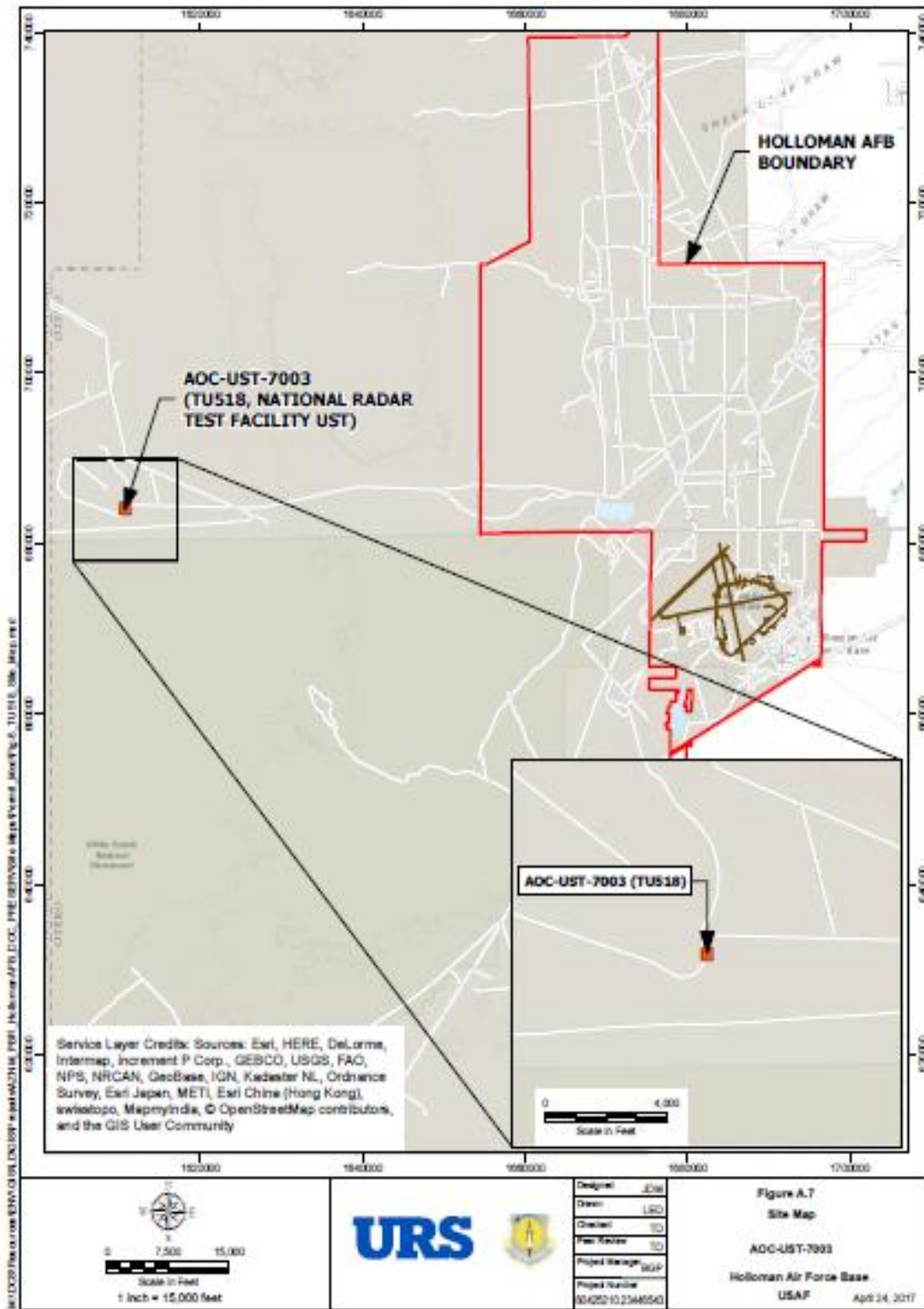


Figure B.6 AOC-UST-7003 Location Map



F. DESCRIPTION OF SWMUS AND AOCs PROPOSED FOR CAC

The following subsections describe the location, history, and land use conditions for each SWMU/AOC. A summary of relevant information from previous investigations and a basis for the CAC determination with or without controls determination for the sites are also presented in this section.

F.1 SWMU 19 (SS-59), BUILDING 638 OIL/WATER SEPARATOR

F.1.1 Location/Unit Description

SWMU 19, a former 400-gallon underground, steel oil/water separator (OWS), is also referred to as ERP Site OW968. The *Technical Memorandum, Former T-38 Test Cell Oil Water Separators: SWMU 19 and SWMU 20* (URS 2016b) identified the location of SWMU 19 as 40 feet from Building 638 directly across Taxiway A from the Main Ramp area. A site map is presented as **Figure F1.1**.

F.1.2 History/Current and Anticipated Future Land Use

A RCRA Facility Assessment (RFA) conducted in 1988 identified OWSs associated with both sites OW967 and OW968 as SWMUs (Kearney 1988). The purpose of the SWMU 19 OWS was to collect oily wastewater from the T-38 Test Cell located at Building 638 and separate the oil from the wastewater. Following separation, the wastewater effluent was discharged to the HAFB Wastewater Treatment Plant, and the accumulated oil was removed and transferred to the Building 638 Waste Accumulation Area.

The RFA noted that the OWS at SWMU 19 had been active since 1977, and that it was equipped with release controls, including liners, level controls, and a cover. No current or past releases were noted at the time of the RFA.

The SWMU 19 OWS was converted to a sediment trap in 1991 when a new OWS was installed. The original OWS was removed in 1997 during activities associated with remediation of overlapping SWMU 229 (SS-59). After removal, the area surrounding its former location was excavated during Voluntary Corrective Measures (VCM) activities conducted between 2004 and 2013 (see **Figure F1.2**) at SWMU 229 (NationView 2015; URS 2009, 2016a). All petroleum-contaminated soil (PCS) remaining at or around SWMU 19 is attributed to the SWMU 229 Jet Propellant Type 4 (JP-4) spill.

There are no proposed changes for the land use at SWMU 19, which is industrial.

F.1.3 Evaluation of Relevant Information

In 1995, a RCRA Facility Investigation (RFI) was conducted at SWMU 19 (ACC 1995). The RFI was conducted in conjunction with the investigation of the T-38 Test Cell fuel spill (SWMU 229). Eleven soil samples were collected around the former OWS, former leaching tank, excavated soil pile, and surrounding area.

The analytical results of the 1995 soil sampling determined there had been a release of petroleum at SWMU 19. The RFI Report indicated that the waste stream managed at SWMU 19 was predominantly fuel and concluded that analytical results from samples collected from three feet below ground surface (bgs) were either indistinguishable from or likely to be the result of the T-38 Test Cell fuel spill.

Additional site investigations at overlapping SWMU 229 were conducted in the fall of 2014, spring and summer of 2015, and spring of 2016 to characterize the nature and extent of the phase-separated light non-aqueous phase liquid (LNAPL) and PCS beneath and surrounding the T-38 Test Cell, as well as the dissolved-phase contaminant plume within and surrounding previously remediated areas. Elevated total dissolved solids (TDS) concentrations were observed across all the T-38 sites (including SWMU 19). The average TDS concentration across all T-38 monitor wells was approximately 19,500 milligrams per liter (mg/L) (above the 10,000 mg/L threshold established by the New Mexico Water Quality Control Commission [NMWQCC]). The maximum TDS concentration was found in SS059-MW14 (31,000 mg/L). Petroleum releases are a contributor to TDS. Based on SWMU 229 groundwater observations, the depth to water in the immediate vicinity of the T-38 Test Cell area varies from approximately 6 to 22 feet bgs, depending on surface topography.

An interceptor trench was installed for SWMU 229 in 2011, near SWMU 19. During the installation of the trench, most of the area surrounding the former OWSs was excavated to accommodate the trench system infrastructure, and the trench itself was backfilled with gravel, while the excavated soils were treated at the adjacent T-38 land farm treatment unit. The former locations of both OWSs were over-excavated during installation of the trench, or in conjunction with other remedial excavations conducted under the VCM in 2013, as detailed in the *Technical Memorandum – T-38 Summary Report (2000-2014)* (NationView 2015).

Therefore, a Class 3 modification to the Permit pursuant to 40 CFR 270.42(c) is warranted for SWMU 19 to move the site from Table A (Sites Requiring Corrective Action) to Table C (Sites With Corrective Action Complete With Controls).

F.1.4 Basis for Determination

All contamination and source material associated with SWMU 19 has been removed from the site eliminating the exposure pathway for this site to potential receptors (i.e., site workers and future construction workers). Since preparation of the 1995 RFI Report, the former OWS associated with SWMU 19 was converted to use as a sediment trap and then removed in 1997. The area surrounding the OWS (including potentially impacted shallow and deep subsurface soils) has been over-excavated. The removal and over-excavation removed contaminated material associated with the OWS. Recent investigations at the T-38 Test Cell facility have shown no indication of the current or past presence of the OWS.

SWMU 229, a 10-acre site also located at the T-38 Test Cell, encompasses SWMU 19. SWMU 229 was initially contaminated with approximately 1 million gallons of JP-4 from leaking underground supply lines. SWMU 229 is currently undergoing corrective action and monitoring associated with this release.

Because groundwater contamination associated with SWMU 229 is present beneath SWMU 19, controls at this site are required, including continued monitoring and corrective action in association with activities required for SWMU 229. All future activities conducted at SWMU 19

will be conducted under SWMU 229 remediation activities, and no additional work specific to the OWS at SWMU 19 is required. Controls will include ongoing groundwater monitoring and corrective action activities associated with the overlapping SWMU 229.

Figure F1.1 SWMUs 19 and 20 Site Map with 1995 Soil Boring Locations

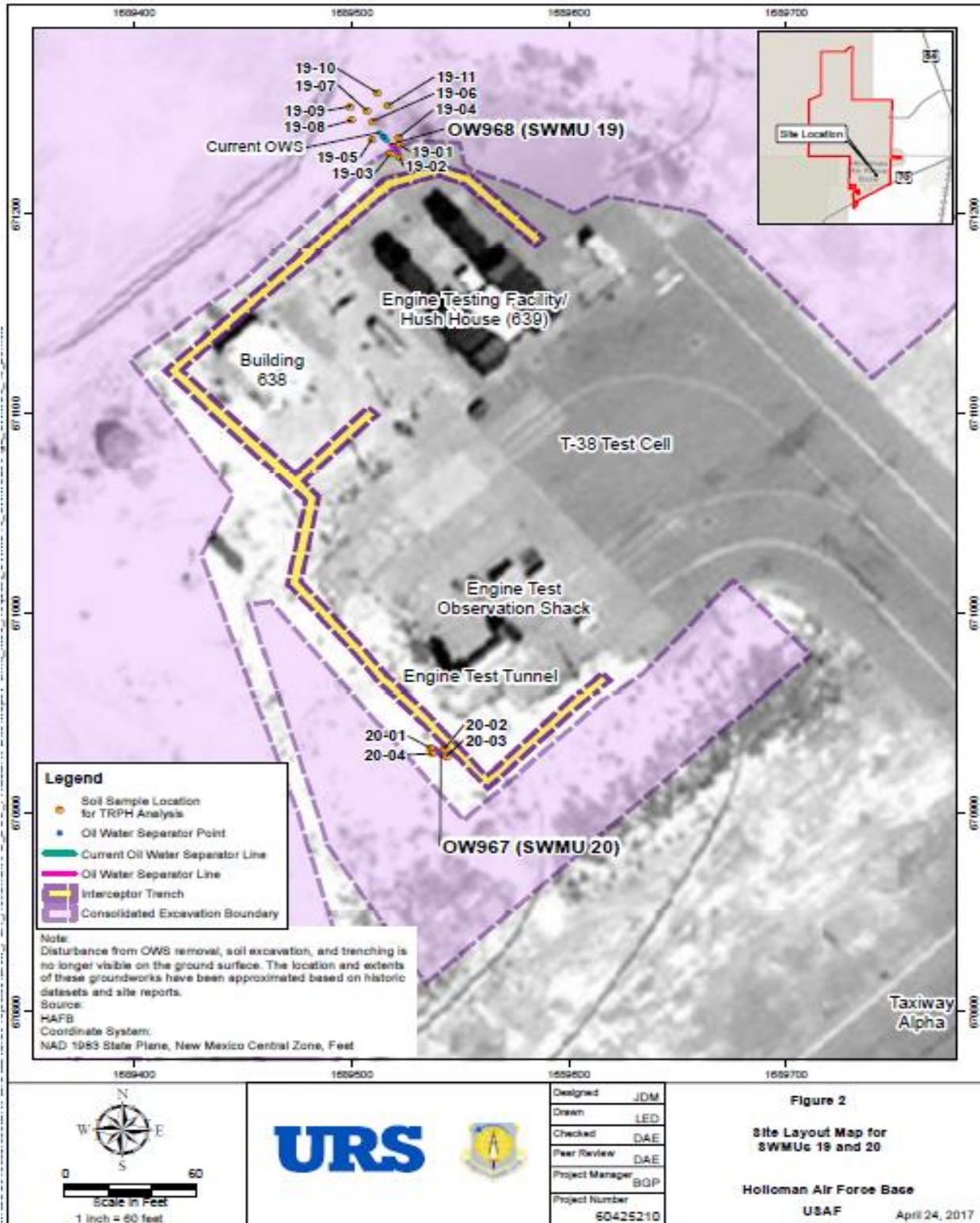
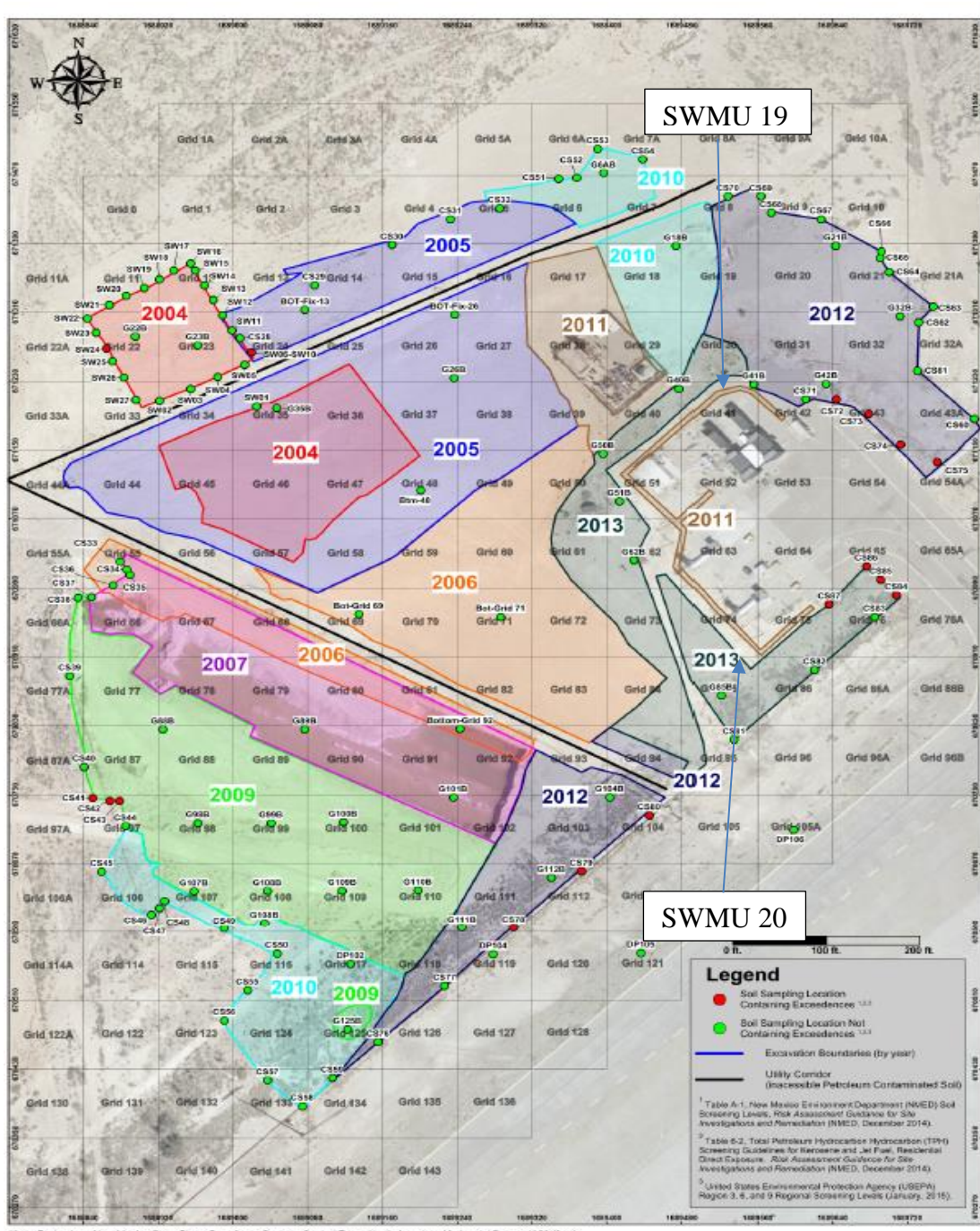


Figure F1.2 SWMUs 19 and 20 Soil Excavations Between 2004 and 2013



Note: Projection - New Mexico State Plane Coordinate System, Central Zone, North American Horizontal Datum 1983 (feet).



Reference: NationView 2015, T-38 SUMMARY REPORT, (2004 - 2014), Figure 1

T-38 Test Cell Site (SS059) Previous Excavation
Figure 2-1
Holloman Air Force Base USAF

F.2 SWMU 20 (SS-59), BUILDING 639 OIL/WATER SEPARATOR

F.2.1 Location/Unit Description

SWMU 20, a former 500-gallon underground, concrete OWS, is also referred to as ERP Site OWS967. The *Technical Memorandum, Former T-38 Test Cell Oil Water Separators: SWMU 19 and SWMU 20* (URS 2016b) identified the location of SWMU 20 as 5 feet from the engine test pad.

