FACT SHEET / STATEMENT OF BASIS

Kirtland Air Force Base
Request for No Further Action Status for Twenty Solid Waste Management Units

RCRA Permit No. NM9570024423

June 15, 2005

TABLE OF CONTENTS

Section **Page**

LIST OF FIGURES

Figure **Page**

ACRONYMS AND ABBREVIATIONS

AFB	Air Force Base
ALECS	Air Force Weapons Laboratory/Los Alamos Scientific Laboratories Electromagnetic Pulse Calibration and Simulation Facility
AOC	Area of Concern
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act*
CMS	Corrective Measure Study
COC	chemical of concern
COPCs	contaminants of potential concern
DCGL	derived concentration guideline limit
DOE	U.S. Department of Energy
DPT	direct-push technology
DRO	diesel-range organic
ECP	Environmental Compliance Program
EOD	Explosives Ordnance Disposal
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration
ERP	Environmental Restoration Program
ESA	enhanced site assessment
FEMA	Federal Emergency Management Agency
ft	foot/feet
GPS	global positioning system
GRO	gasoline-range organic
GWQB	Ground Water Quality Bureau
HI	Hazard Index
HSA	hollow stem auger
HHRB	human health risk-based
HSWA	*Hazardous and Solid Waste Amendments*
HWB	Hazardous Waste Bureau
ICM	interim corrective measure
KAFB	Kirtland AFB
LDL	laboratory detection limit
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MCL	maximum contaminant limit
mg/kg	milligram per kilogram
MWSA	Manzano Weapons Storage Area
NFA	no further action
NMAC	*New Mexico Administrative Code*
NMED	New Mexico Environment Department
NMEID	New Mexico Environmental Improvement Division
NRC	Nuclear Regulatory Commission
PAH	Polyaromatic Hydrocarbons

ACRONYMS AND ABBREVIATIONS (continued)

PCB	polychlorinated biphenyl
pCi/g	picocuries per gram
PID	photoionization detector
PVC	polyvinyl chloride
OWS	oil water separator
RCRA	*Resource Conservation and Recovery Act*
RFI	RCRA Facility Investigation
RSI	Request for Supplemental Information
SSL	soil screening level
SNL/NM	Sandia National Laboratories/New Mexico
SVOC	semivolatile organic compound
SWMU	Solid Waste Management Unit
TAL	Target Analyte List
TCLP	toxicity characteristic leaching procedure
TPH	total petroleum hydrocarbons
TS	Training Site
µg/kg	micrograms per kilogram
USACE	Unites States Army Corps of Engineers
USAF	U.S. Air Force
UST	underground storage tank
VCM	voluntary corrective measure
VOC	volatile organic compound

FACT SHEET / STATEMENT OF BASIS

Proposals For No Further Action Status For Twenty Solid Waste Management Units

RCRA Permit No. NM9570024423

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) intends, pending public input, to approve a November 1, 2004 permit modification request to grant No Further Action (NFA) status for twenty solid waste management units (SWMUs) currently listed on the Hazardous and Solid Waste Amendments (HSWA) Corrective Action module of the Kirtland Air Force Base (AFB) *Resource Conservation and Recovery Act* (RCRA) Hazardous Waste Management Facility Permit (NM9570024423) issued to Kirtland AFB on October 10, 1990 (U.S. Environmental Protection Agency [EPA], 1990).

If approved, the proposed modification would grant NFA status for twenty (20) SWMUs. Table A, Module IV of KAFB's RCRA Permit lists SWMUs at the KAFB facility where corrective action may be necessary to characterize and/or remediated past releases of hazardous wastes or hazardous waste constituents. If this modification is approved by NMED, the 20 SWMUs would be transferred from Table A to Table B as SWMUs that have been approved for NFA.

A. Facility Description

Kirtland AFB is located in Albuquerque, Bernalillo County, New Mexico (Figure 1). The base covers 52,223 acres on a high, arid mesa approximately 5 miles east of the Rio Grande. KAFB is bounded on the north and northwest by the City of Albuquerque, on the east by the Cibola National Forest, on the south by the Pueblo of Isleta, and on the west by land owned by the State of New Mexico and the Albuquerque International Sunport. KAFB was originally named Oxnard Field and began operation in 1928. In 1981 KAFB began the Installation Restoration Program (IRP) that completed a Phase I Records Search of potential contaminated sites. As a result of the facility's operations from 1944 to the present, KAFB has generated, treated, stored, disposed of, and otherwise handled a variety of solid wastes, hazardous wastes, hazardous waste constituents, and radioactive wastes. Today, it is home to the 377th Air Base Wing, KAFB's host organization.

The Permittee is located at the following address: Kirtland Air Force Base, 2000 Wyoming Blvd., SE, Kirtland AFB, NM 87117-5000. The Permittee's primary contact for this action is Mr. Carl J. Lanz, Chief, Restoration Section, Environmental Branch, 377 MSG/CEVR, 2050 Wyoming Blvd., SE, Suite 118, Kirtland AFB, NM 87117-5270.

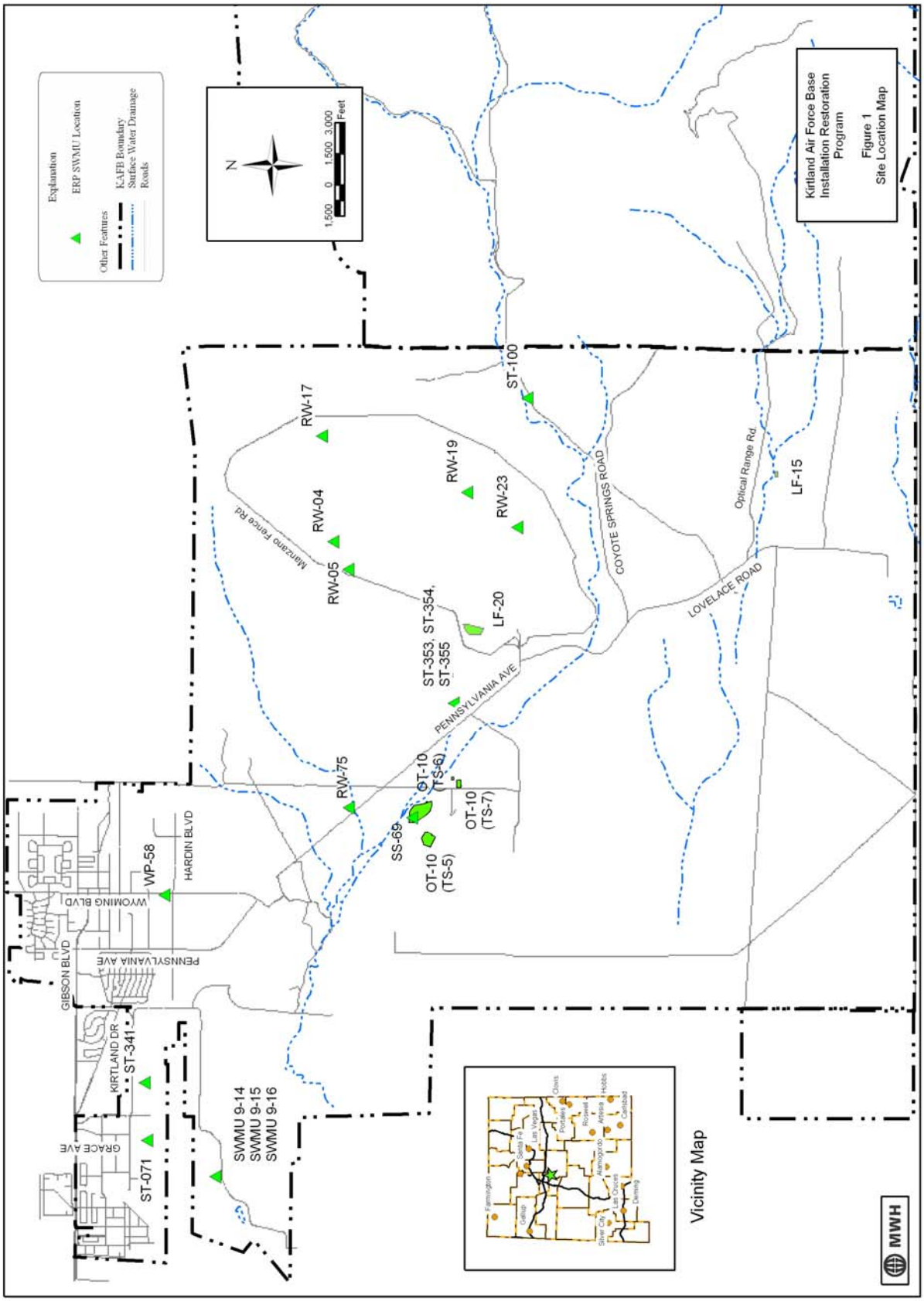

Figure 1. Facility Map

B. History of Investigation

The EPA and the New Mexico Environmental Improvement Division (NMEID), now known as the NMED, jointly issued Kirtland AFB's Hazardous Waste Permit in October 1990. One module of the permit, Module IV, Special Conditions Pursuant to the 1984 HSWA to RCRA, concerns the investigation of SWMUs. The HSWA Module requires Kirtland AFB to determine whether or not there have been any releases of hazardous waste from any SWMU and to take appropriate corrective measures for any such releases. On January 2, 1996, the NMED received authorization for corrective action under the HSWA and became the administrative authority for this action.

Section H, below, briefly describes the location, history, evaluation of relevant information, and the bases for determination for each of the 20 SWMUs proposed for NFA. More detailed descriptions of the particulars for each SWMU can be found in the original NFA proposal for each SWMU and other referenced documentation constituting the Administrative Record.

This Statement of Basis describes twenty of the SWMUs that were identified as "potentially appropriate for NFA." In summary, if Kirtland AFB's request for a permit modification is approved by NMED, these 20 SWMUs will be listed in Module IV, Table B as being approved for NFA.