A site map is presented as **Figure F1.1**.

F.2.2 History/Current and Anticipated Future Land Use

An RFA conducted in 1988 identified OWSs associated with both OW967 and OW968 as SWMUs (A.T. Kearney 1988). The purpose of the SWMU 20 OWS was to collect wastewater from the engine test area sound suppressors. Following separation, the wastewater effluent was discharged to the HAFB Wastewater Treatment Plant. The accumulated oil was removed and transferred to the Building 638 Waste Accumulation Area.

The RFA noted that the OWS at SWMU 20 was inactive but present at the time, and that it was equipped with release controls, including level controls, sewer connection, and a cover. No current or past releases were noted at the time of the RFA.

The SWMU 20 OWS was removed from service and abandoned in place in 1994. It was subsequently removed in 1997 during activities associated with remediation of overlapping SWMU 229. After removal, the area surrounding its former location was excavated in association with the 2004-2013 VCMs (see **Figure F1.2**) conducted for SWMU 229. Any PCS remaining at, or around SWMU 20 is attributed to the SWMU 229 JP-4 spill.

There are no proposed changes for the land use at SWMU 20, which is industrial.

F.2.3 Evaluation of Relevant Information

In 1995, a RFI was conducted at SWMU 20 (ACC 1995). The RFI was conducted in conjunction with the investigation of SWMU 229. At SWMU 20, soil samples were collected from four locations, one on each side of the OWS. Samples were not collected below depths of 4 feet due to known impacts associated with the SWMU 229 fuel spill.

The RFI Report concluded that no release was detected from the SWMU 20 OWS. Total Petroleum Hydrocarbons (TPH) results were all below the release screening criterion of 100 mg/kg that was applicable at the time, and no visible evidence of an overflow or leak from SWMU 20 was observed.

Additional site investigations at overlapping SWMU 229 were conducted in the fall of 2014, spring and summer of 2015, and spring of 2016 to characterize the nature and extent of the LNAPL and PCS beneath and surrounding the T-38 Test Cell, as well as the dissolved-phase plume within and surrounding previously remediated areas. Elevated TDS concentrations were observed across all the T-38 sites (including SWMU 19). The average TDS concentration across all T-38 monitor wells was approximately 19,500 mg/L (above the 10,000 mg/L threshold established by the NMWQCC). The maximum TDS concentration was found in SS059-MW14 (31,000 mg/L). Petroleum releases are a contributor to TDS. Based on SWMU 229 groundwater observations, the

depth to water in the immediate vicinity of the T-38 Test Cell area varies from approximately 6 to 22 feet bgs, depending on surface topography.

Therefore, a Class 3 modification to the Permit pursuant to 40 CFR 270.42(c) is warranted for SWMU 20 to move the site from Table A (Sites Requiring Corrective Action) to Table C (Sites With Corrective Action Complete With Controls).

F.2.4 Basis for Determination

No significant soil contamination related to the former OWS associated with SWMU 20 has been identified. The former OWS associated with SWMU 20 was removed, and the area surrounding it (including potentially impacted shallow and deep subsurface soils) has been over-excavated. The removal and over-excavation of the former OWS have been confirmed by recent investigations at the T-38 Test Cell facility, which have shown no indication of the current or past presence of the OWS.

Because groundwater contamination associated with SWMU 229 is present beneath SWMU 20, controls at this site are required, including continued monitoring and corrective action in association with activities required for SWMU 229. All future activities conducted at SWMU 20 will be conducted under SWMU 229, and no additional work specific to the OWS at SWMU 20 is required. Controls will include ongoing groundwater monitoring and corrective action activities associated with the overlapping SWMU 229.

F.3 SWMU 137 (OT-38), BUILDING 1166 TEST TRACK DRAIN FIELD

F.3.1 Location/Unit Description

SWMU 137, also referred to as ERP Site OT038, is a former cesspool and septic tank and drainfield located within the Test Sled Maintenance Area which is located north of the Lost River Basin, just south of Building 1166 underneath a paved parking area. It is less than 1 acre in size and is dominated by buildings, concrete sidewalks, paved areas, and gravel.

A site map is presented as **Figure F3.1**.

F.3.2 History/Current and Anticipated Future Land Use

From 1951, when the test track became operational, waste oils, solvents, and paint strippers used in the sled industrial maintenance area (Building 1166) were discharged to a cesspool behind the building. Since 1979, wastes have been accumulated in 55-gallon drums and shipped off site for disposal or recycling. In the late 1980s, the cesspool was replaced with a septic tank and a leach field that was installed at the former cesspool location. There was also a former septic tank leach field northeast of the former cesspool. The septic system received sanitary sewage from Building 1166. A review of records indicated that the septic tank was removed in 2006.

Building 1166 is still used for test sled maintenance activities in support of the High-Speed Test Track; however, there are no longer any discharges to the former cesspool area. The site is paved and used for parking and general loading/unloading of vehicles. Use of the cesspool ceased in the late 1980s, and the former septic tank and leach field are also no longer used. Building 1166 and

the surrounding buildings in the general area are all served with sanitary sewer connections to the HAFB Waste Water Treatment Plant.

There are no proposed changes for the land use at SWMU 137, which is industrial.

F.3.3 Evaluation of Relevant Information

A record search for SWMU 137 was conducted in 1982 (CH2M Hill 1983). The site was investigated in September 1991 during a Remedial Investigation (RI) (Radian 1992). The RI included installation of two soil borings and collection of soil samples from the former cesspool location, and installation and one round of sampling of three monitoring wells (one up-gradient and two down-gradient of the former cesspool location). Soil samples were also collected during installation of RI monitoring wells.

Results of the RI indicated that there was an area of elevated TPH in shallow soils (between 0 and 10 feet bgs). Limited volatile organic compound (VOC) detections were estimated values. All groundwater results were below NMWQCC cleanup standards. Inorganic constituents of chloride, sulfate, fluoride, and nitrate (common constituents of TDS) exceeded the NMWQCC standards. It was determined that groundwater was not a viable drinking water source at SWMU 137 due to elevated TDS levels (average 11,833 mg/L).

An ACM Investigation was conducted in June 2007, to further characterize subsurface soils within the former cesspool area, and septic tank, drain line, and leach field areas. Additionally, groundwater samples were collected from the three monitoring wells that were installed during the RI.

The ACM Investigation Report (Bhate 2008) determined that arsenic was the only constituent in soil or groundwater that exceeded NMED Soil Screening Levels (SSLs) or groundwater standards. One groundwater sample contained an estimated arsenic concentration of 11 micrograms per liter ($\mu\text{g/L}$). The groundwater standard is 10 $\mu\text{g/L}$. Additionally, the area of elevated TPH identified during the RI did not exceed the concurrent SSLs for TPH.

A RFI was conducted in 2013 for the Building 1166 former septic tank and leach field areas with the purpose of delineating potential contamination that may have been released from the former septic system. As part of the RFI, a geophysical study was conducted using electromagnetic induction conductivity detection, ground-penetrating radar, and electromagnetic pipe and cable location to define the limits of the removed septic system. Locations of the former tank and leach field were determined to be approximately 40 feet southeast of Building 1166.

Four direct push (DPT) soil borings were advanced and sampled (two to three samples per boring) around the former septic tank, which is near the former OT-38 cesspool. Additionally, one monitoring well was installed near the former leach field, approximately 40 feet northeast of the former septic tank location.

Detections in soil samples were all at concentrations less than NMED residential SSLs for VOCs, semivolatile organic compounds (SVOCs), explosives, cyanide, inorganics, target analyte list (TAL) metals, and TPH fractions. One groundwater sample was collected from the monitoring well. Manganese, antimony, and copper were detected at levels that slightly exceeded the NMWQCC standards and/or MCLs. TDS in this well was measured at 10,800 mg/L.

Since no contaminants of potential concern (COPCs) were detected in the soil samples at concentrations greater than their respective residential screening levels, no risk-based calculations were developed for potential exposure to soils at the site. Two COPCs were identified for groundwater (antimony and manganese); however, future tap water exposure was determined to not represent a health concern since the groundwater is not suitable for human consumption due to elevated TDS levels (i.e., >10,000 mg/L). A screening level ecological risk assessment (SLERA) was conducted based on detected values of chemicals in soils at SWMU 137. It was determined that chemicals detected in soils were below their respective HAFB background values (metals only). Based on sampling and human health and ecological risk screening results, no additional corrective action was recommended for soil or groundwater at Building 1166.

An additional groundwater sample was collected from monitoring well OTC542-MW01 on November 19, 2015 and analyzed for nitrate. Nitrate (as N) was detected at 38.9 mg/L. It was concluded that any potential exposure risks from nitrate and manganese in groundwater at the site were acceptable risks, since shallow groundwater at the site is not currently usable as a potable water supply due to high TDS concentrations and low/inconsistent pumping yields. No further corrective action was recommended.

A Human Health and Ecological Risk Evaluation was presented in the *Final Technical Memorandum: Risk Assessment Screening for Site OT-37 (AOC L) and Site OT-38 (SWMU 137)* (URS 2017a). Elements of the risk assessment screening included: (1) a review of relevant reports available for site SWMU 137, (2) a compilation of soil and groundwater data for the site, (3) a comparison of maximum soil and groundwater concentrations with the NMED or USEPA screening levels to identify COPCs for human health and chemicals of potential ecological concern (COPECs), (4) development of exposure models, and (5) site-specific cumulative risks that were estimated and evaluated for potentially complete exposure pathways. The site passed the residential screening cancer risk and residential screening hazard analysis (see **Table F3.1**).

SWMU 137 is an industrial site and has very limited ecological habitat located in the immediate vicinity of the site. Because the site does not have viable ecological habitat, ecological receptors are not present, and therefore, are not exposed to contaminants in soil. Since no exposure to ecological receptors is expected, no ecological risk is anticipated. No further ecological risk evaluation was warranted at SWMU 137.

Therefore, the site qualifies for Corrective Action Complete Without Controls.

Table F3-1
SWMU 137 Comparison of Maximum Groundwater Concentrations with VISLs

Chemical	Maximum Groundwater Concentration*	Residential Groundwater VISL	Residential Screening Cancer Risk	Residential Screening Hazard
	(µg/L)	(µg/L)		
Volatile Organic Compounds				
Chloroform	1.5	8.11	c	1.8E-06
Methylene Chloride	ND	4700	n	--
Trichloroethylene (TCE)	1.2	5.16	n	0.2
Cumulative Cancer Risk		-	-	2E-06
Hazard Index		-	-	0.2

Notes:

1. Values are from NMED (2015).

* Data from most recent sampling event only (2007).

n - noncancer hazard (hazard quotient of 1) endpoint

c - cancer risk (1E-05) endpoint

N/A = Not Applicable

NA = Not Available

ug/L = micrograms per liter

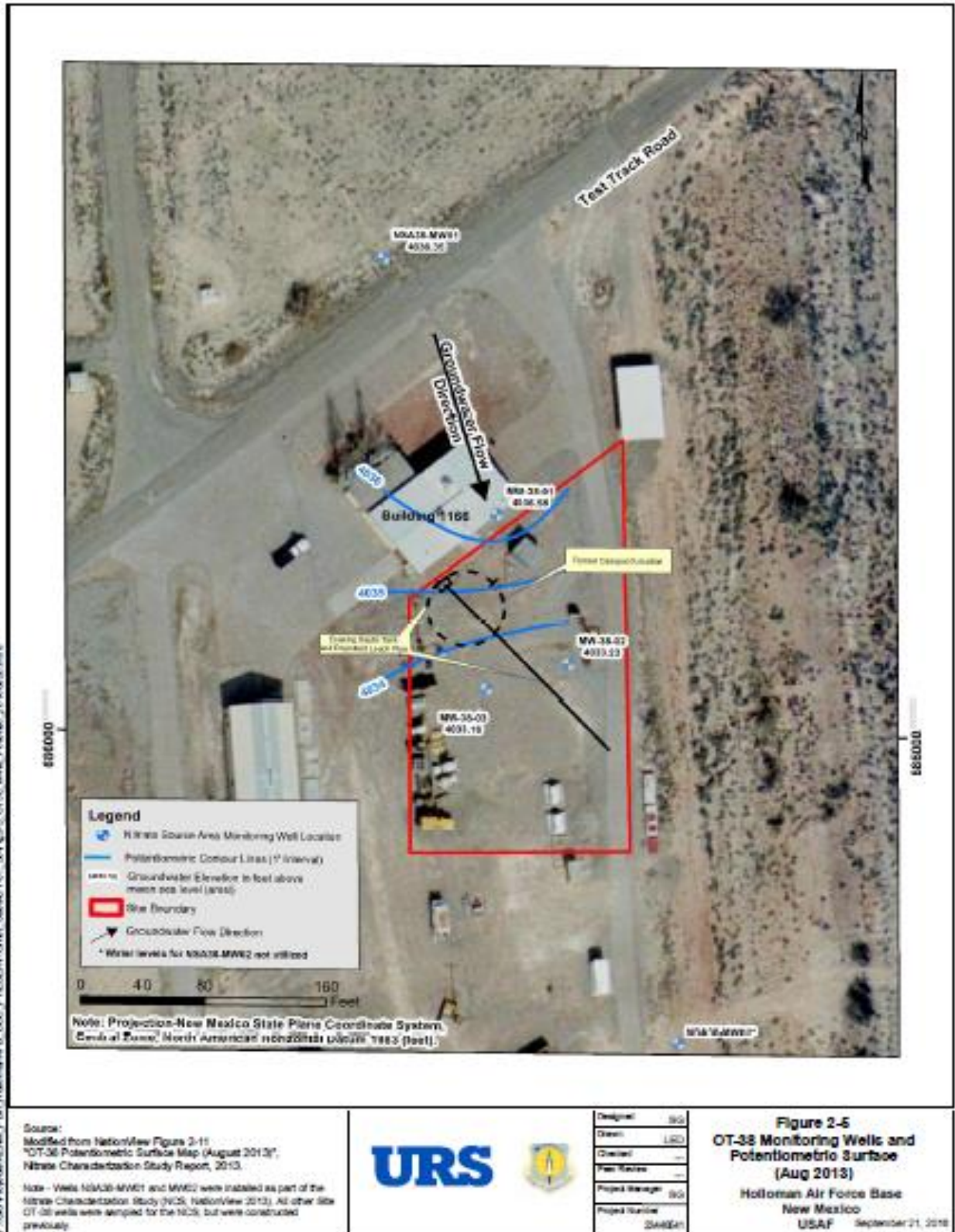
VISL = Vapor Intrusion

Screening Level

F.3.4 Basis for Determination

Based on the human health and ecological risk screening results, no unacceptable risk to human health or the environment exists at SWMU 137; therefore, SWMU137 is proposed for CAC Without Controls.

Figure F3.1 SWMU 137 Site Map



F.4 SWMU 165 (SS-39), BUILDING 1176 POND

F.4.1 Location/Unit Description

SWMU 165, which is also referred to as ERP Site SS039 (which includes three other SWMUs: 177, 179, and 181), was identified in previous reports as a pond near Building 1176. SWMU 165 is in the central portion of HAFB along the Lost River Drainage Basin on the northern slope of the Basin immediately south of Building 1176.

A site map is presented as **Figure F4.1**.

No evidence of a pond was discovered during recent investigations associated with SS039 or at Building 1176 (URS 2016d).

F.4.2 History/Current and Anticipated Future Land Use

Because SWMU 165 was not identified during investigations at site SS039 but is on the Permit as being associated with SS039, this section provides a site history of SS039. Site SS039 includes Building 1176 and associated drainage troughs and sumps, and the Alpha launch pad that includes a concrete collection box for sediment, two spill discharge pipes (propellant and oxidizer), and a concrete discharge box at the end of the propellant pipe. Spilled oxidizers and fuels (propellants) were delivered to separate drains at the launch pad, diluted with water, and flushed via the spill pipes to the Lost River Basin. In 1975, a catch basin was installed to collect the spilled liquid fuels. Oxidizer vent lines from the engines were also installed and designed to discharge into the catch basins. Since 1975, no propellants have been intentionally released to the open drains. Surface and groundwater samples were first collected from the Lost River near the test track in July of 1979. The three other SWMUs (177, 179, and 181) have been investigated in association with activities at Building 1176. The features described above relate to one of the other three SWMUs at Building 1176, and not SWMU 165.

There are no proposed changes for the land use at SWMU 165, which is industrial.