C. Administrative Record

The Administrative Record for this proposed action consists of the KAFB Permit Modification Request, the Fact Sheet / Statement of Basis, the Public Notice, the draft Permit that consists of the proposed Tables A and B, and the referenced supporting documentation 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 87505-6303
(505) 428-2500
Monday - Friday from 8:00 a.m. to 5:00 p.m.

The Fact Sheet / Statement of Basis, the Public Notice, and the draft Permit that consists of the proposed Tables A and B may be reviewed at the following locations during the public comment period:

NMED-District 1 Albuquerque Office
5500 San Antonio NE
Albuquerque, New Mexico 87109
(505) 222-9500
Monday - Friday from 8:00 a.m. to 5:00 p.m.

Government Information Department
Zimmerman Library
University of New Mexico
Albuquerque, NM 87131
(505) 277-5441

A copy of the Fact Sheet / Statement of Basis, the Public Notice, and the draft Permit that consists of the proposed Tables A and B are also available on the NMED website at: www.nmenv.state.nm.us/HWB/kafbperm.html. To obtain a copy of the Administrative Record or a portion thereof, in addition to further information please contact Ms. Pam Allen at (505) 428-2531, or at the address given above. NMED will provide copies, or portions thereof, of the administrative record at a cost to the requestor.

D. No Further Action Criteria

NFA is proposed at these SWMUs based upon one or more of the following: field surveys, historical records, aerial photographs, employee interviews, site investigations, confirmatory sampling and/or remediation activities that yielded either no release, insignificant releases, or clean-up of a hazardous waste release to the environment. The criteria to propose a SWMU for NFA are:

1. The SWMU cannot be located, does not exist, or is a duplicate SWMU.

2. The SWMU/AOC has never been used for the management (that is, generation, treatment, storage, or disposal) of RCRA solid or hazardous wastes and/or constituents or other CERCLA hazardous substances.

3. No release to the environment has occurred or is likely to occur in the future from the SWMU.

4. There was a release from the SWMU to the environment but the site was characterized and/or remediated under another authority that adequately addressed corrective action, and documentation such as a closure letter is available.

5. The SWMU has been characterized or remediated in accordance with current 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.

E. Public Participation

Nineteen people (including representatives from KAFB and NMED) attended a public meeting arranged by KAFB on November 17, 2004 at the Hilton Hotel. Subsequent to the meeting, no written comments were submitted to KAFB or NMED.

NMED issued a public notice on **June 15, 2005,** to announce the beginning of a 45-day comment period that will end at **5:00 p.m., August 1, 2005**. Any person who wishes to comment on this action or request a public hearing should submit written or electronic mail (e-mail) comment(s) with the commenter's name and address to the respective address below. Only comments and/or requests received on or before **5:00 p.m., August 1, 2005** will be considered.

John E. Kieling, Program Manager
Hazardous Waste Bureau - New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303
Or e-mail: hazardous_waste_comment@nmenv.state.nm.us
Ref: KAFB – 20 No Further Actions (June 15, 2005)

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 proposes to raise for consideration at the hearing. Written comment and requests for Public Hearing must be filed with Mr. John Kieling on or before 5:00 p.m., **August 1, 2005** at NMED Hazardous Waste Bureau, 2905 Rodeo Park Drive East, Building 1, Santa Fe, New Mexico, 87505-6303. The NMED will provide a thirty (30) day notice of a public hearing, if scheduled.

F. Next Steps

The NMED will ensure that the approved draft Permit is consistent with the New Mexico Hazardous Waste Management Regulations. All written comments submitted on the draft Permit will become part of the administrative record, will be considered in formulating a final decision, and may cause the draft Permit to be modified. NMED will respond in writing to all significant public comment. The response will specify which provisions, if any, of the draft Permit have been changed in the final Permit decision, and the reasons for the change. This response will also be posted on the NMED website in addition to notifying all persons providing written comments.

The NMED will notify KAFB, each person on the facility mailing list, and each person who made a public comment of the final decision. The final decision will become effective 30 days after service of the decision unless a later date is specified or a review is requested under the New Mexico Hazardous Waste Management Regulations, 20 New Mexico Administrative Code 4.1, Subpart IX.

G. Contact Person for Additional Information

For additional information, contact the following individual:

Mr. William McDonald
New Mexico Environment Department
c/o Sandia National Laboratories
P. O. Box 5800/MS 1089
Albuquerque, NM 87185
E-mail: wsmcdon@sandia.gov
Telephone: (505) 284-5409
Fax: (505) 284-2616

Mr. John E. Kieling
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Bldg 1
Santa Fe, NM 87505
Telephone: (505) 428-2500
Fax: (505) 428-2567

H. Description of Solid Waste Management Units Proposed for No Further Action

1. Solid Waste Management Unit 9-14, Buried Caustic Drain Line, Building 617 (ST-270)

Location and Current Land Use

Solid Waste Management Unit (SWMU) 9-14, Caustic Drain Line (ST-270) is located along the south side of the flightline at Kirtland Air Force Base (AFB) (Figure 2), and is associated with former Building 617 of the Phillips Laboratory/Air Force Research Laboratory Chemical Laser Research Facility (USAF, 2003). The land use in and around SWMU 9-14 is urban/industrial.