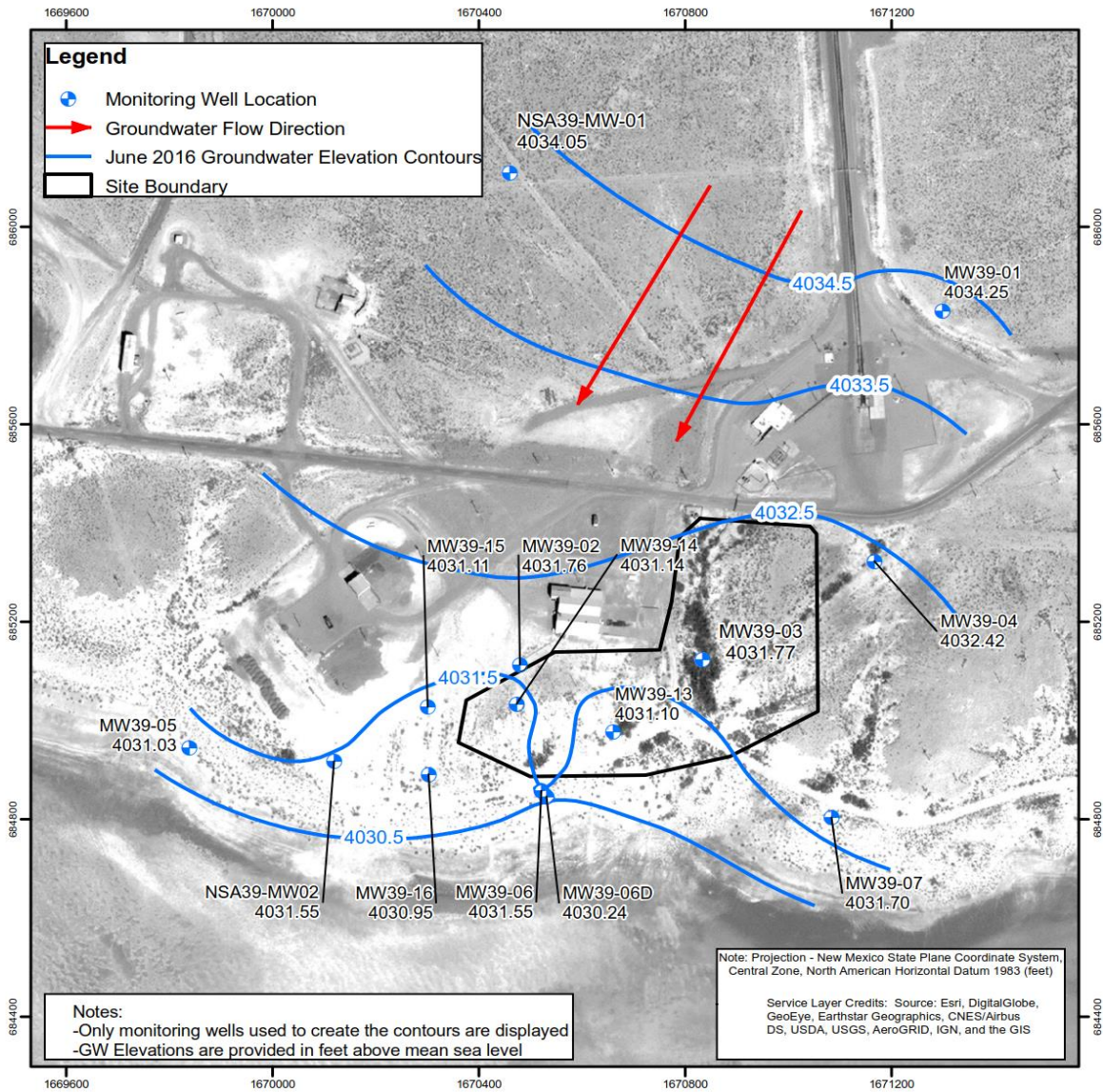
F.4.3 Evaluation of Relevant Information

There is currently no relevant information or data available specifically for SWMU 165 because it was not located during any investigations of Building 1176 or SS039. Groundwater at SS039 is non-potable due to high TDS levels (exceeding 10,000 mg/L). Groundwater is encountered approximately between 7 and 25 feet bgs and generally flows in a southerly direction toward the Lost River Basin.

F.4.4 Basis for Determination

Because SWMU 165 has not been identified during any previous investigations, the site qualifies for Corrective Action Complete Without Controls.

Figure F4.1 SWMU 165 Site Map with Monitoring Well Locations and Potentiometric Surface



			Designed SG	<p>Figure 4-1</p> <p>SS-039 Missile Spill Area</p> <p>Groundwater Elevation Map</p> <p>June 2016</p> <p>Holloman Air Force Base</p> <p>USAF</p> <p>May 2, 2017</p>
			Drawn TG	
Checked --				
Peer Review --				
Project Manager SG				
Project Number 23446542				

F.5 AOC-J (SS-13), HERBICIDE SODIUM ARSENITE SPILL AREA

F.5.1 Location/Unit Description

AOC-J, the sodium arsenite spill area, is also referred to as ERP Site SS013. The *Accelerated Corrective Measures (ACM) Completion Report for Site SS-13* (North Wind, Inc. 2011) identified the location of this site as being in the civil engineering complex yard, next to the Defense Reutilization Management Office (DRMO).

A site map is presented as **Figure F5.1**.

F.5.2 History/Current and Anticipated Future Land Use

Site SS013 was originally used to store sodium arsenite, a weed killer used to treat runway areas, and in 1979, an estimated two to thirty gallons of sodium arsenite were released within an earthen storage area (i.e., 2-foot deep depression) at the site. Approximately eighty-three 30-gallon containers of sodium arsenite were stored at this location in 1979. In August 1979, one of the cans was found empty with a hole in the bottom. It was assumed that approximately thirty gallons of sodium arsenite were released at the site.

At the spill site, two soil borings and one monitoring well were installed and sampled during the Phase II IRP investigation (Dames & Moore 1987). Soil and groundwater samples were analyzed for arsenic. The Phase II IRP results identified arsenic in groundwater at 0.01 mg/L, which is below the 0.1 mg/L NMWQCC groundwater standard. Extraction procedure-toxicity analysis of five soil samples reported a maximum arsenic concentration of only 0.04 mg/L in the extract. The depression was backfilled and capped with asphalt in the early 1990s. The site is currently used as a storage area.

There are no proposed changes for the land use at AOC-J, which is industrial.

F.5.3 Evaluation of Relevant Information

Site SS013 was not considered sufficiently characterized to meet the requirements of the RCRA Permit. Therefore, additional characterization and potential remediation of the release were required. Three shallow groundwater monitoring wells (MW01, MW02, and MW04S) and one deep groundwater monitoring well (MW04D) were installed and sampled for total arsenic in February 2009. The total arsenic detected in 2009 at MW01, MW02, MW04S, and MW04D was 0.0125, 0.0508, 0.0294, and 0.0342 mg/L, respectively.

The *ACM Completion Report* for SS013 was submitted in 2011, but was disapproved by NMED in a letter dated October 1, 2013, for the following reasons:

- Detection of arsenic in monitoring wells at SS013 in exceedance of the MCL for total arsenic in groundwater of 0.01 mg/L.
- Lack of figures depicting locations of soil borings and monitoring wells, potentiometric surface map, and a contaminant isoconcentration map of arsenic in groundwater.

NMED required the Permittee to “present sufficient evidence to demonstrate to NMED that these elevated arsenic values should be considered as representative of background conditions, and not anthropogenic in origin”.

The existing site data from 2009, supplemented with additional data collected in 2015, were evaluated in the *Evaluation of Arsenic in Groundwater at SS-13 (AOC-J)* (URS 2015c) to better understand past and current site conditions. In July 2015, more than 6 years after the prior sampling event, groundwater sampling was conducted at SS013 to assess current site conditions. Groundwater samples were collected from the four monitoring wells (MW01, MW02, MW04S, and MW04D) on the site and submitted for laboratory analysis of total and dissolved arsenic, and TDS. See **Figure F5.1** for monitoring well locations and concentration of arsenic in groundwater.

Based on an evaluation of available data, the current concentrations of arsenic found in groundwater (total and dissolved) at SS013 are representative of naturally-occurring conditions and do not present a risk to human health. This conclusion is based on the following:

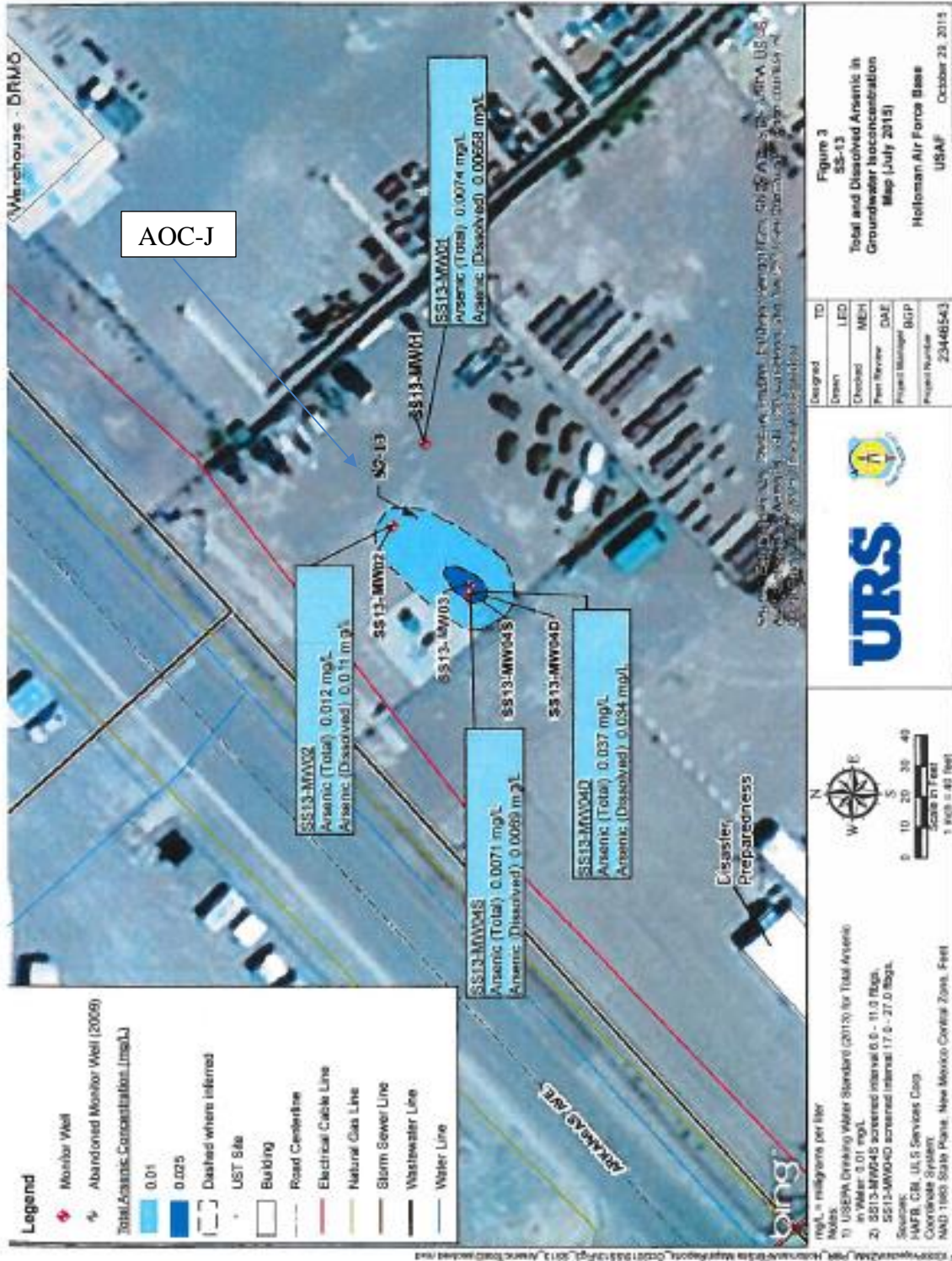
- A site-specific background level for arsenic in groundwater at SS013 is proposed as 0.021 mg/L. This is derived from well S10-MW4, an upgradient well used as part of the HAFB *Basewide Background Study Report* (NationView/Bhate 2011).
- Concentrations of arsenic in shallow SS013 monitoring wells are all below 0.021 mg/L, and therefore, are likely to be representative of natural background conditions.
- The arsenic concentrations found in MW04D (0.037 mg/L) are above this proposed background level of 0.021 mg/L. However, MW04D has a TDS concentration of 29,000 mg/L, nearly three times the TDS threshold of 10,000 mg/L above which the NMWQCC human health standards no longer apply.
- All four site monitoring wells contain dissolved arsenic concentrations below the NMWQCC standard of 0.1 mg/L, and therefore, an additional human health risk assessment is not necessary.
- Concentrations of total arsenic measured in the shallow SS013 monitoring wells in July 2015 are approximately 41 to 76 percent lower than 2009 measurements, likely due to changes in sampling methodology. However, if earlier arsenic concentrations were attributable to the sodium arsenite spill, they have since attenuated.
- Due to aquifer properties, including high-TDS groundwater (29,000 milligrams per liter) from the aquifer zone represented by MW04D, ingestion of groundwater is not a likely exposure pathway, and therefore, the use of MCLs in determining cleanup goals is not appropriate.

Therefore, a Class 3 modification to the Permit pursuant to 40 CFR 270.42(c) is warranted for AOC-J to move the site from Table A (Sites Requiring Corrective Action) to Table B (Sites With Corrective Action Complete Without Controls).

F.5.4 Basis for Determination

AOC-J is proposed for CAC without controls status based upon the presence of acceptable concentrations of arsenic in groundwater and the site is capped with asphalt which inhibits infiltration of storm water and prevents potential exposure to soils.

Figure F5.1 AOC-J Site Map and Arsenic Concentrations in Groundwater



F.6 AOC-L (OT-37), EARLY MISSILE TEST SITE

F.6.1 Location/Unit Description

AOC-L, the Early Missile Test Site, is also referred to as ERP Site OT037. The site is located north and east of the airfield area, adjacent to the Lost River and is in a relatively remote area along the southeast bank of the Lost River, bisected by Tula Peak Road. Aside from three historically used structures (“block houses”) that are located within the site, there are no other inhabitable buildings or developed sites within approximately one mile of the site. The test site covers approximately 160 acres and includes three block houses (used as communication and observation points), the inclined test track, three vertical launch pads, a pit northwest of Blockhouse 1142, and four transformer concrete pads (transformers have been removed).

A site map is presented as **Figure F6.1**.

F.6.2 History/Current and Anticipated Future Land Use

Site OT037 was used to develop rocket and missile systems from 1947 to 1955. Fuels used at these sites included JP-4, kerosene, and solid rocket propellants. Polychlorinated biphenyls (PCBs) were contained in the transformer dielectric fluid. At some sub-sites, solid rocket propellants such as nitrocellulose, nitroglycerine, potassium perchlorate, and polysulfide were exclusively used. Potential source areas include the fuel staging area at the base of the incline track (“JB-2 Ramp”), the outfall for the drainpipe at the inclined track, the three launch facilities, and the four step-down transformer pads.

Testing operations are no longer conducted at the site. Many of the buildings present at or near the site have been used for warehousing/general storage. Nearby buildings 1105, 1106, and 1107 and the adjacent water tank and water tower are currently in use by the HAFB water distribution utility shop. Based on a study conducted in 1998, the JB-2 launch ramp (inclined test ramp), and buildings 1113 (Radio Relay Facility) and 1116 (Missile Launching Test Facility) are all located in an “archeological area” and were eligible for National Register of Historic Places status.

There are no proposed changes for the land use at OT037, which is industrial. Additional development to the western portions of the site, within the Lost River basin, is restricted due to floodplain risks and habitat of the State-threatened White Sands pupfish. An interagency agreement between the Permittee and federal and state agencies protects the area as Essential Habitat and precludes development or recreational use.

F.6.3 Evaluation of Relevant Information

A records search for site OT037 was conducted in 1982 and a RFA Preliminary Review/Visual Site Inspection was conducted in 1988. Based on suspected releases and/or spills of hazardous wastes (e.g., solid rocket fuel propellants) to soils, the RFA Report (A.T. Kearney 1988) recommended further investigation at OT037.

The site was investigated in August 1991 during a RI which focused on two different possible contaminant releases: 1) an investigation of the four (4) step-down transformer concrete pads for PCBs and TPH, and 2) an investigation of the launch facilities (four vertical launch facilities and

the inclined track) for fuel components. Four hand-auger surface soil samples were collected and seven soil borings, and six monitoring wells were installed as part of the investigation.

ACM investigations were conducted at the site in 2007 and 2010. The primary objectives of the investigations were to determine the extent of potential PCB and TPH soil contamination associated with each of the four former transformers for potential source removal and to evaluate the current subsurface conditions (soil and groundwater) at each of the three vertical launch pads and the inclined test track. Another objective was to determine if the tar-like substance that was observed to coat the ground near the inclined test track contained PCBs.

During the 2007 investigation, the tar-like substance found on the ground surface surrounding the inclined test track was sampled for PCBs, which were not detected in the sample. Between June and October 2007, ten shallow DPT borings were advanced with two soil samples collected per boring. Other work included resampling of two surface soil locations at previous RI locations, installation of eight deep hollow stem auger (HSA) boreholes with two soil samples collected per borehole. Four of the borings were converted to monitoring wells.

The 2010 investigation was conducted to obtain additional soil and groundwater data to delineate the extent of nitrate, perchlorate, and arsenic that had been previously detected in soil and groundwater samples collected at the four launch facilities. A second objective was to determine if the previous detections of nitrate in groundwater are from a geogenic (natural) or an anthropogenic (human) source. To meet these objectives, the following field activities were conducted: collection of 16 composite surface soil samples; advancement of nine deep boreholes with HSA, collection of two soil samples per boring, and conversion of all nine boreholes to monitoring wells; collection of one round of groundwater samples from all site monitoring wells. Seven wells were also sampled for compound-specific isotopic analysis (CSIA) for nitrate, tritium, and anions. Data from these analyses provide a technique for fingerprinting nitrate sources (i.e. to determine if the nitrate is from an anthropogenic or geogenic source).

Widespread concentrations of nitrate and perchlorate were detected in groundwater during the 2010 sampling event. Nitrate concentrations ranged from 5.6 to 143 mg/L and exceeded the USEPA and NMWQCC groundwater action level (10 mg/L) in 17 of the 18 monitoring wells sampled during the ACM Addendum. Additionally, perchlorate concentrations ranged from 0.37 to 17 µg/L and exceeded the USEPA Interim Drinking Water Health Advisory (15 µg/L) in one monitoring well (OT37-MW15) which is located within the Lost River Basin (AOC-U) and is downgradient from the Central Vertical Launch Pad. However, the ubiquitous distribution of perchlorate appears to be homogeneous throughout the site as one of the upgradient wells (OT37-MW16) had a perchlorate concentration (13 µg/L) just below the USEPA Interim Drinking Water Health Advisory.

The historical site data from the prior investigations were summarized and described in the Release Assessment Report (RAR), dated February 2011. The CSIA and tritium data were consistent with an up-gradient and potentially geogenic source of nitrate in groundwater. Additionally, distribution of perchlorate in groundwater was indicative of a potential up-gradient and/or natural source. The RAR recommended additional sampling of nitrate and perchlorate in the upper tributaries (Malone and Rita's Draw) of the Lost River Basin (AOC-U). NMED provided a letter approving the RAR on June 12, 2013 acknowledging that the additional groundwater sampling had already been conducted and submitted to NMED as part of the AOC-U RFI Report. It is noted

that the AOC-U RFI Report has since been approved by NMED and the site was granted CAC without controls status on May 12, 2017.

Groundwater TDS levels are elevated at site OT037. Since TDS levels exceed the 10,000 mg/L NMWQCC threshold, NMWQCC standards are not applicable and USEPA MCLs do not directly apply since the aquifer is classified as a Class IIIB aquifer (USEPA 1986).

An additional investigation at site OT037 has been conducted since the RAR as part of the RI for Missile Stand Test Area (XU853). Site XU853 is a Military Munitions Response Program, Munitions Response Site (MRS) that overlaps a majority of the former operational area of OT037 (see **Figure F6.2**). Field work for the XU853 RI Report (FPM 2016) was conducted in 2014 and 2015. Sampling included multi-incremental sampling (MIS) of surface soils from six identified decision units located at the north vertical launch pad, south vertical launch pad, and inclined test ramp facilities. Activities performed under this RI also included surface clearance of munitions and explosives of concern (MEC), munitions debris (MD), and small arms debris with 100% areal coverage, using digital geophysical mapping with detectors to search for MD and MEC. A total of 10 MIS samples were collected from the six decision units, each sample containing approximately 100 aliquots. MIS samples were analyzed for perchlorate, explosives, and nitrate. It was concluded that explosives, nitrate, and perchlorate in soils do not pose a hazard to human health and the environment.

The XU853 RI Report was approved by NMED on March 18, 2016 with the finding that MRS XU853 was not historically used as a range, was primarily used as a launch area for an array of missile testing programs, and that solid wastes have not been routinely and/or systematically released at the MRS. No free liquids were observed. No MEC was detected and all Munitions Constituents (MC) detected were below soil screening levels. Thus, results indicated that the site does not present an unacceptable risk to human health or the environment for MEC and MC. NMED determined that MRS XU853 is not a SWMU or AOC. The USEPA also concurred with the RI Report's recommendation for No Further Action for site XU853.

Based on results of the prior investigations, a human health and ecological risk evaluation was performed at site OT037 to identify potential receptors and the pathways by which these receptors may be potentially exposed to media. The only potential route of exposure for soil and groundwater is potential future indoor vapor intrusion from groundwater. This pathway is applicable only for VOCs. The risk evaluation was presented in the *Final Technical Memorandum: Risk Assessment Screening for Site OT-37 (AOC-L) and Site OT-38 (SWMU 137)* (Tech Memo, URS, 2017a). Elements of the risk assessment screening included: (1) a review of relevant reports available for OT037, (2) a compilation of soil and groundwater data for the site, (3) a comparison of maximum soil and groundwater concentrations with the NMED or USEPA screening levels to identify COPCs for human health and chemicals of potential ecological concern, (4) development of exposure models, and (5) site-specific cumulative risks that were estimated and evaluated for potentially complete exposure pathways. The site passed the residential screening cancer risk and residential screening hazard analysis (see **Table F6.1**). Therefore, there are no unacceptable risks to human health or the environment based on residual contaminants in soils and groundwater at site OT037. NMED approved the Tech Memo in a letter dated 4/18/2017 advising that the site may be proposed for CAC status.

**Table F6.1
AOC-L Comparison of Maximum Groundwater Concentrations with VISLs**

Chemical	Maximum Groundwater Concentration *	Residential Groundwater VISL (µg/L)	Residential Screening Cancer Risk	Residential Screening Hazard
	(µg/L)			
Organic Volatile Compounds				
Acetone	3.2	22,500,000	--	0.0000001
Bromodichloromethane	0.59	8.73	6.8E-07	
Chloroform	5.65	8.11	7.0E-06	
1,1,2,2-Tetrachloroethane	ND	32.2	--	
Methylene Chloride	18	4,700	--	0.004
Cumulative Cancer Risk		-	- 8E-06	-
Hazard Index		-	-	0.004

Notes:

1. Values are from NMED (2015).

* Data from most recent sampling event only (2007).

N/A = Not Applicable

NA = Not Available

ug/L = micrograms per liter

VISL = Vapor Intrusion

Screening Level

This criterion was accomplished by analyzing historical data, collecting groundwater and soil data, and investigating AOC-L.

F.6.4 Basis for Determination

Based on the human health and ecological risk screening results, no unacceptable risk to human health or the environment exists at AOC-L. AOC-L is proposed for CAC without controls based upon Criterion #5 listed in Appendix 4-B of the Permit.

Figure F6.1 AOL-L Site Map

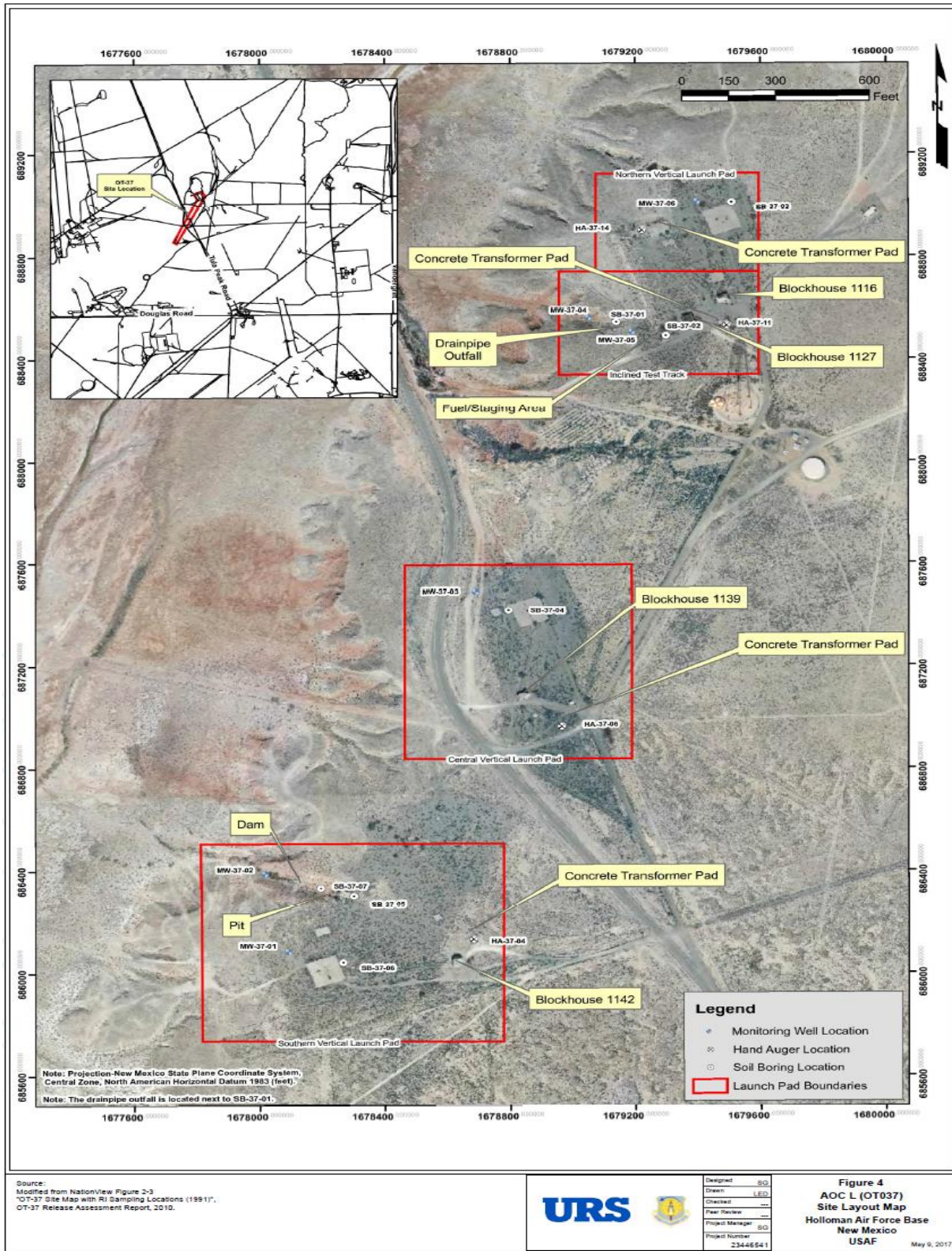
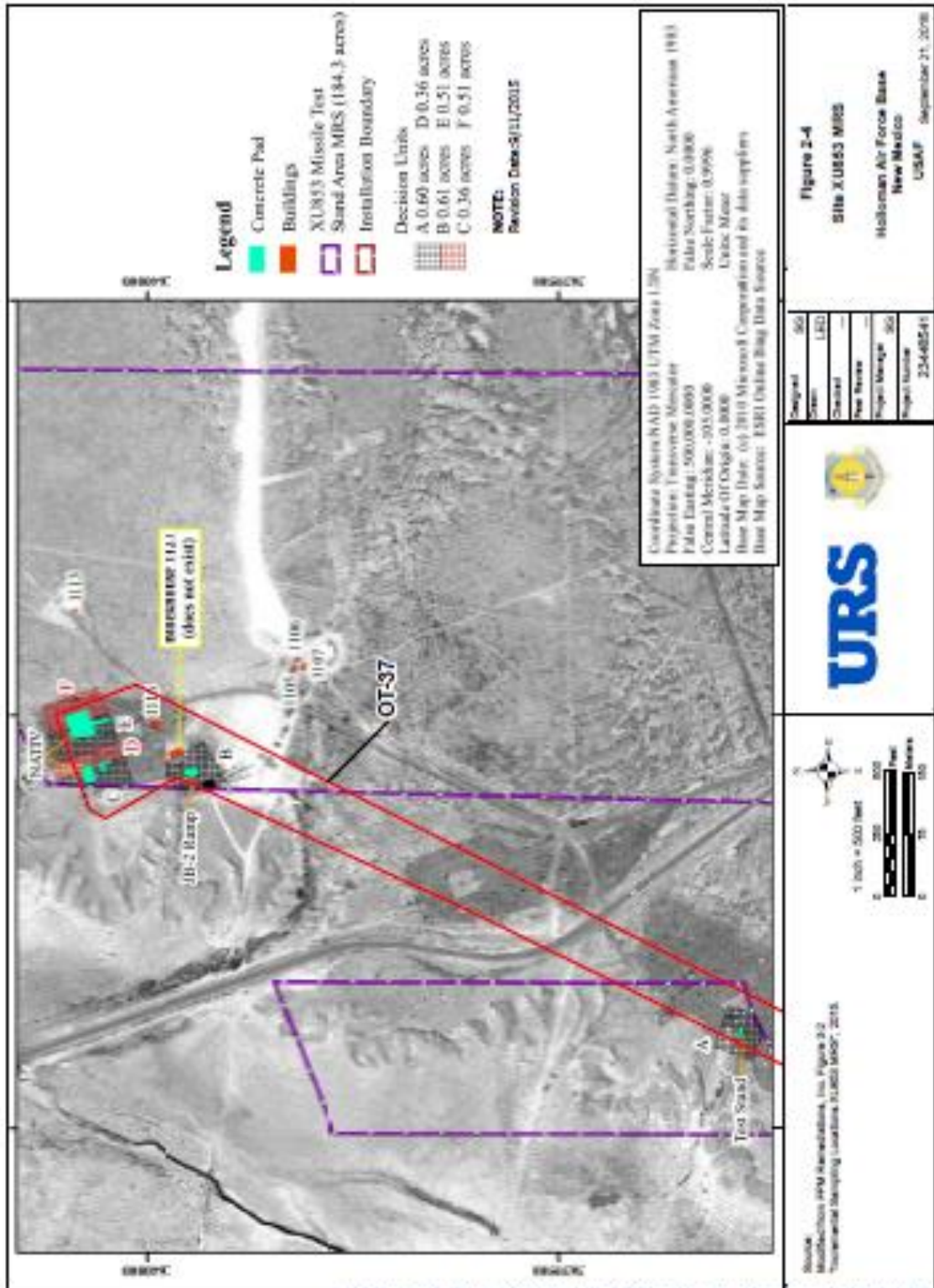


Figure F6.2 AOC-L and MRS XU853 Layout Map



F.7 AOC-PRI-A (OT032), PRIMATE RESEARCH LAB SEWER LINE

F.7.1 Location/Unit Description

AOC-PRI-A, the Primate Research Lab Sewer Line, is also referred to as ERP Site OT032. The *ACM Completion Report, Sites OT-32 and RW-42* (Bhate 2012) identified the location of OT032 as along the waste discharge sewer line of the former Primate Research Institute (PRI). The former location of the PRI (Buildings 1200 through 1208) was on Douglas Road, near the intersection with Vandergrift Road, approximately two miles north of the Main Base Area.

A site map is presented as **Figure F7.1**.

F.7.2 History/Current and Anticipated Future Land Use

It was reported that approximately 3,000 to 4,000 ft of sewer line leading from the former PRI were suspected of being corroded, with certain portions thought to be totally collapsed during the early 1960s until the late 1970s. In 1981, a segment of the sewer line from the former Primate Research Lab was repaired. During the period when the sewer lines were badly corroded/collapsed, small quantities of carbon-14, iodine-125, tritium tracers, and solvents may have entered the lines at the PRI and are suspected to have leaked into the subsurface at the location of the collapsed section. Based on interviews conducted in 2006 with Charles Price, Jr., Manager of the Holloman AFB Utilities Group, another sewer line collapse occurred in the early 1990s. This collapsed segment of sewer line was located along the main north-south line approximately 500 to 1,000 ft south of the sewer line that connects with the former Primate Research Area. It was reported (during the 2006 interviews) that a 20-ft long by 40-ft wide by 16-ft deep pit, which received sewage waste for one year prior to the sewer line being repaired, was excavated in the early 1990s. The quantities of solvents and radioactive tracers used by the former Primate Research Area were reportedly small; however, no specific information was available concerning the volumes of these contaminants that could have entered the shallow groundwater.

An IRP Records Search was conducted for OT032 in 1982. The site was not considered to present a significant risk and further investigation of the site was not recommended at that time.

A Phase II, Stage 1 investigation was conducted at OT032 in September 1984. Four soil borings (32B-1 through 32B-4) were drilled along the sewer line approximately 1.5 miles southwest of where the corroded/collapsed sewer line was identified during the IRP Records Search. Eight soil samples were collected and analyzed for oil and grease, total organic halogens (TOX), tritium, and carbon-14. Carbon-14 was detected in one sample at a concentration of 240 plus or minus (\pm) 194 picocuries per gram (pCi/g). No other contaminants were detected in the samples.

Based on the site description and location presented in the IRP Phase II – Confirmation/Quantification Stage 1 Report (Dames & Moore 1987), the Phase II investigation for OT032 was conducted at the wrong location. The Records Search and interviews conducted in 2006 with Mr. Price indicate that the segment of corroded/collapsed sewer line (OT032) was actually located approximately 0.25 mile southwest of the former PRI (Buildings 1200 through 1208). Misidentification of the source area (corroded/collapsed sewer line) would explain the lack of detections during the Phase II investigation.

In 2007, 12 soil borings were drilled along 2,600 ft of the sewer line and completed as temporary groundwater monitoring wells. The temporary wells were surveyed to evaluate hydraulic

conditions at the site, and sampled for laboratory analysis. A concentration of 1,1-dichloroethene (DCE) was detected at a concentration above the NMWQCC standard of 5 µg/L in well TMW09 (18 µg/L). All other analytes were either not detected or detected at concentrations below the applicable groundwater standards.

There are no proposed changes for the land use at OT032, which is industrial.

F.7.3 Evaluation of Relevant Information

The *ACM Completion Report, Sites OT-32 and RW-42* was submitted in 2012, but disapproved by NMED in a Notice of Disapproval (NOD) letter dated September 18, 2014. The NOD addressed deficient issues at both OT032 and RW042. For OT032, the NOD was based on:

- Detection of 1,1-DCE in monitoring well OT32-TMW09 (TMW09) at 18 µg/L in 2007, in exceedance of the NMWQCC groundwater standard of 5 µg/L, and
- Questionable groundwater flow direction as depicted in *the ACM Completion Report, Sites OT-32 and RW-42*.

In 2015, a Letter Work Plan (URS 2015a) was submitted to NMED that proposed supplemental groundwater monitoring, and included analytical results from October 2014 and revised potentiometric surface maps. An additional groundwater monitoring event, stipulated in NMED's Second Response to the NOD letter dated March 3, 2015, also was included in the plan.

The October 2014 sampling event documented in the Letter Work Plan represents the first sampling event, conducted prior to NMED's approval of the Letter Work Plan as an attempt to meet NMED's timeline. The second sampling event was conducted in July 2015, with analytical results documented in the October 20, 2015 *Letter Report for OT-32 (AOC-PRI-A)* (URS 2015d). In conjunction with the 2014 and 2015 groundwater sampling events, new water-level measurements from 12 site monitoring wells were also collected and updated potentiometric surface maps were created for the site.

The *Letter Report for OT-32 (AOC-PRI-A)* includes analytical results for TMW09 from 2007, 2014, and 2015, as well as updated potentiometric surface maps addressing the additional site monitoring activities required by NMED. Based on an evaluation of available data:

- The extent of 1,1-DCE is localized, attenuating, and approaching the relevant NMWQCC standard, and
- Groundwater flows to the southwest, consistent with the flow direction observed at other locations in this area of Holloman AFB.