Projected Future Land Use

The projected future land use for the SWMU 9-14 area is urban/industrial; however, a residential scenario was used for risk-based screening assessments.

History

SWMU 9-14 was active from 1981 to 2000 when it conveyed the depleted caustic laser fuel and/or scrubber waste generated at Building 617 to SWMU 9-15 (USAF, 1995). Caustic chemical laser fuel wastes were discharged through SWMU 9-14, treated with hydrochloric acid in SWMU 9-15, and then the neutral-pH solution was pumped to SWMU 9-16 for disposal. The neutralized wastes then either evaporated or infiltrated into subsurface soils at the unlined SWMU 9-16. Use of the evaporation/infiltration pond was permanently discontinued on July 21, 2000 when the Caustic Drain Line (SWMU 9-14) from Building 617 was plugged at both ends (USAF, 2003).

Evaluation of Relevant Information

A *Resource Conservation and Recovery Act* (RCRA) Facility Investigation (RFI) was conducted at SWMUs 9-14, 9-15 and 9-16 in 1993 and 1994 (Appendix II, Stage 2B). Kirtland AFB investigated SWMU 9-14 for the potential of wastewater release from the caustic drain line. To investigate the caustic drain line, the United States Geological Survey advanced three boreholes using a Geoprobe™ system (direct-push technology) in September 1993 (USAF, 2003). The boreholes were located approximately 2 ft to the side of the caustic drain line. Composite soil samples were collected from a 2-ft interval beneath the base of the drain. Soil samples were analyzed for pH, target analyte list metals, and other inorganics. None of the analytical results of the soil sampling at SWMU 9-14 exceeded either the approved background concentrations (NMED, 1997) or the current New Mexico Environment Department (NMED) residential soil screening levels (NMED, 2004a). In one case, the laboratory detection limit for cadmium was slightly higher than the background value approved subsequently; however, the reported detection limit is well below the NMED residential soil screening level. In addition, data gaps exist for three other RCRA metals -- analyses for arsenic, selenium, and silver were either not performed or were not reported. Filling the data gaps might only prove useful if the discharge

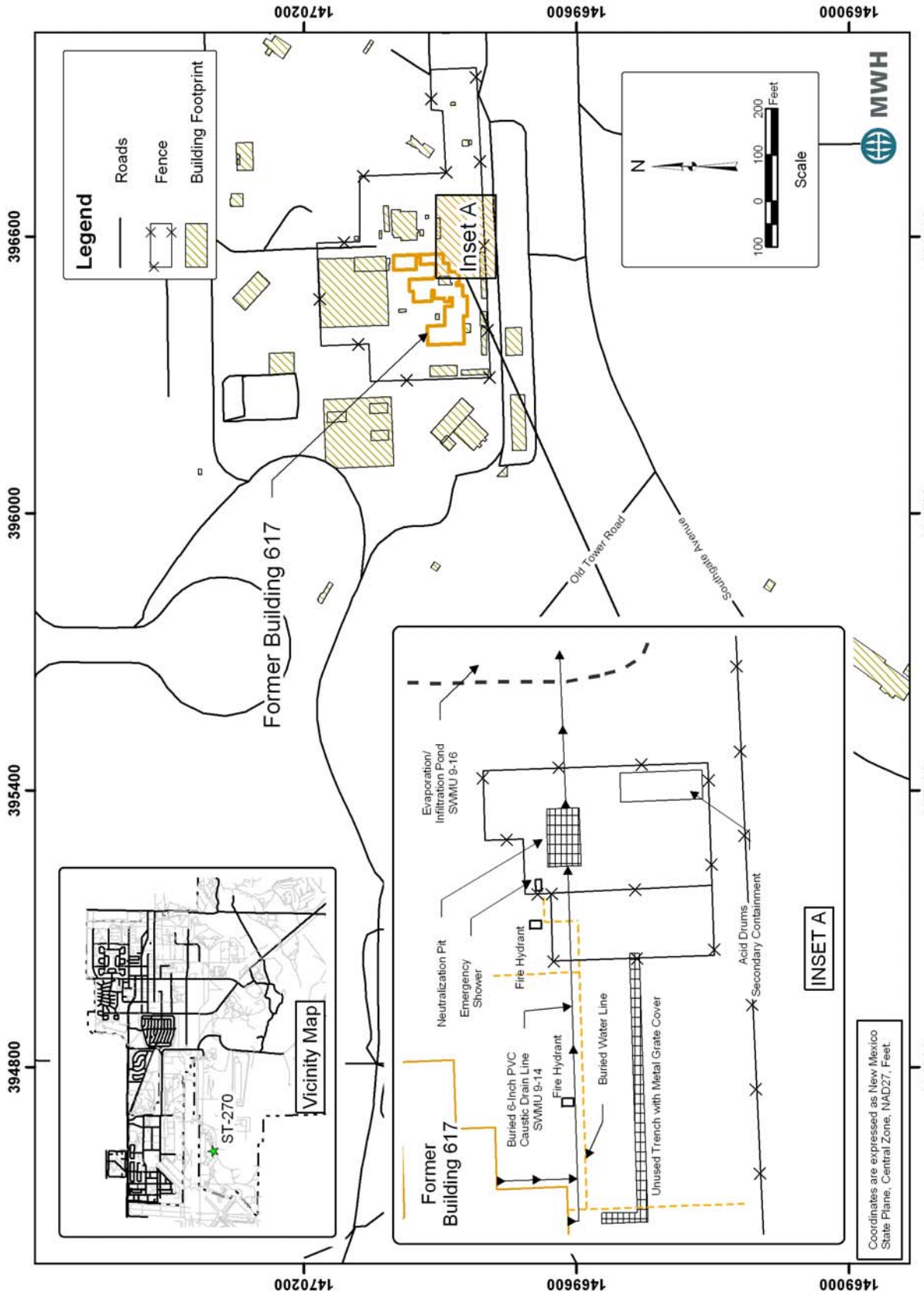

Figure 2. Solid Waste Management Unit 9-14

points for the caustic drain line (SWMUs 9-15 and 9-16) were contaminated with these metals (USAF, 2003). Subsequent investigations were focused on the discharge site of the caustic drain line (that is, SWMUs 9-15 and 9-16) due to the greater likelihood that contaminants would be released there in much greater volumes (USAF, 2003).

In an effort to permanently close the neutralization pit and evaporation/infiltration pond, voluntary corrective measure activities were undertaken according to the site closure plan submitted to the NMED by the Air Force through a groundwater protection program (USAF, 2003). Corrective measures included removing the concrete pit and supporting facilities including pumps, metal shed, and concrete berms surrounding the former hydrochloric acid tank location; backfilling the pit with clean compacted soil; and capping the pit with concrete to match surrounding facilities. The west wall of the SWMU 9-15 concrete pit included the discharge inlet from SWMU 9-14. The six-inch diameter opening was unplugged when the concrete wall was demolished (USAF, 2003). The polyvinyl chloride pipe that served as the caustic drain line (SWMU 9-14) from Building 617 to the neutralization pit (SWMU 9-15) remains buried in the shallow subsurface at the site, but is isolated at both ends and cannot receive wastewater discharges. Kirtland AFB effectively removed the potential source of contamination by closing Building 617 drains in July 2000 (USAF, 2003).

A baseline residential risk assessment was not conducted due to the lack of contaminants of potential concern (COPCs) at this site.

Basis for Determination

In a letter dated March 2, 2004, the NMED's Hazardous Waste Bureau (HWB) stated that SWMU 9-14 is suitable for a NFA petition (NMED, 2004b). This NFA proposal is based upon NMED’s NFA Criterion 3: no release to the environment has occurred or is likely to occur in the future from SWMU 9-14.

References

NMED, 2004a. Technical Background Document for Development of Soil Screening Levels, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program.

NMED, 2004b. Request for Supplemental Information (RSI) from William S. McDonald, KAFB Project Leader, Permits Management Program, Hazardous Waste Bureau, New Mexico Environment Department to Carl Lanz, Chief, Restoration Section, Environmental Management Branch, Kirtland Air Force Base, Re: Voluntary Corrective Measures Report for Solid Waste Management Units 9-14, Building 617, Buried Caustic Drain Line (ST-270); 9-15, Building 617, Neutralization Pit (ST-271); and 9-16, Building 617, Evaporation/Infiltration Pond (ST-272), November 2003, Kirtland Air Force Base, ID# NMD9570024423, Task # HWB-KAFB-04-002. March 2, 2004.

NMED, 1997. *Approved Background Concentrations Sandia National Laboratories/Kirtland Air Force Base.* New Mexico Environment Department, Hazardous and Radioactive Materials Bureau, RCRA Permits Management Program, Santa Fe, New Mexico. September 24, 1997.

USAF, 2003. *Voluntary Corrective Measures Report for Solid Waste Management Units 9-14, Building 617, Buried Caustic Drain Line (ST-270); 9-15, Building 617, Neutralization Pit (ST-271); and 9-16, Building 617, Evaporation/Infiltration Pond (ST-272),* U.S. Air Force, Kirtland Air Force Base, New Mexico. November 17, 2003.

USAF, 2002. *Voluntary Corrective Measures Work Plan For Corrective Action Units 9-15, Building 617, Neutralization Pit (ST-271); and 9-16, Building 617, Evaporation Infiltration Pond (ST-272),* United States Air Force, Kirtland Air Force Base, New Mexico. December 1, 2002.

USAF, 1995. Final RCRA Facility Investigation (RFI) Report, Appendix II, Stage 2B with NOD Response, Kirtland AFB, NM. July 5, 1995.

2. Solid Waste Management Unit 9-15, Neutralization Pit, Building 617 (ST-271)

Location and Current Land Use

Solid Waste Management Unit (SWMU) 9-15, Neutralization Pit (ST-271) is located along the south side of the flightline at Kirtland Air Force Base (AFB) (Figure 3), and is associated with former Building 617 of the Phillips Laboratory/Air Force Research Laboratory Chemical Laser Research Facility (USAF, 2003). The land use in and around SWMU 9-15 is urban/industrial.