As indicated in the NMED 2014 NOD, following receipt of the *Letter Report for OT-32 (AOC-PRI-A)*, "NMED will make a decision regarding the need for future site characterization activities." In a February 22, 2016 partial approval letter for the *ACM Completion Report, Sites OT-32 and RW042*, NMED gave partial approval of that *ACM Completion Report* indicating that OT032 had been satisfactorily addressed and that the site is suitable for a finding of CAC.

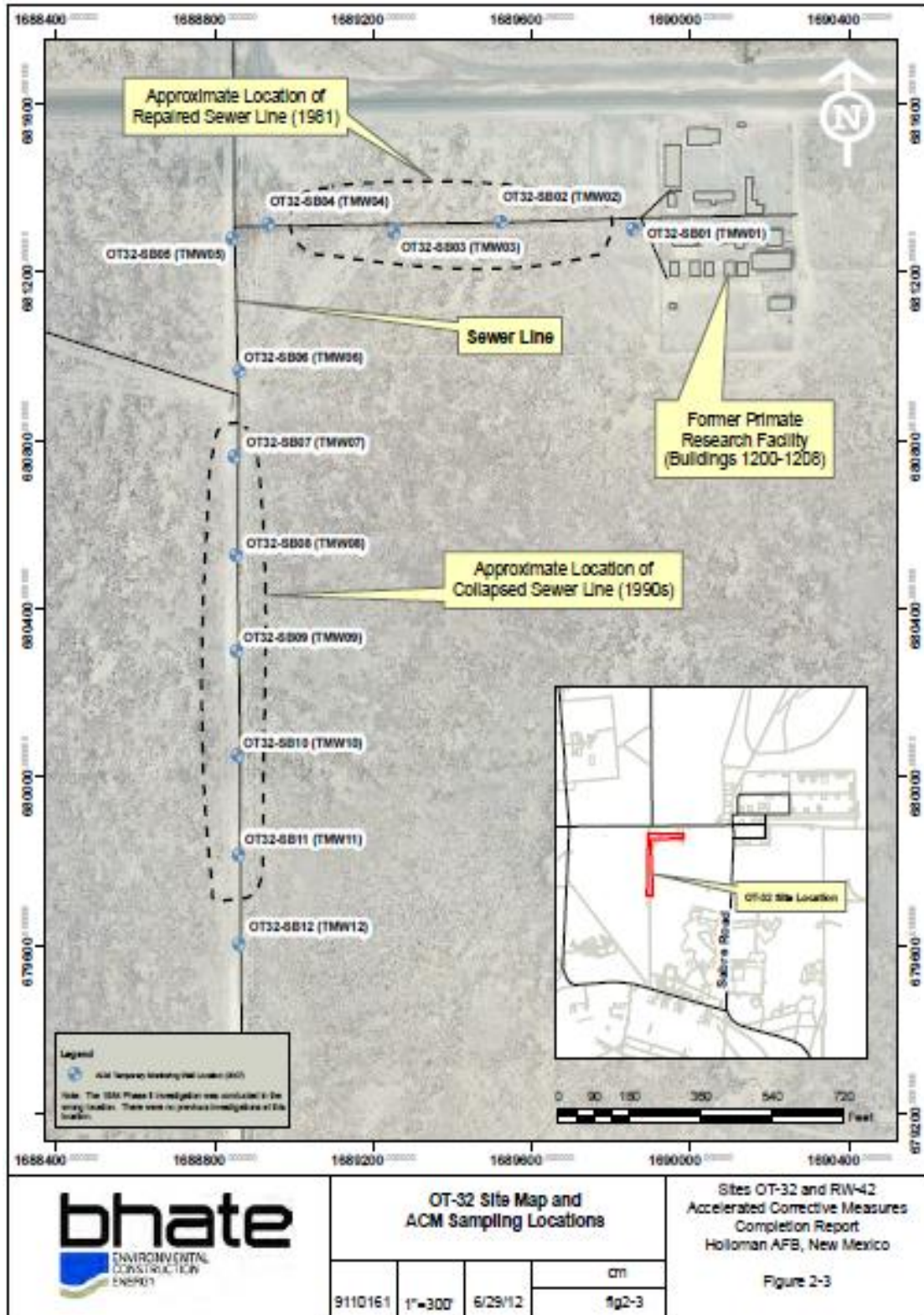
Since the discovery of this potential groundwater contamination in 2007, the NMED required further investigation of the site and intended to move this site to Table A of the Permit. However, this site was investigated before it could be officially moved to Table A and NMED has since deemed it suitable for CAC without controls, as described in the section below. Therefore, upon approval of the Class 3 permit modification, AOC-PRI-A (OT032) will remain on Table B of the

Permit. A Class 3 modification is not necessary for AOC-PRI-A as further investigation indicated the site is suitable for CAC without controls.

F.7.4 Basis for Determination

AOC-PRI-A is proposed for CAC without controls status based upon Criterion #5 listed in Appendix 4-B of the Permit. The approval for OT032 is included in the partial approval letter from NMED dated February 22,2016 for the *ACM Completion Report, Sites OT-32 and RW-42*.

Figure F7.1 AOC-PRI-A Site Map



F.8 AOC-UST-221 (TU/US-C503), BUILDING 221 UST

F.8.1 Location/Unit Description

AOC-UST-221, the Building 221 underground storage tank (UST), is also referred to as ERP Site TU503. The *Final Interim Measures Report, Group 3 Former UST Sites: AOC-UST-221 (TU503), AOC-UST-298 (TU508), AOC-UST-901 (TU506), and AOC-UST-7003 (TU518)* (IM Report, URS 2016) identified the location of TU503 as associated with Building 221 in the southeastern portion of Holloman AFB, approximately 1,500 ft southeast of the HAFB airfield Controlled Area. Building 221 is the only structure present at this site. It is of slab-on-grade construction, and provides office and equipment space for telecommunications contractors.

A site map is presented as **Figure F8.1**.

F.8.2 History/Current and Anticipated Future Land Use

Records for former UST Site TU503 indicate that the UST associated with Building 221 was removed in 1991. Closure records indicate that the UST was a steel tank with a capacity of 300 gallons. The tank had been in service for an estimated 5 years and had been used for diesel fuel storage prior to closure. There was no known internal or external tank protection, and the associated piping was bare steel. The records show that soil directly beneath the tank contained a TPH concentration of 1,470 mg/kg prior to soil removal. As part of the UST removal effort, soil directly beneath the tank was also removed. The analytical results for the soil left in place indicated that the TPH concentration was 141 mg/kg (i.e., below the current NMED screening level of 1,000 mg/kg). However, in a November 1992 letter to HAFB, NMED indicated that it would still be necessary to determine the lateral extent of contaminated soils.

During Voluntary Corrective Measures (VCM) conducted in 2012, approximately 42 cubic yards (CY) of soil were removed from the site between 7 and 11 ft bgs. Additionally, a 2-ft wide by 24-ft long by 11-ft deep trench was excavated to delineate the contamination based on visual evidence. The contamination extended 18 ft laterally, which was confirmed by soil samples. A total of 13 soil samples were collected from various depth intervals down to the water table (approximately 9 ft bgs) at locations surrounding the former UST at Building 221. Screening criteria for TPH-diesel range organics (DRO) were exceeded in 11 of 13 samples, including samples collected from the sidewalls and floor of the excavation. Delineation of TPH-DRO contamination was not completed to the east, west, and south. Benzo(a)pyrene was detected above the residential screening level in one soil sample at a depth of 9 to 10 ft bgs near the former UST location.

Three monitoring wells were installed as part of the VCM. One was located upgradient and two were installed downgradient of the former UST location. Soil samples, collected from boreholes during well installation activities, were analyzed for COPCs. No COPCs were detected at concentrations above the applicable screening or regulatory levels. Groundwater samples were collected from only two of the three wells since downgradient well TU503-MW01 did not yield sufficient groundwater for sampling. Upgradient monitoring well TU503-MW02 contained a TDS value greater than 10,000 mg/L, and no further analyses were performed since it was believed at the time that NMWQCC groundwater standards were not applicable to individual monitoring wells containing TDS concentrations above 10,000 mg/L. Sample results for downgradient well TU503-MW03 were compared to the NMWQCC standards, but none of the detected analytes exceeded their corresponding groundwater standard.

There are no proposed changes for the land use at TU503, which is industrial.

F.8.3 Evaluation of Relevant Information

Investigative and remedial objectives of the IM Report at TU503 focused on delineation and remediation of TPH and polynuclear aromatic hydrocarbon (PAH) screening level exceedances in soils in the vicinity of the former UST location and on characterization of groundwater affected by the UST release and historic site operations.

Investigative work at TU503 included the drilling of fourteen soil borings, installation of six temporary monitoring wells and one permanent monitoring well, soil and groundwater sampling, and water elevation measurements. Remedial actions included contaminated soil removal and confirmation soil sampling.

Site TU503 currently has four permanent groundwater monitoring wells (TU503-MW01, MW02, MW03, and MW04) that show no evidence of groundwater contamination related to the former UST, and petroleum-contaminated soil (PCS) has been excavated to the maximum extent practicable. The IM Report further describes the field activities and remedial actions that have occurred since the initiation of IM at TU503.

Based on the IM Report:

The source area has been removed and confirmation soil sampling indicates that PCS remains only in areas inaccessible to excavation within the vadose zone (i.e., beneath Building 221 and associated subsurface utilities).

- Despite exceedances of the TPH screening levels, the only COPC present in soil above residential SSLs is benzo(a)pyrene, which does not present unacceptable vapor intrusion risk due to its low volatility and the slab-on-grade construction of Building 221. Furthermore, benzo(a)pyrene was not detected in groundwater after source removal activities were completed.
- PCS is limited in extent beneath the building, as soil samples on the opposite side of the building from the excavated area were non-detect for benzo(a)pyrene.
- The remaining benzo(a)pyrene in soil at TU503 is found only at concentrations less than 1 mg/kg. The residential SSL is 1.12 mg/kg.

There are currently no groundwater sample locations with analytical results exceeding applicable groundwater standards.

- Soils in the area where groundwater was affected near the former TU503-TMW10 has been removed, and TU503-MW04 (installed within the excavated area, near the former temporary monitoring well) contains no concentrations of any petroleum hydrocarbons, including benzo(a)pyrene, above standards.
- Groundwater within the former source area has been sampled twice since remedial excavation was performed (TU503-MW04, May and November 2015), and no COPCs exceed the applicable standards.
- Elevated metals concentrations identified in site groundwater are not attributable to the former UST or related historical site operations, and are presumably naturally

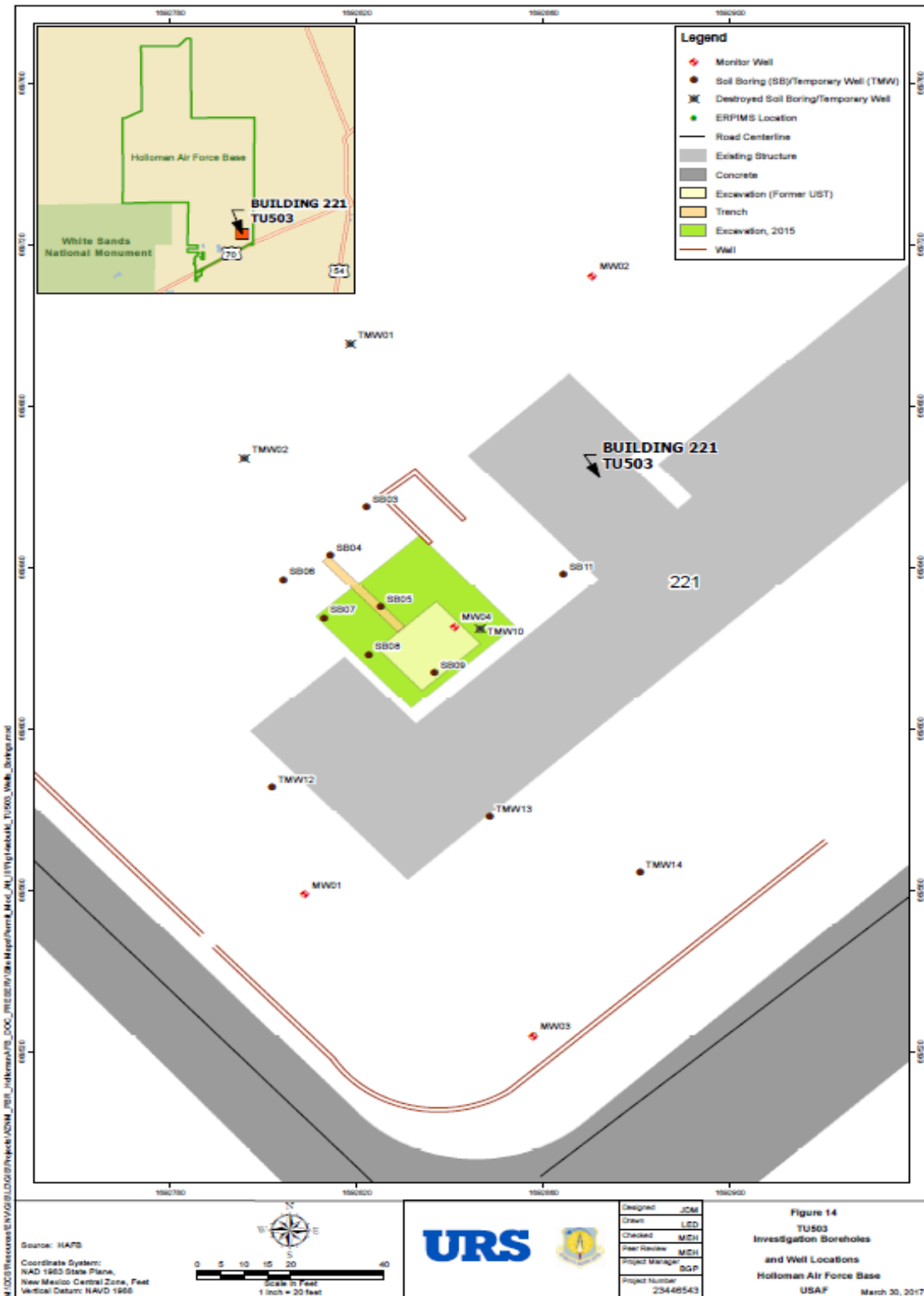
occurring. Groundwater TDS levels are elevated at site TU503. Since TDS levels exceed the 10,000 mg/L NMWQCC threshold, NMWQCC standards are not applicable and USEPA MCLs do not directly apply since the aquifer is classified as a Class IIIB aquifer (USEPA 1986).

Therefore, a Class 3 modification to the Permit pursuant to 40 CFR 270.42(c) is warranted for AOC-UST-221 to move the site from Table A (Sites Requiring Corrective Action) to Table B (Sites With Corrective Action Complete Without Controls).

F.8.4 Basis for Determination

AOC-UST-221 is proposed for CAC without controls status based on completion of site remediation as discussed above.

Figure F8.1 AOC-UST-221 Site Map



F.9 AOC-UST-298 (TU/US-C508), BUILDING 298 UST

F.9.1 Location/Unit Description

AOC-UST-298, the Building 298 UST, is also referred to as ERP Site TU508. The *Final Interim Measures Report, Group 3 Former UST Sites: AOC-UST-221 (TU503), AOC-UST-298 (TU508), AOC-UST-901 (TU506), and AOC-UST-7003 (TU518)* (IM Report, URS 2016) identified the location of TU508 as between Building 294 and former Building 298 (German Air Force, flight operations) on the southeastern portion of HAFB, within the airfield Controlled Area. Building 294 and several other buildings are present near this site. Building 294 is of slab-on-grade construction, and provides office and hangar space for the German Air Force desert training flight operations.

A site map is presented as **Figure F9.1**.

F.9.2 History/Current and Anticipated Future Land Use

Records for former UST Site TU508 at former Building 298 indicate that three USTs were removed in 1996. Closure records indicate that those three USTs were each constructed of fiberglass reinforced plastic. Two of the tanks had a capacity of 5,000 gallons each; one held jet fuel (JP4/8) and the other held gasoline. A third tank had a capacity of 3,000 gallons and held diesel fuel. There was no internal or external tank protection, and the associated piping was also fiberglass reinforced plastic. The tanks were removed by excavation, cut into pieces, and transported off site for disposal. Records also show that soil samples were collected from the excavation sidewalls and floor, and from the resultant soil stockpile following soil removal. Analytical results for the soil samples indicated the presence of TPH-DRO at concentrations of more than 1,000 mg/kg from a depth of 4.5 to 6.0 ft bgs and from within the soil stockpile. Approximately 600 CYs of soil were excavated from the former UST pit. Concentrations of TPH-DRO detected in soil samples collected from the excavation were below 1,000 mg/kg in the remaining soils.

During a VCM conducted in 2012, five soil samples were collected from depths near the water table (approximately 8 ft bgs from the base of the former UST pit). Petroleum hydrocarbon constituents were not detected at concentrations greater than the NMED residential SSLs in soil samples collected from the former UST area. A concentration of arsenic exceeded NMED residential SSL in one soil sample.

Three monitoring wells were installed as part of the VCM, one upgradient and two downgradient of the former USTs location. Six soil samples were collected from the boreholes drilled during well installation activities. Petroleum hydrocarbon constituents were not detected in the soil samples at concentrations above the applicable screening or regulatory levels. Concentrations of arsenic and cobalt exceeded their respective NMED residential SSLs in three soil samples collected from two of the well borings (TU508-MW01 and -MW02). Analytical results from the testing of groundwater samples collected from these three monitoring wells indicated the presence of various chlorinated volatile organic compounds (VOCs) above the applicable groundwater standards, but arsenic or cobalt concentrations did not exceed the cleanup levels. Four existing monitoring wells located near former Building 298 (associated with Site SS018 [AOC-H], VOC Spill Area) were added to the sampling program to further investigate the presence of chlorinated solvents not normally associated with petroleum hydrocarbons (i.e., gasoline, diesel

fuel, and JP 4/8). The analytical results for the four SS018 monitoring wells indicated the presence of various chlorinated VOCs associated with adjacent and overlapping AOC-H at concentrations greater than groundwater standards, both upgradient and further downgradient from the Building 298 former USTs.