Projected Future Land Use

The projected future land use for the SWMU 9-15 area is urban/industrial; however, a residential scenario was used for risk-based screening assessments.

History

SWMU 9-15 was active from 1981 to 2000, receiving depleted caustic laser fuel and/or scrubber waste generated at Building 617 through SWMU 9-14, Building 617, Buried Caustic Drain Line (USAF, 2003). The waste was neutralized in the pit by adding either hydrochloric or sulfuric acid until the pH of the solution was reduced to about 7.0. Nitric acid may also have been used to neutralize the wastes. The neutralized wastes were pumped into the adjacent evaporation/infiltration pond, SWMU 9-16. Discharges from the neutralization pit to the evaporation/infiltration pond were permanently discontinued in July 2000 when the discharge system from the neutralization pit to the evaporation/infiltration pond was disabled, and the pipe from the chemical laser facility into the neutralization pit was capped (USAF, 2003).

Evaluation of Relevant Information

Subsurface soils at SWMU 9-15 were first investigated during the Appendix II, Stage 2B *Resource Conservation and Recovery Act* (RCRA) Facility Investigation (USAF, 1995RFI). Two boreholes were advanced near the north and south walls of the neutralization pit, using direct-push technology (DPT) (USAF, 2003). The highest measurements for arsenic, barium, beryllium, cadmium, cobalt, copper, lead, and vanadium were all observed in one sample. Arsenic was detected in one sample at 45.6 milligrams per kilogram (mg/kg). That detection was greater than the New Mexico Environment Department (NMED) approved background concentration (4.4 mg/kg) (NMED, 1997), as well as the NMED residential soil screening level (SSL) (3.9 mg/kg) (NMED, 2004b). Barium (284 mg/kg) was detected above the NMED approved background concentration in one sample. This detection exceeds the NMED approved background concentration of 200 mg/kg, but not the NMED residential SSL of 5,450 mg/kg. Beryllium was detected in three samples (0.9 mg/kg, 1 mg/kg, and 6 mg/kg). These concentrations exceed the NMED-approved background concentration of 0.8 mg/kg, but are lower than the NMED residential SSL of 156 mg/kg. Cadmium, cobalt, copper, and lead were also detected at concentrations above their respective NMED-approved background levels. Chromium (14.5 mg/kg) was detected above the NMED approved background concentration in one sample. This detection exceeds the NMED approved background concentration of 12.8 mg/kg, but is less than the NMED residential SSL of 234 mg/kg. Vanadium (47 mg/kg and 78.6