The investigation and remediation of chlorinated VOC groundwater contamination at SS018 is being conducted separately from Site TU508.

A background value for arsenic of 3.7 mg/kg has been established for soil at HAFB (NMED 2011). The arsenic concentrations exceeding standards in soil at TU508 range from 3.9 to 4.6 mg/kg. This is slightly above the average background value, but less than the NMED 2017 residential SSL of 7.07 mg/kg.

The cobalt result (68.7 mg/kg) is an order of magnitude above the accepted background value for HAFB (7.7 mg/kg) but is less than the NMED 2017 SSL of 1,720 mg/kg. The elevated cobalt concentration was contained in a sample collected from a depth of 0 to 2 ft bgs in fill material at downgradient well boring TU508-MW01 and cannot be explained by natural processes. However, elevated cobalt concentrations were not observed at depths below two feet bgs and cobalt is not associated with the former USTs at Building 298.

There are no proposed changes for the land use at site TU508, which is industrial.

F.9.3 Evaluation of Relevant Information

Investigative objectives of the 2014-2015 IM focused on characterizing petroleum hydrocarbon exceedances within the investigation area. Site work included drilling and installation of four new monitoring wells. Additionally, a 10-ft by 10-ft area was excavated to a depth of 3-ft bgs to address the cobalt detected in shallow soils recorded in the *Draft RFI Report, Building 298 (TU/US-C508) Group 3 UST Site* (Shaw 2013c).

Site TU508 currently has seven groundwater monitoring wells (TU508-MW01, -MW02, -MW03, -MW04, -MW05, -MW06, and -MW07) that show no evidence of petroleum contamination in groundwater related to the former USTs. Water levels and groundwater samples have also been collected from monitoring wells associated with adjacent and overlapping Site SS018 to assist in the overall environmental assessment at TU508.

Based on the IM Report:

- The area of elevated cobalt in soil has been removed by excavation, and confirmation soil sampling indicates that no cobalt remains in the subsurface above the residential SSL.
- There are currently no groundwater sample locations for TU508 with petroleum hydrocarbon constituent concentrations exceeding applicable groundwater standards.
 - Benzene previously detected slightly above the MCL in two site monitoring wells was not detected in groundwater samples collected in November 2015.
 - Chlorinated solvents present at TU508 are from sources associated with an overlapping site and are being addressed under corrective actions for ERP Site SS018 (AOC-H).

Metals concentrations identified in site groundwater did not exceed their respective groundwater cleanup standards.

Therefore, a Class 3 modification to the Permit pursuant to 40 CFR 270.42(c) is warranted for AOC-UST-298 to move the site from Table A (Sites Requiring Corrective Action) to Table C (Sites With Corrective Action Complete With Controls).

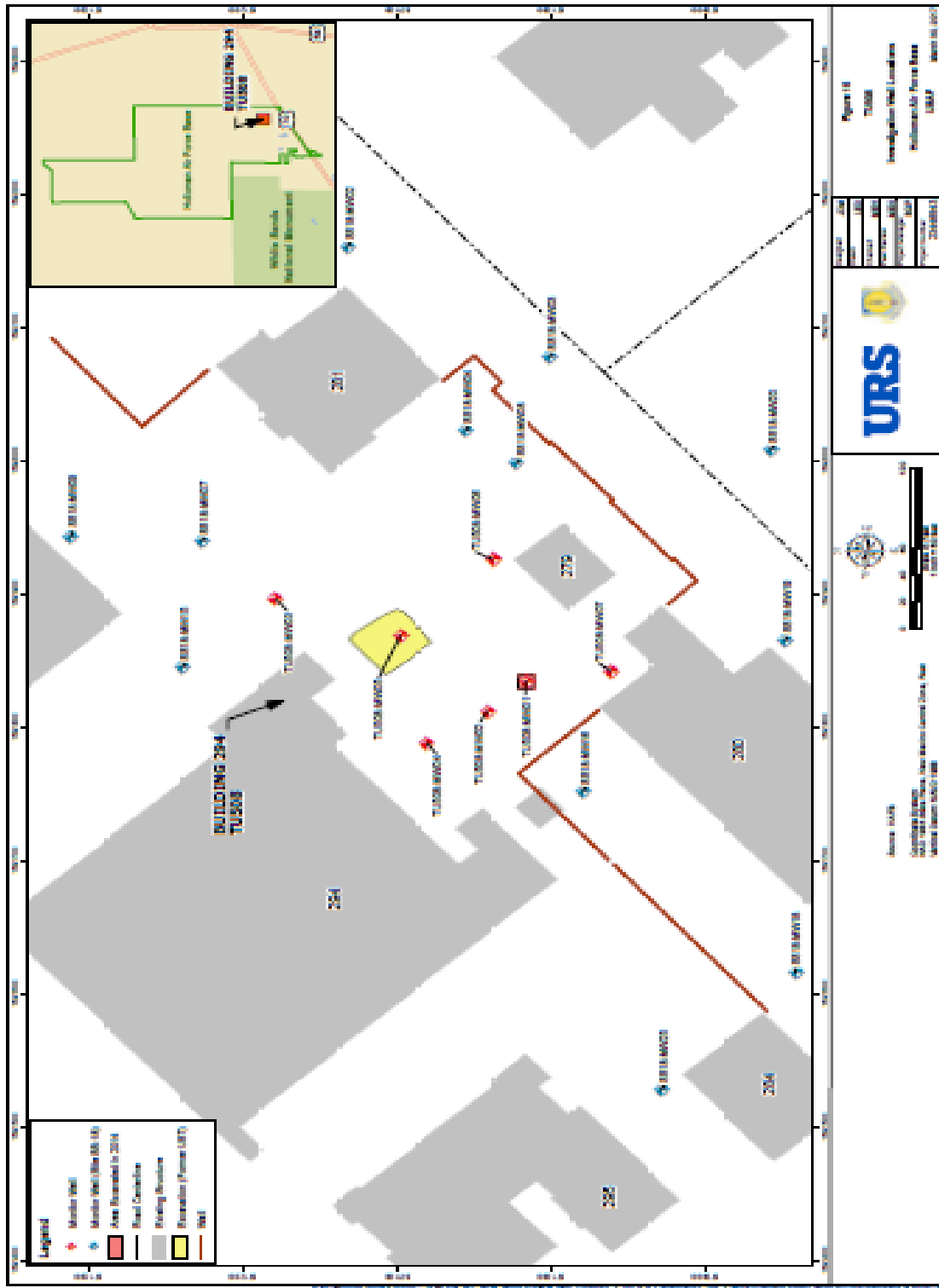
In NMED's June 9, 2016 approval letter, the Final IM Report was approved with the following comment: "Monitoring wells installed at AOC-UST-298 (TU508) shall be retained for additional monitoring and corrective action associated with the adjacent and overlapping site SS018 (AOC-H), which is undergoing corrective action." Therefore, monitoring wells associated with TU508 will be retained for additional monitoring or corrective action activities.

F.9.4 Basis for Determination

Because groundwater contamination associated with AOC-H is present beneath site TU508, controls at this site are required, including continued monitoring and corrective action in association with activities required for AOC-H. All future activities will be conducted under AOC-H remediation activities, and no additional work specific to site TU508 is required. Controls will include ongoing groundwater monitoring and corrective action activities associated with the overlapping AOC-H.

AOC-UST-298 is proposed for CAC with controls status based upon the presence of VOC groundwater contamination beneath the site.

Figure F9.1 AOC-UST-298 Site Map



F.10 AOC-UST-901 (TU/US-C506), BUILDING 901 UST

F.10.1 Location/Unit Description

AOC-UST-901, the Building 901 UST, is also referred to as ERP Site TU506. The *Final Interim Measures Report, Group 3 Former UST Sites: AOC-UST-221 (TU503), AOC-UST-298 (TU508), AOC-UST-901 (TU506), and AOC-UST-7003 (TU518)* (IM Report, URS 2016) identified the location of TU506 as at Building 901 (49th Materiel Management Group repair hangar) on the southwestern portion of HAFB, directly adjacent to the airfield Controlled Area and connected to the main airfield by Taxiway L. Only Building 901 is present at this site. It is of slab-on-grade construction, and provides hangar space for equipment receiving, repair, and redeployment to active service.

A site map is presented as **Figure F10.1**.

F.10.2 History/Current and Anticipated Future Land Use

Records for former UST Site TU506 indicate that the associated UST was closed in 1991. Closure records indicate the UST was a bare steel tank with a capacity of 250 gallons. The tank had been in service for 31 years, was used to store diesel fuel or used oil storage, and was in poor condition, exhibiting severe corrosion at the time of closure. There was no known internal or external tank protection, and the associated piping was bare steel. Soil contamination was noted during closure; a soil sample collected from below the tank had a TPH concentration of 14,000 mg/kg. There are no records to show that soil remediation was performed at that time.

During the 2012 VCM (Shaw 2012a), five soil samples were collected from depths near the water table (approximately 8 ft bgs), at locations surrounding the former UST north of Building 901. No parameters were detected that exceeded NMED residential SSLs. TPH was not detected above the 1,000 mg/kg SSL in any of the soil samples, and no removal actions were conducted.

Three monitoring wells were installed as part of the VCM, one slightly upgradient and two cross-gradient of the former UST location. Seven soil samples were collected from depths of between 2 and 15 ft bgs in boreholes during well installation activities. Petroleum-related constituents were not detected at concentrations above the applicable screening or regulatory levels. Iron and manganese were detected above NMWQCC standards in a groundwater sample collected from upgradient well TU506-MW01, but not in subsequent sampling round in 2014 and 2015. TPH-gasoline range organics (GRO) and TPH-DRO were detected in the same monitoring well at concentrations greater than the former NMED screening levels (Shaw 2013b).

There are no proposed changes for the land use at site TU506, which is industrial.

F.10.3 Evaluation of Relevant Information

Investigative objectives of the 2014-2015 IM at TU506 focused on characterizing dissolved-phase TPH exceedances in groundwater recorded during the 2012 VCM investigation down- or cross-gradient of the former UST location.

Investigative work for the IM included drilling, installation, and development of two additional monitoring wells (TU506-MW04 and MW05) to add upgradient and downgradient groundwater

monitoring points to the existing network of monitoring wells installed during the 2012 VCM and subsequent groundwater sampling and water level gauging within the monitoring well network.

Site TU506 currently has five permanent groundwater monitoring wells (TU506-MW01, -MW02, MW03, MW04, and MW05) that show no evidence of groundwater contamination related to the former UST. Based on these IM results and the previous RFI, no remedial work was conducted at TU506.

Based on the 2016 IM Report:

- The 2012 RFI identified no petroleum hydrocarbon constituents in soil above SSLs in the potential source area.
- The 2012 RFI concluded that only TPH-DRO was present above groundwater standards. At the time of the preparation of the IM Report, which was approved by the NMED on June 9, 2016 (NMED 2016c), dissolved TPH was not included as a screening tool for groundwater contamination in the risk assessment guidance (NMED 2015b). It was added to the guidance in March 2017.
- Groundwater analytical results from November 2014 indicated that only benzo(a)pyrene was present above the MCL in upgradient well TU506-MW05.
 - Two subsequent rounds of groundwater sampling in June and November 2015 resulted in no exceedances of benzo(a)pyrene detected.
 - No other potential COPCs have been identified at TU506.

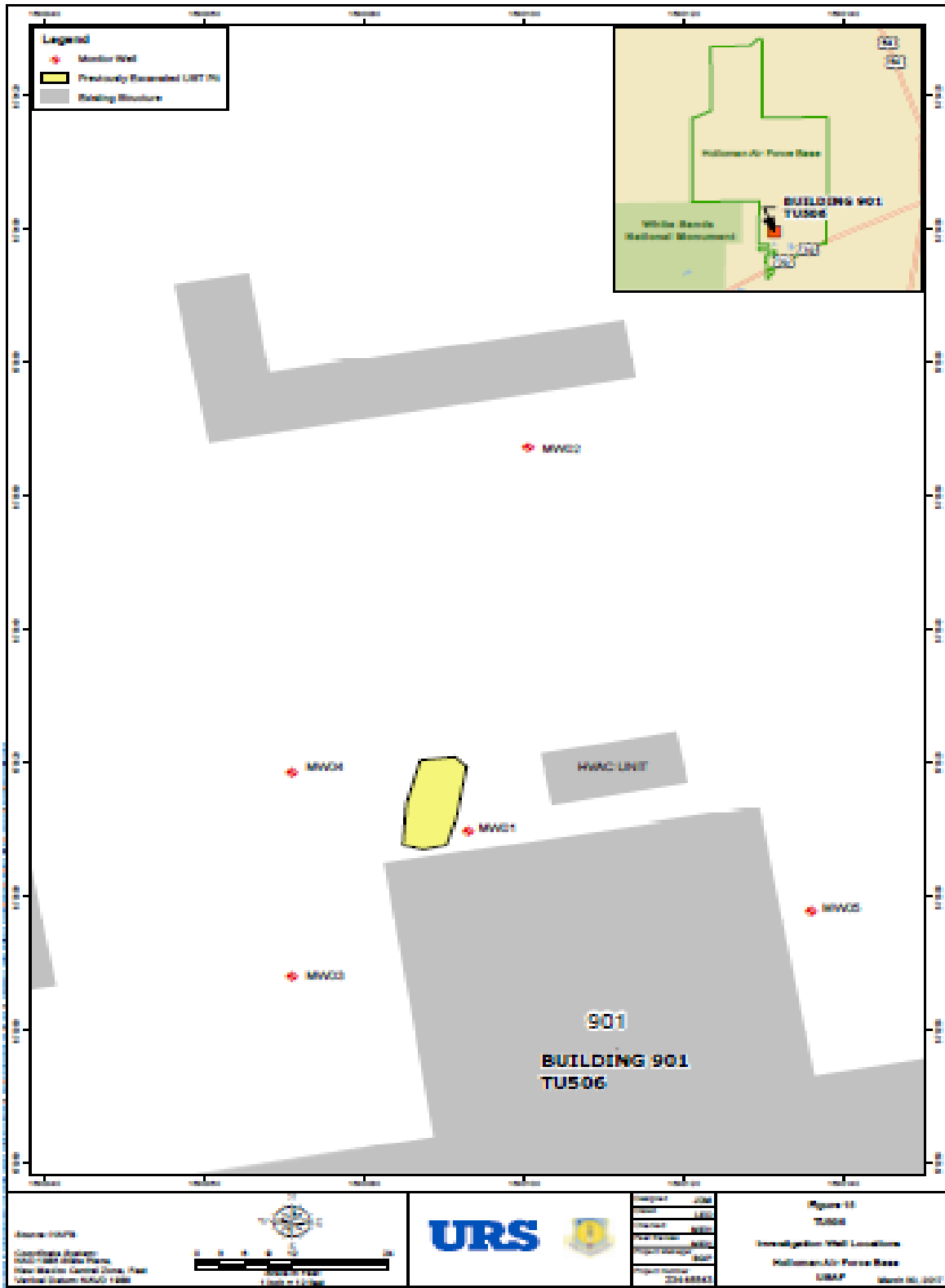
Based on the current evaluation, it is recommended that TU506 be considered for CAC without controls status. Therefore, a Class 3 modification to the Permit pursuant to 40 CFR 270.42(c) is warranted for AOC-UST-901 to move the site from Table A (Sites Requiring Corrective Action) to Table B (Sites With Corrective Action Complete Without Controls).

F.10.4 Basis for Determination

AOC-UST-901 is proposed for CAC without controls status based upon Criterion #5 listed in Appendix 4-B of the Permit which states:

“The site was characterized or remediated in accordance with applicable state and/or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.”

Figure F10.1 AOC-UST-901 Site Map



F.11 AOC-UST-1097 (TU/US-C505), BUILDING 1097 UST

F.11.1 Location/Unit Description

AOC-UST-1097, the Building 1097 UST, is also referred to as ERP Site TU/US-C505. Building 1097 is a communications building in the northeastern portion of the Base, and is located east of the runway.

A site map is presented as **Figure F11.1**.

Closure records for the Building 1097 UST indicate that a 4 ft diameter by 6 ft long steel UST, with a nominal capacity of 500 gallons used to store diesel fuel, was removed from the east side of Building 1097 in February 1991. The UST was reportedly in poor condition, and showed signs of leakage. Sample results showed a TPH concentration of 3,930 mg/kg in the soil beneath the tank. The site record does not specifically discuss remediation activities at the Building 1097 UST excavation; however, subsequent investigation suggests that at least some soil removal was performed in December 1991.

F.11.2 History/Current and Anticipated Future Land Use

The UST was closed, removed, and inspected in accordance with the requirements of the NMED Petroleum Storage Tank Bureau (PSTB). The Inspection Report/Tank Closure Worksheet (NMED 1991) indicates that the tank was properly closed and that all required records were maintained. Additional notes state that the tank was in poor condition, evidence of release/spill was present, and that a sample was collected from under the tank. The sample result was 3,930 mg/kg of TPH as analyzed by EPA Method 418.1. This result exceeded the 2014 NMED residential SSL of 1,000 mg/kg for TPH-DRO.

In December 1991, additional soil samples were collected after closure. Sixteen samples collected from depths of 5 to 29 ft bgs were collected from three locations. The soil samples were analyzed by EPA Method 418.1 and none of the detected TPH concentrations exceeded the 2012 NMED residential SSL of 1,000 mg/kg for TPH-DRO.