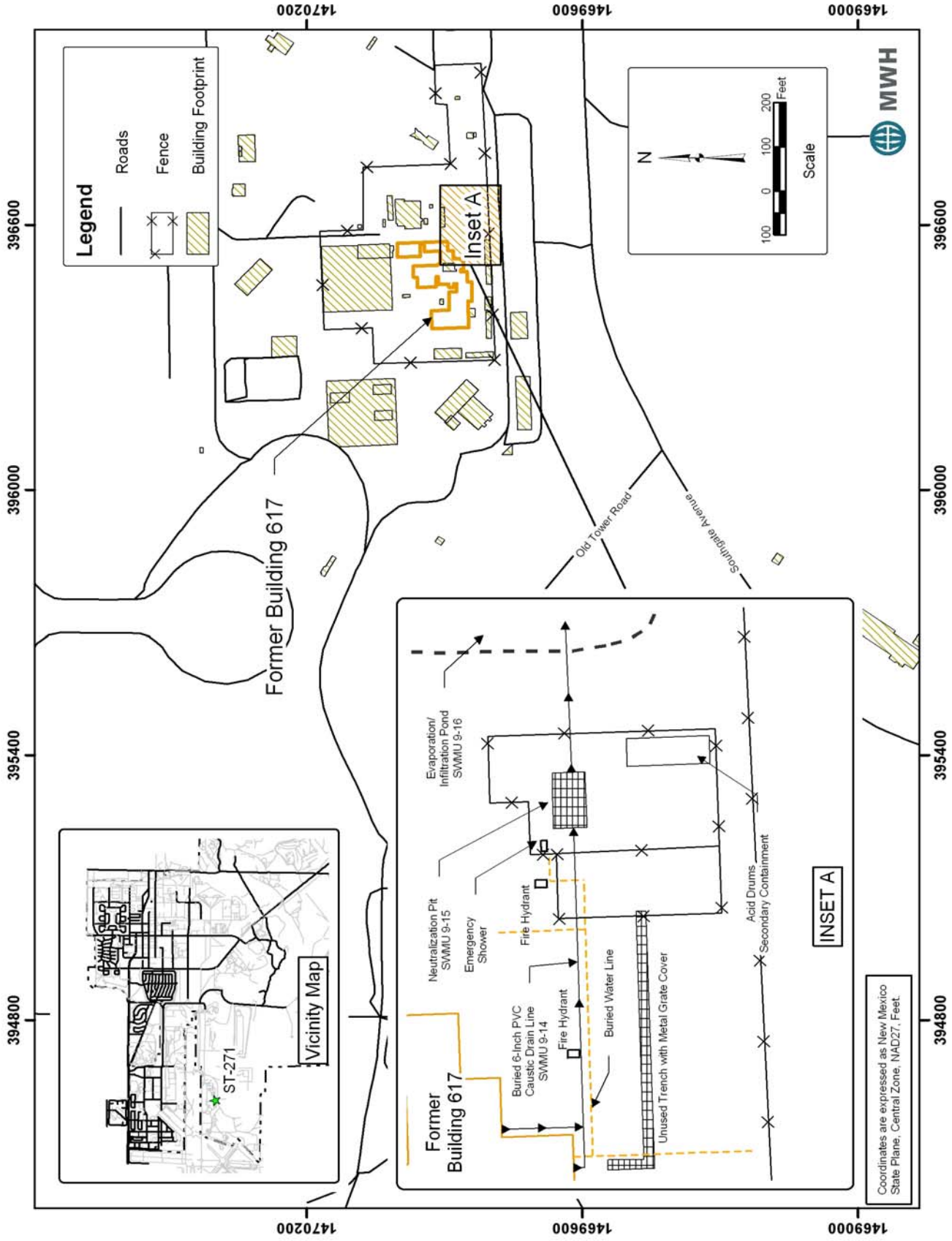

Figure 3. Solid Waste Management Unit 9-15

mg/kg) was detected in two samples at concentrations exceeding the NMED approved background concentration of 33 mg/kg, but below the NMED residential SSL of 548 mg/kg (USAF, 2003). All NMED approved background level exceedances were from one sample: cadmium (5.6 mg/kg), cobalt (53.9 mg/kg), copper (30.6 mg/kg), and lead (55.6 mg/kg). The concentrations of these constituents are all below NMED residential SSLs.

The Appendix II, Phase 2 RFI at SWMU 9-15 was performed in 1996 with the goal of determining the nature and extent of metals contamination in subsurface soils (USAF, 1997). Five boreholes were drilled, and soil samples were collected using DPT. Four samples were collected from each of the boreholes. The samples were analyzed for the target analyte list (TAL) metals (excluding mercury), molybdenum, and pH. Antimony (24.3 mg/kg to 25.8 mg/kg) was detected in one sample each in two boreholes. These detections exceed the NMED-approved background concentration of 3.9 mg/kg, but are below the NMED residential soil screening level of 31.3 mg/kg. Barium was detected in one sample in one borehole (306 mg/kg), and two samples in another borehole (271 mg/kg and 211 mg/kg). These detections exceed the NMED approved background concentration of 200 mg/kg, but are below the NMED residential SSL of 5,450 mg/kg. Beryllium (0.81 to 0.92 mg/kg) was detected in one sample each in three of the boreholes. These detections exceed the NMED-approved background concentration of 0.8 mg/kg, but are below the NMED residential SSL of 156 mg/kg. Vanadium was detected in one sample each in two of the boreholes (35.5 mg/kg and 33.6 mg/kg). These detections exceed the NMED-approved background concentration of 33 mg/kg, but are below the NMED residential SSL of 548 mg/kg (USAF, 2003).

A corrective measures study (CMS) was performed at SWMU 9-15 in 1999. The CMS included additional soil sampling at SWMU 9-15 for analysis using lower quantitation limits than those used in the RFI sampling (USAF, 2003). The RFI laboratory detection limits (LDLs) for antimony, arsenic, selenium, silver, and thallium were higher than their EPA Region 6 human health risk-based (HHRB) screening levels (EPA, 1999), as well as NMED approved background concentrations, and as a result could not be compared (USAF, 2003). Seven boreholes were installed and sampled during the CMS, using DPT. Three soil samples were collected from each of the boreholes, and were analyzed for target analyte list (TAL) metals and pH. Arsenic was detected in all samples, and with one exception (4.5 mg/kg), the range of arsenic measurements was at or below the NMED approved background concentrations of 5.6 mg/kg for surface soil and 4.4 mg/kg for subsurface soil. Detections in four of the soil samples exceeded the NMED residential SSL of 3.9 mg/kg. Barium was detected in one sample (241 mg/kg) in exceedance of the NMED-approved background concentration of 200 mg/kg for surface and subsurface soils, but well below its NMED residential SSL of 5,450 mg/kg (USAF, 2003).

In January 2003, the corrective measures proposed in the voluntary corrective measures (VCM) work plan (USAF, 2000) were implemented at SWMU 9-15. Corrective measures included removing the concrete pit and supporting facilities including pumps, metal shed, and concrete berms surrounding the former hydrochloric acid tank location; backfilling the pit with clean, compact soil, and capping the pit with concrete to match surrounding facilities. Confirmation sampling of soil beneath the neutralization pit confirmed that no hazardous substances had been released from the SWMU.

The potential residential cancer risks and hazard indices (HI) at SWMU 9-15 were not calculated because no COPCs exceeding residential SSLs were identified in the surface soil. The potential cancer risk and HI were calculated for a construction worker (for subsurface soil) and both were below the NMED target levels (cancer risk = 7.2×10^{-7} with a target level of 10^{-5} and the HI = 0.4 with a target level of 1.0).