An RFI was conducted at the site to identify the former location of the UST, determine the nature and extent of potential constituents of concern in the soil and groundwater, and evaluate potential risks to human health and the environment. A summary of RFI information is presented below. The complete RFI for Building 1097 UST is provided in the *Final RCRA Facility Investigation Report, Group 3 – Building 1097 (TU/US-C505)* (RFI Report, Shaw 2013e).

There are no proposed changes for the land use at site TU505, which is industrial.

F.11.3 Evaluation of Relevant Information

The RFI soil investigation was initiated on July 26, 2012. A total of 11 soil samples were collected from nine borings drilled at Building 1097. Soil samples were collected from a depth interval of 6 to 8 ft bgs at five soil borings advanced within, and around, the former tank down to depths at, or just below, the bottom level of the former UST. Four soil borings were advanced and sampled while installing a total of three groundwater monitoring wells. However, only the first soil boring was completed as a monitoring well (USTC505-MW01). Monitoring wells were not installed in

the other borings because of the inability to reach the water table or lack of a sufficient water bearing zone.

Soil samples from four of the five soil borings at the tank excavation area displayed no evidence of petroleum-hydrocarbon contamination, and photoionization detector (PID) readings were all 0.0 parts per million (ppm). However, soil samples from USTC505-STA4 reported odors in the fill material, as well as in the clay soils immediately below the fill. Soil staining was also observed in the clay at approximately 6.0 ft bgs. PID readings in the USTC505-STA4 fill material were reported to be 4.3 ppm near the ground surface, and 8.9 ppm at approximately 3.5 ft bgs.

There were no VOC, SVOC, TAL metals, or TPH results exceeding their SSLs/RSLs in the soil samples collected during this investigation. Detections of constituents in soil included metals in all samples, low levels of TPH-DRO were detected in UST station samples USTC505-STA1 (4 mg/kg), USTC505-STA4 (11.7 mg/kg), and USTC505-STA5 (8.28 mg/kg), as well as TPH-oil range organics (ORO) in the 0.0 to 2.0 ft bgs sample (6.67 mg/kg) from monitoring well Soil Boring No. 3. Very low levels of methylene chloride were detected in the 0.0 to 2.0 ft bgs sample (0.0066 mg/kg), and 21.0 to 23.0 ft bgs sample (0.0048 mg/kg) from monitoring well Soil Boring No. 4.

Monitoring well USTC505-MW01 was installed at the site; however, the well was dry at the time of the sampling attempt on August 10, 2012. As a result, groundwater sampling and analysis was not performed due to a lack of a water-bearing zone beneath the site. In a letter dated May 29, 2015 (NMED 2015c), the NMED denied the Permittee's request for a CAC determination for the site and required the Permittee to collect and analyze two groundwater samples from an on-site monitoring well to confirm that there are no impacts on groundwater.

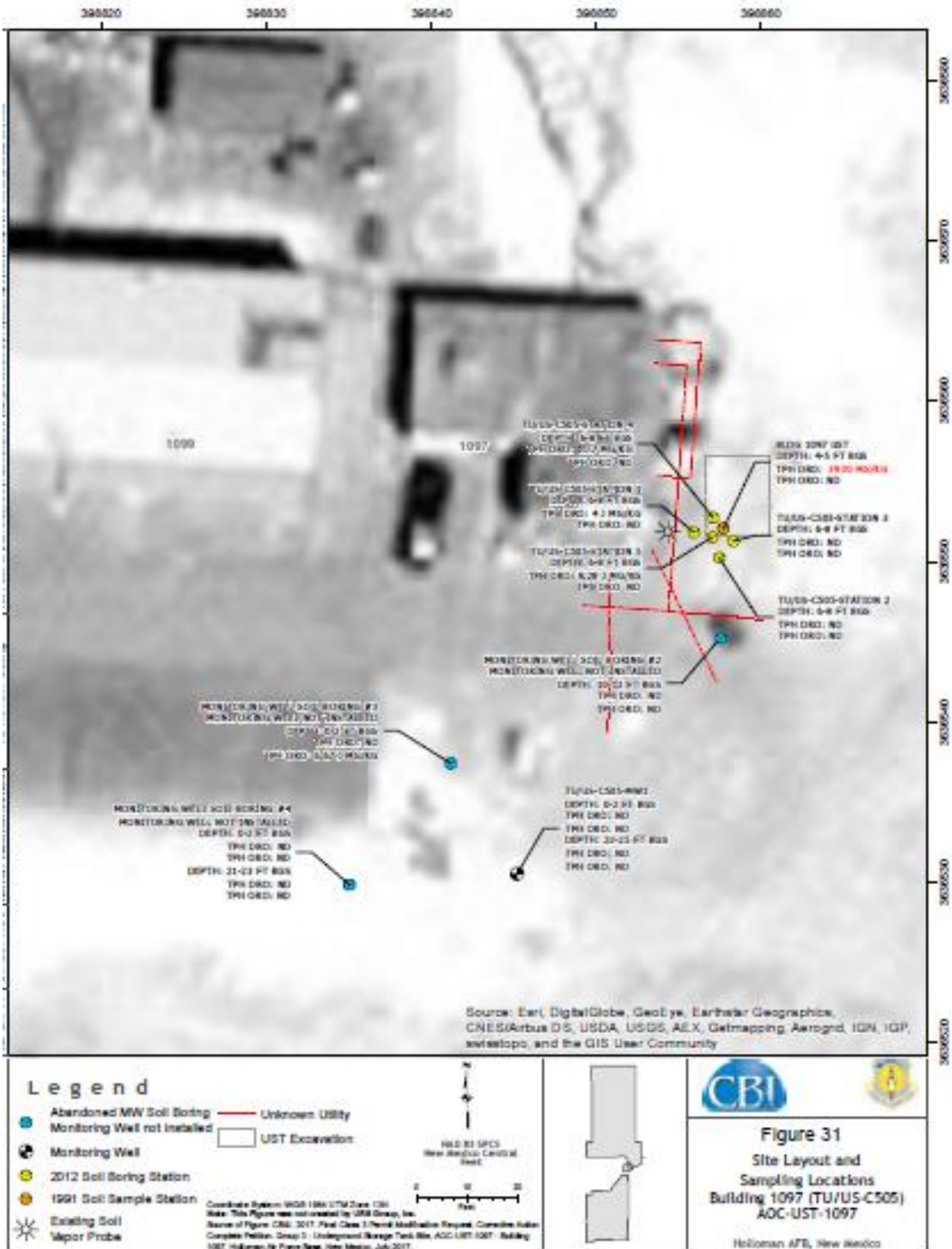
In response to the NMED letter, two groundwater monitoring events were conducted. The first groundwater monitoring event was on November 18, 2015, and the second was on April 6, 2016. In accordance with the *Working Copy, RFI Work Plan, Group 3 – Nine Former UST Sites* (Shaw 2012b), the water level at monitoring well USTC505-MW01 was measured prior to sampling. No groundwater was detected. Because the well had no measurable groundwater, no groundwater sample could be collected and analyzed. During the second event on April 6, 2016, the measuring process was repeated. The results were the same. In addition, groundwater was not observed in additional soil borings advanced to depths of 30 ft bgs. COPCs were not detected in any soil samples collected from the site at concentrations greater than applicable soil screening levels. NMED subsequently approved the site for corrective action complete in a letter dated June 3, 2016 (NMED 2016d).

Therefore, a Class 3 modification to the Permit pursuant to 40 CFR 270.42(c) is warranted for AOC-UST-1097 to move the site from Table A (Sites Requiring Corrective Action) to Table B (Sites With Corrective Action Complete Without Controls).

F.11.4 Basis for Determination

AOC-UST-1097 is proposed for CAC without controls status based upon Criterion #5 listed in Appendix 4-B of the Holloman AFB Permit.

Figure F11.1 AOC-UST-1097 Site Map



F.12 AOC-UST-7003 (TU/US-C518), NATIONAL RADAR TEST FACILITY UST

F.12.1 Location/Unit Description

AOC-UST-7003, the National Radar Test Facility (or RATSCAT), is also referred to as TU518. The *Final Interim Measures Report, Group 3 Former UST Sites: AOC-UST-221 (TU503), AOC-UST-298 (TU508), AOC-UST-901 (TU506), and AOC-UST-7003 (TU518)* (IM Report, URS 2016) identified the location of TU518 as between Buildings 7003 and 7004 (former RATSCAT) approximately eight miles west of the main cantonment of HAFB, within the White Sands dune field. Buildings 7003 and 7004, as well as several other buildings, are present at this site; however, the former test facility is now closed and unoccupied. Buildings 7003 and 7004 are the backup generator and wastewater treatment system for the former RATSCAT facility, respectively. Neither building is designed to be occupied, as they provide equipment space for the (now unused) backup generator, associated switchgear, and wastewater treatment facility.

A site map is presented as **Figure F12.1**.

F.12.2 History/Current and Anticipated Future Land Use

Records for former UST Site TU518 indicate that the associated UST was removed in 2008. During excavation, PCS was evident from the top of the excavation down toward the UST, indicating that the contamination was likely due to repeated overfills. Sample results showed TPH concentrations of up to 21,000 mg/kg in the soil. According to Base personnel, NMED was on site during tank removal and verified that the tank was in sound condition and that the contamination was likely due to overfilling. The removal project was not funded for remediation; therefore, the excavation was filled with clean soil without removing all contamination.

During the 2012 VCM, soil excavation was performed to remove PAH-impacted soil, but it also exposed additional petroleum-impacted soil. Approximately 45.5 CY of soil were removed for off-site disposal from an excavation that was approximately 16 ft long by 13 ft wide by 7 to 9 ft deep. Confirmation soil samples were collected from the excavation walls and floor. Petroleum-related contaminants were detected in the soil samples at concentrations that exceeded NMED residential SSLs. The parameters exceeding the SSLs were TPH-DRO (in one floor sample) and several PAHs (in two side wall samples). Groundwater was not investigated due to direct push technology (DPT) refusal.

There are no proposed changes for the land use at site TU518, which is industrial.

F.12.3 Evaluation of Relevant Information

Site TU518 currently has five functional groundwater monitoring wells (TU518-MW04, MW05, MW06, MW07, and MW08). No evidence of groundwater contamination related to the former UST has been detected in the wells. Monitoring wells TU518-MW01, MW02, and MW03 were drilled in 2012 as part of the VCM and RFI; however, the boreholes did not yield water by the time refusal was encountered at 8 ft bgs, and the borings were never completed as monitoring wells. These borings were entered into the USAF's ERP Information Management System database, and therefore, the more recent well identifiers start at "MW04."

Investigative and remedial objectives of the 2014-2015 IM activities at TU518 focused on delineation and remediation of TPH and PAH exceedances in soil near the former UST location, as well as characterization of potential groundwater impacts resulting from the UST release and other historic site operations. Investigative work at TU518 included installing five monitoring wells (TU518-MW04, -MW05, -MW06, -MW07, and -MW08) to approximately 13 ft bgs, sampling soil and groundwater, and measuring water levels. Remedial actions in the petroleum-affected area included soil removal and confirmation soil sample collection on two occasions.

Based on the IM Report:

The source area for petroleum hydrocarbons has been removed by excavation, and confirmation soil sampling indicates no PCS remains in the subsurface at concentrations greater than applicable screening levels.

There are no groundwater sample locations with analytical results exceeding applicable groundwater standards, including TU518-MW08 (installed within the excavated source area).

- Groundwater within the former source area has been sampled twice since remedial excavation was performed and no COPCs exceed the applicable standards.
- During the November 2014 groundwater sampling event, concentrations of arsenic, manganese and lead exceeded applicable standards. However, during the November 2015 sampling event, all metals concentrations were below standards. Elevated metals concentrations identified in site groundwater are not attributable to the former UST or related historical site operations, and are presumably naturally occurring. Groundwater TDS levels are elevated at site TU518. Since TDS levels exceed the 10,000 mg/L NMWQCC threshold, NMWQCC standards are not applicable and USEPA MCLs do not directly apply since the aquifer is classified as a Class IIIB aquifer (USEPA 1986).

Therefore, a Class 3 modification to the Permit pursuant to 40 CFR 270.42(c) is warranted for AOC-UST-7003 to move the site from Table A (Sites Requiring Corrective Action) to Table B (Sites With Corrective Action Complete Without Controls).

F.12.4 Basis for Determination

AOC-UST-7003 is proposed for CAC without controls status because residual contamination in soils does not present an unacceptable risk to human health and TDS in groundwater exceeds 10,000 mg/L.

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ATTACHMENT

DRAFT PERMIT

**MODIFIED TABLES
PERMIT APPENDIX 4-A
SUMMARY OF SOLID WASTE MANAGEMENT UNITS/
AREAS OF CONCERN**

TABLE A

(Summary of SWMUs/AOCs Requiring Corrective Action)

TABLE B

(Summary of SWMUs/AOCs With Corrective Action Complete Without Controls)

TABLE C

(Summary of SWMUs/AOCs With Corrective Action Complete With Controls)

APPENDIX 4-A

TABLE A

**SUMMARY OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN
REQUIRING CORRECTIVE ACTION**

SERIAL NO.	SWMU	ERP SITE ID	UNIT NAME
1	49	SS-59	Building 638 Oil/Water Separator
2	20	SS-59	Building 639 Oil/Water Separator
31	82	SD-08SD008	Building 131 Washrack
42	104	LF-29LF029	Former Army Landfill
53	111	RW-42RW042	Radioactive Waste Disposal Area
64	113B	DP-30/SD-33DP030/SD033	Sludge Disposal Trenches Fire Training Area
75	122	N/A	Building 702 Waste Oil Tank
86	123	N/A	Building 704 Waste Oil Tank
9	137	OT-38	Building 1166 Test Track Drain Field
107	141	SD-27SD027	Pad 9 Drainage Pit
11	165	SS-39	Building 1176 Pond
128	177	SS-39SS039	Building 1176 Sumps
139	179	SS-39SS039	Discharge Box
1410	181	SS-39SS039	Building 1176 Drainage Trough
1511	229	SS-59SS059	T-38 Test Cell Fuel Spill Site
1612	AOC-1001	SS-61SS061	Building 1001 Fuel Spill Site
1713	AOC-H	SS-18SS018	Chromic Acid Spill Area VOC Spill Site
18	AOC-J	SS-13	Herbicide Sodium Arsenite Spill Area
19	AOC-L	OT-37	Early Missile Test Site
2014	AOC-Q	SS-17SS017	BX Gas Station Fuel Line Leaks
2115	AOC-RR	N/A	Buried RR Cars
2216	AOC-T	SS-02/05SS02/05	POL Storage Tank Spill Sites 1 & 2
2317	AOC-W	TU-912TU912	Building 301 Concrete UST
2418	AOC-X	SS-74SS074	Remotely Piloted Aircraft FSST Washrack
2519	AOC-Y	XU-853XU853a	EOD 50-pound Range
26	AOC-UST-221	TU/US-C503	Building 221 UST
27	AOC-UST-298	TU/US-C508	Building 298 UST
2820	AOC-UST-889	TU/US-C515	Building 889 UST
29	AOC-UST-901	TU/US-C506	Building 901 UST
30	AOC-UST-1097	TU/US-C505	Building 1097 UST
31	AOC-UST-7003	TU/US-C518	National Radar Test Facility UST
3221	AOC-823	N/ASS823	Building 823 TPH in Soil
3322	AOC-851	TS-851TS851	Former Skeet Range
3623	AOC-859	SR-859TS859	Former Skeet Range 2
3724	AOC-862	TS-862TS862	Jeep Target Area Skeet Range
3825	AOC-1194	TU-904TU904	Building 1194 Septic System

TOTAL OF CORRECTIVE ACTION SITES = ~~38-25~~ [i.e., ~~15-11~~ SWMUs + ~~23-14~~ AOCs].

APPENDIX IV-A

TABLE B

**SUMMARY OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN
WITH CORRECTIVE ACTION COMPLETE WITHOUT CONTROLS**

SWMU/AOC	DESCRIPTION	COMMENT
1	Building 55 Oil/Water Separator	Site NFAd in February 2001
2	Building 121 Oil/Water Separator	Site NFAd in February 2001
3	Building 130 Oil/Water Separator	Site NFAd in February 2001
4	Building 131 Oil/Water Separator	Site CACd in May 2017
5	Building 137 Oil/Water Separator	Site NFAd in February 2001
6	Building 193 Oil/Water Separator	Site NFAd in February 2001
7	Building 198 Oil/Water Separator	Site NFAd in February 2001
8	Building 231 Oil/Water Separator	Site CACd in May 2017
9	Building 282 Oil/Water Separator	Site NFAd in February 2001
10	Building 283 Oil/Water Separator	Site NFAd in February 2001
11	Building 300 Oil/Water Separator	Site NFAd in February 2001
12	Building 304 Oil/Water Separator	Site NFAd in February 2001
13	Building 304A Oil/Water Separator	Site NFAd in February 2001
14	Building 306 Oil/Water Separator	Site NFAd in February 2001
15	Building 309 Oil/Water Separator	Site NFAd in February 2001
16	Building 315 Oil/Water Separator	Site NFAd in February 2001
17	Building 316 Oil/Water Separator	Site NFAd in February 2001
18	Building 500 Oil/Water Separator	Site NFAd in February 2001
21	Building 702 Oil/Water Separator	Site NFAd in February 2001
22	Building 704 Oil/Water Separator	Site NFAd in February 2001
23	Building 800 Oil/Water Separator	Site NFAd in February 2001
24	Building 801 Oil/Water Separator	Site NFAd in February 2001
25	Building 805 Oil/Water Separator	Site NFAd in February 2001
26	Building 809 Oil/Water Separator	Site NFAd in February 2001
27	Building 810 Oil/Water Separator	Site NFAd in February 2001
28	Building 822 Oil/Water Separator	Site NFAd in February 2001
29	Building 827 Oil/Water Separator	Site NFAd in February 2001
30	Building 830 Oil/Water Separator	Site NFAd in February 2001
31	Building 855 Oil/Water Separator	Site NFAd in February 2001
32	Building 868 Oil/Water Separator	Site NFAd in February 2001
33	Building 869 Oil/Water Separator	Site NFAd in February 2001
34	Building 902 Oil/Water Separator	Site NFAd in February 2001
35	Building 903 Oil/Water Separator	Site NFAd in February 2001
36	Building 1000 Oil/Water Separator	Site NFAd in February 2001
37	Building 1080 Oil/Water Separator	Site NFAd in February 2001
38	Building 1080A Oil/Water Separator	Site NFAd in February 2001
39	Building 1092 Oil/Water Separator	Site CACd in March 2013
40	Building 1166 Oil/Water Separator	Site NFAd in February 2001
41	Building 1266 Oil/Water Separator	Site NFAd in February 2001
42	Building 1 Waste Accumulation Area	Site NFAd in February 2001

APPENDIX IV-A

TABLE B CONTINUED

**SUMMARY OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN
WITH CORRECTIVE ACTION COMPLETE WITHOUT CONTROLS**

SWMU/AOC	DESCRIPTION	COMMENT
43	Building 55 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
44	Building 121 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
45	Building 195 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
46	Building 198 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
47	Building 280 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
48	Building 282 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
49	Building 300 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
50	Building 301 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
51	Building 308 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
52	Building 500 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
53	Building 638 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
54	Building 702 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
55	Building 702A Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
56	Building 807 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
57	Building 809 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
58	Building 822 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
59	Building 837 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
60	Building 844 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
61	Building 851 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
62	Building 855 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
63	Building 867 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
64	Building 869 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.

APPENDIX IV-A

TABLE B CONTINUED

**SUMMARY OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN
WITH CORRECTIVE ACTION COMPLETE WITHOUT CONTROLS**

SWMU/AOC	DESCRIPTION	COMMENT
65	Building 901 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
66	Building 901 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
67	Building 909 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
68	Building 910 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
69	Building 807 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
70	Building 1119 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
71	Building 1778A Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
72	Building 11778A Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
73	Building 1266 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
74	Building 7005 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
76	DRMO Non-Hazardous Waste Drain	EPA listed the site in 1988 as a SWMU with no further action required.
77	RATSCAT Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
78	Trim pad 3 WAA	EPA listed the site in 1988 as a SWMU with no further action required.
79	Building 21 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
80	Building 55 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
81	Building 121 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
83	Building 134 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
84	Building 137 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
85	Building 283 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
86	Building 304A Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
87	Building 306 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
88	Building 309 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.

APPENDIX IV-A

TABLE B CONTINUED

**SUMMARY OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN
WITH CORRECTIVE ACTION COMPLETE WITHOUT CONTROLS**

SWMU/AOC	DESCRIPTION	COMMENT
89	Building 703 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
90	Building 801 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
91	Building 816 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
92	Building 822 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
93	Building 827 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
94	Building 830 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
95	Building 902 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
96	Building 1080 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
97	Building 1119 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
98	Building 1116 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
99	Building 1266 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
100	Pad 9 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
102	Acid Trailer Burial Site	EPA listed the site in 1988 as a SWMU with no further action required.
103	Causeway Rubble Disposal Area	EPA listed the site in 1988 as a SWMU with no further action required.
105	LF-19 Golf Course Landfill	Site CACd in March 2013
106	Main Base Landfill	Site NFAd in November 2005
107	Main Base Substation PCB Disposal Area	EPA listed the site in 1988 as a SWMU with no further action required.
108	LF-23 MOBSS Landfill Disposal Trench	Site CACd in March 2013
110	POL Rubble Disposal Area	EPA listed the site in 1988 as a SWMU with no further action required.
112	RATSCAT Disposal Area	EPA listed the site in 1988 as a SWMU with no further action required.
113A	OT-20 Sludge Disposal Trench	Site CACd in May 2017
114	OT-03 TEL Disposal Site	Site CACd in May 2017
115	LF-22 West Area Landfill #1 PCB Disposal Area	Site CACd in March 2013
116	LF-21 West Area Landfill #2	Site CACd in March 2013
117	Wire Spool Disposal Area	EPA listed the site in 1988 as a SWMU with no further action required.
118	OT-16 Building 21 Pesticide Holding Tank	Site CACd in May 2017
119	Building 121 Waste Oil Tank	Site NFAd in February 2001

APPENDIX IV-A

TABLE B CONTINUED

**SUMMARY OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN
WITH CORRECTIVE ACTION COMPLETE WITHOUT CONTROLS**

SWMU/AOC	DESCRIPTION	COMMENT
120	Building 309 Waste Oil Tank	Site NFAd in February 2001
121	Building 316 Waste Oil Tank	Site NFAd in February 2001
124	Building 752 Waste Oil Tank	Site NFAd in February 2001
125	Building 868 Waste Oil Tank	Site NFAd in February 2001
126	Building 1000 Waste Oil Tank	Site NFAd in February 2001
127	Building 1092 Waste Oil Tank	Site CACd in March 2013
128	Building 1166 Waste Oil Tank	Site NFAd in February 2001
129	Building 1191 and 1192 Spill Tanks	Site NFAd in February 2001
130	SS-46 Taxiway 4 Tank 28 Underground Waste Tank	Site CACd in March 2013
131	Waste Oil Bowsers	Site NFAd in February 2001
132	OT-16 Building 21 Entomology Leach Field	Site CACd in May 2017
133	Building 703 Wash Rack Discharge Pit	Site NFAd in February 2001
134	Buildings 902-925 Drainage Ditch	Site NFAd in February 2001
135	Building 1092 O/W Separator Drainage Pit (FT-31)	Site CACd in March 2013
136	Building 1119 Washrack Drainage Area	Site NFAd in November 2005
137	Building 1166 Test Track Drain Field (OT-38)	Site CACd in XXX 2018
138	Building 1166 Oil/Water Sep Drainage Pit	Site NFAd in February 2001
139	SWMU 139 Lake Holloman	Site NFAd in November 2005
140	SWMU 140 Lake Stinky	Site NFAd in November 2005
142	Wastewater Influent Chamber	Site NFAd in February 2001
143	Bar Screen	Site NFAd in February 2001
144	Comminutor	Site NFAd in February 2001
145	Grit Chamber	Site NFAd in February 2001
146	Parshall Flume Wet Well	Site NFAd in February 2001
147	Splitter Box	Site NFAd in February 2001
148	Sewage Lagoon A	Closed June 30, 2000
149	Sewage Lagoon B	Closed June 30, 2000
150	Sewage Lagoon C	Closed June 30, 2000
151	Sewage Lagoon D	Closed June 30, 2000
152	Sewage Lagoon E	Closed June 30, 2000
153	Sewage Lagoon F	Closed June 30, 2000
154	Sewage Lagoon G	Closed June 30, 2000
155	Sludge Drying Beds	Site NFAd in February 2001
156	Imhoff Tanks (5)	Site NFAd in February 2001
157	ABLE 51 PCB Storage Area	Site NFAd in February 2001
158	PCB Storage Bunker	Site NFAd in February 2001
159	Building 500 Pb Storage Shelves	Site NFAd in February 2001
160	Building 500 NiCd Battery Storage Area	Site NFAd in February 2001
161	Building 844 Battery Storage Area	Site NFAd in February 2001
162	DRMO Scrap Metal Storage Area	EPA called this site a SWMU in 1988 but did not require corrective action ¹ .
163	DRMO Wood Pile	EPA called this site a SWMU in 1988 but did not require corrective action ¹ .
164	Building 1080 Pond	Site NFAd in February 2001
165	Building 1176 Pond (SS-39)	Site CACd in XXX 2018

APPENDIX IV-A

TABLE B CONTINUED

**SUMMARY OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN
WITH CORRECTIVE ACTION COMPLETE WITHOUT CONTROLS**

SWMU/AOC	DESCRIPTION	COMMENT
166	SD-25 MOBSS Drainage Lagoon	Site NFAd in November 2005
167	Test Shed Launch Area Collection Basin	EPA identified it in 1988 as a SWMU without requiring further corrective action
169	Burn Kettle	EPA identified it in 1988 as a SWMU without requiring further corrective action
170	Fire Department Training Area 1 (FT-31)	Site CACd in March 2013
171	Fire Department Training Area 2 (FT-31)	Site NFAd in February 2001
173	Building 198 Sand Trap	EPA listed this as a SWMU in the 1988 RFA Report
174	Building 231 Hobby Shop Silver Recovery Unit	EPA listed this as a SWMU in the 1988 RFA Report
176	Building 844 Sand Trap	EPA listed this as a SWMU in the 1988 RFA Report
178	Building 1191 Fuel Runoff Pits	Site NFAd in February 2001
180	Building 301 Outdoor Drainage Flume	Site NFAd in February 2001
182	Building Floor Drains	Site NFAd in February 2001
183	Base Sewer System	Site CACd in May 2017
184	Wastewater Re-circulation Line	Site NFAd in February 2001
185	Building 332 Silver Recovery Unit	EPA identified this site as a SWMU in 1988
186	Hospital Silver Recovery Unit	EPA identified this site as a SWMU in 1988
187	West Area Silver Recovery Unit	EPA identified this site as a SWMU in 1988
188	Building 161 Acid Neutralization Unit	EPA identified this site as a SWMU in 1988
189	Building 232 Recycling Area	EPA identified this site as a SWMU in 1988
190	Building 500 Battery Neutralization Unit	EPA identified this site as a SWMU in 1988
191	Building 855 Concrete Pad	EPA identified this site as a SWMU in 1988
192	Coco Block House Disposal Well	EPA identified this site as a SWMU in 1988
193	Trash Dumpster	EPA identified this site as a SWMU in 1988
194-228	SWMUs which no longer exist or could not be located	EPA identified this site as a SWMU in 1988
212	Former north Area Wash Rack	Site NFAd in February 2001
230	Building 828 Fuel Spill Site	Site NFAd in February 2001
231	Incinerator/Landfill	Site NFAd in February 2001
AOC-1	DP-64 Chemical Agent Site	Site CACd in May 2017
AOC-2	Sewage Drainage Pit NE of Building 864	Site CACd in March 2013
AOC-3	DP-63 Ammunition Yard Disposal Pit	Site CACd in May 2017
AOC-838	SS-72 TCE in Groundwater Upgradient of LF-21	Site CACd in May 2017
AOC-1088	SS-73 TCE in Groundwater Upgradient of SS-61	Site CACd in May 2017
AOC-A	OT-16 Building 21 Pesticide Rinse Spill Area	Site CACd in May 2017
AOC-B	SS-65 Building 807 Test Cell Spill Area	Site CACd in May 2017
AOC-BBMS	Bare Base Mobility Squadron Spill Area	EPA called the site in the 1988 RFA but did not require corrective action ¹ .
AOC-C	SS-66 Building 835 Spills	Site CACd in May 2017
AOC-D	SD-26 Building 882 Spills	EPA called the site in the 1988 RFA but did not require corrective action ¹ .
AOC-E	SS-67 Buildings 903-909 Sand Blast Residues	Site CACd in May 2017

APPENDIX IV-A

TABLE B CONTINUED

SUMMARY OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN WITH CORRECTIVE ACTION COMPLETE WITHOUT CONTROLS

SWMU/AOC	DESCRIPTION	COMMENT
AOC-F	Asphalt Tank Spill Area (SS-68)	Site CACd in March 2013
AOC-FST837	Building 837 Fuel Spill Site	Site NFA November 2005
AOC-G	Atlas Substation PCB Spill	EPA called the site in the 1988 RFA but did not require corrective action ¹ .
AOC-I	SS-69 Fighter Wing Flight Line Spill	Site CACd in May 2017
AOC-J	Herbicide Sodium Arsenite Spill Area (SS-13)	Site CACd in XXX 2018
AOC-K	SS-12 Northeast Fuel Line Spill #1	Site CACd in May 2017
AOC-L	Early Missile Test Site (OT-37)	Site CACd in XXX 2018
AOC-M	RW-70 Building 18 Product Storage Tank	Site CACd in May 2017
AOC-N	SS-48 Building 137 Military Gas Tank Leak	Site CACd in March 2013
AOC-O	OT-45 Building 296 Old AGE Refueling Station	Site CACd in May 2017
AOC-P	OT-44 Building 301 Fuel Tank Leak	Site CACd in March 2013
AOC-R	JP-4 Fuel Line Spill Site (SS-06)	Site CACd in March 2013
AOC-RD	DP-62 Rita's Draw Disposal Pit	Site NFA November 2005
AOC-S	Leaking Underground Storage Tank (BHUST)	Site CACd in March 2013
AOC-U	Lost River Basin	Site CACd in May 2017
AOC-UST-221	Building 221 UST (TU/US-C503)	Site CACd in XXX 2018
AOC-UST-300	Building 300 UST	Site CACd in May 2017
AOC-UST-301	Building 301 UST	Site CACd in May 2017
AOC-UST-684	Building 684 UST	Site CACd in May 2017
AOC-UST-882	Building 882 UST	Site CACd in May 2017
AOC-UST-898	Building 898 UST	Site CACd in May 2017
AOC-UST-901	Building 901 UST (TU/US-C506)	Site CACd in XXX 2018
AOC-UST-1097	Building 1097 UST (TU/US-C505)	Site CACd in XXX 2018
AOC-UST-1113	Building 1113 UST	Site CACd in May 2017
AOC-UST-1272	Building 1272 UST	Site CACd in May 2017
AOC-UST-2395	Building 2395 UST	Site CACd in May 2017
AOC-UST-7003	National Radar Test Facility UST (TU/US-C518)	Site CACd in XXX 2018
AOC-V	SS-57 Officer's Club	Site CACd in March 2013
AOC-PRI-A	OT-32 Primate Research Lab Sewer Line	EPA listed the site in 1988 as a SWMU with no further action required Site CACd in XXX 2018
AOC-PRI-S	Primate Research Lab Borehole Disposal Site	EPA called the site in the 1988 RFA but did not require corrective action ¹ .
AOC-PRI-1	Primate Research Institute (PRI) Building 1264: Waste Accumulation Area	EPA called the site in the 1988 RFA but did not require corrective action ¹ .
AOC-PRI-2	PRI Building 1264 Solvent Burn Area (OT-35)	Site CACd in March 2013
AOC-PRI-3	PRI Building 1264: Biological Incinerator	EPA called the site in the 1988 RFA but did not require corrective action ¹ .
AOC-PRI-4	PRI Building 1264: Quarantine Area	EPA called the site in the 1988 RFA but did not require corrective action ¹ .
AOC-PRI-5	PRI Building 1264 Solvent Burn Area (OT-35)	Site CACd in March 2013

1. Unit underwent Corrective Action, was approved for No Further Action (NFA), and is limited by Institutional Controls

**HOLLOMAN AIR FORCE BASE OPERATING AND CLOSED HAZARDOUS WASTE
MANAGEMENT UNITS**

OPERATING/CLOSED UNIT	DESCRIPTION	COMMENT
20,000-Pound Open Detonation (OD) Treatment Unit/SWMU 168	The OD Unit	Permitted in 1997 and is currently undergoing closure.
Container Storage Unit (CSU)/SWMU 75	Hazardous Waste Management Unit	Closure of the CSU was approved on January 5, 2015. The Corrective Action Permit Part 4 remains in effect.
300-Pound Open Burn (OB) Unit. This site was listed in the 1988 RFA Report as SWMU 72	The OB Unit	The OB Unit was under Interim status from 1965 to 1979. HAFB conducted risk-based closure as per approved Work Plan of 1997. NMED approved Closure of this site on February 3, 1997.

APPENDIX IV-A

TABLE C

**SUMMARY OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN
WITH CORRECTIVE ACTION COMPLETE WITH CONTROLS**

SWMU/AOC	Control(s) Needed
<u>SWMU 19, Building 638 Oil/Water Separator</u>	<u>Because groundwater contamination is present beneath this SWMU, additional groundwater monitoring and corrective action activities must be conducted in association with ongoing activities at overlapping site SWMU 229 (Former T-38 Test Cell Fuel Spill).</u>
<u>SWMU 20, Building 639 Oil/Water Separator</u>	<u>Because groundwater contamination is present beneath this SWMU, additional groundwater monitoring and corrective action activities must be conducted in association with ongoing activities at overlapping site SWMU 229 (Former T-38 Test Cell Fuel Spill).</u>
SWMU 101, LF-10LF010, Building 121 Landfill	Land use controls to prevent future residential use. Maintain the integrity and effectiveness of the cover, including making repairs to the cover as necessary to correct effects of settling, subsidence or erosion. The integrity of the cover shall not be compromised without prior approval from the NMED.
SWMU 109, LF-10LF010, Old Main Base Landfill	Land use controls to prevent future residential use. Maintain the integrity and effectiveness of the cover, including making repairs to the cover as necessary to correct effects of settling, subsidence or erosion. The integrity of the cover shall not be compromised without prior approval from the NMED.
SWMU 197, OT-14OT014, Former Entomology Shop	Land use controls to prevent future residential use. Maintain the integrity and effectiveness of the engineered asphalt cap and access-control stanchions, including making repairs as necessary. The integrity of the cap and stanchions shall not be compromised without prior approval from the NMED.
AOC-4, West POL Fuel Spill Site	Land use controls to prevent future residential use. Upon abandonment of the West POL Yard, or its discontinued use, all remaining contaminated soil shall be removed and an investigation conducted to confirm adequate site remediation.

AOC-298, TU/US-C508, Building 298 UST

Because groundwater contamination is present beneath this AOC, additional groundwater monitoring and corrective action activities must be conducted in association with ongoing activities at overlapping site AOC-H (SS018 VOC Spill Site). All monitoring wells associated with this AOC will be retained for additional monitoring or corrective action activities at AOC-H.