Basis for Determination

In a letter dated August 26, 2004, the NMED's Hazardous Waste Bureau (HWB) stated that SWMU 9-15 is suitable for a no further action (NFA) petition (NMED, 2004a). This NFA proposal is based upon NMED's NFA Criterion 5: SWMU 9-15 has been characterized and remediated in accordance with applicable state or federal regulations and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

References

EPA, 1999. *EPA Region 6-Human Health Media-Specific Screening Levels.* June 1999. http://www.epa.gov/earth1r6/6pd/rcra_c/pd-n/screen.htm.

NMED, 2004a. Correspondence from William S. McDonald, KAFB Project Leader, Permits Management Program, Hazardous Waste Bureau, New Mexico Environment Department to Carl Lanz, Chief, Restoration Section, Environmental Management Branch, Kirtland Air Force Base, Re: Response to Request for Supplemental Information: Voluntary Corrective Measures Report for Solid Waste Management Units 9-14, Building 617, Buried Caustic Drain Line (ST-270); 9-15, Building 617, Neutralization Pit (ST-271); and 9-16, Building 617, Evaporation/Infiltration Pond (ST-272), November 2003, Kirtland Air Force Base, ID# NMD9570024423, Task # HWB-KAFB-04-002. August 26, 2004.

NMED, 2003. Correspondence from William S. McDonald, Assistant Project Leader, SNL/KAFB, Permits Management Program, Hazardous Waste Bureau, New Mexico Environment Department to Carl Lanz, Chief, Restoration Program, Environmental Management Branch, Kirtland Air Force Base, Re: Completion Report for the Voluntary Corrective Measure of Solid Waste Management Unit LF-056, Landfill D, (LF-056), Kirtland Air Force Base, ID# NMD9570024423, Task # HWB-KAFB-03-019. December 3, 2003.

NMED, 2004b. Technical Background Document for Development of Soil Screening Levels, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program.

NMED, 1997. *Approved Background Concentrations Sandia National Laboratories/Kirtland Air Force Base.* New Mexico Environment Department, Hazardous and Radioactive Materials Bureau, RCRA Permits Management Program, Santa Fe, New Mexico.

September 24, 1997.

USAF, 2003. *Voluntary Corrective Measures Report for Solid Waste Management Units 9-14, Building 617, Buried Caustic Drain Line (ST-270); 9-15, Building 617, Neutralization Pit (ST-271); and 9-16, Building 617, Evaporation/Infiltration Pond (ST-272),* U.S. Air Force, Kirtland Air Force Base, New Mexico. November 17, 2003.

USAF, 2000. Corrective Measures Study Report for SWMUs 6-30, 6-32, 9-15 and 9-16. Kirtland AFB, NM. August 1, 2000.

USAF, 1997. RCRA Facility Investigation Report, Appendix II, Phase 2 (HNUS) for SWMUs 9-15 and 9-16. Kirtland AFB, NM. July 1, 1997.

USAF, 1995. Final RCRA Facility Investigation (RFI) Report, Appendix II, Stage 2B with NOD Response, Kirtland AFB, NM. July 5, 1995.

3. Solid Waste Management Unit 9-16, Evaporation Pond, Building 617 (ST-272)

Location and Current Land Use

Solid Waste Management Unit (SWMU) 9-16, Evaporation/Infiltration Pond (ST-272) is located along the south side of the flightline at Kirtland Air Force Base (AFB) (Figure 4), and is associated with former Building 617 of the Phillips Laboratory/Air Force Research Laboratory Chemical Laser Research Facility (USAF, 2003). The land use in and around SWMU 9-16 is urban/industrial.

Projected Future Land Use

The projected future land use for the SWMU 9-16 area is urban/industrial; however, a residential scenario was used for risk-based screening assessments.

History

The evaporation/infiltration pond received neutralized caustic laser fuel and/or scrubber waste generated at Building 617, by way of SWMU 9-15. Neutralized water flowed into the pond through a 2.5-inch polyvinyl chloride (PVC) pipe, located near the pond's southwest corner. The pond received an estimated 400,000 gallons of neutralized water per year. The neutralized waste liquids evaporated and infiltrated into the subsurface soil. The New Mexico Environment Department (NMED) Ground Water Quality Bureau (GWQB), under Water Quality Control Commission regulation 20 NMAC 6.2.3109, approved the discharge of 1,125 gallons per day of wastewater. Discharge permit DP-627 was effective on December 22, 1989 and expired on March 22, 2000.

Discharges into SWMU 9-16 were permanently discontinued in July 2000, when the discharge system was removed and the pipe from the pump in the neutralization pit was capped. The wastewater discharge permit issued by the NMED/GWQB terminated July 17, 2001 with a condition that closure of the evaporation pond would be overseen by the NMED Hazardous Waste Bureau (HWB).

Evaluation of Relevant Information

Three investigations have been conducted at SWMU 9-16 since 1993: Appendix II, Stage 2B *Resource Conservation and Recovery Act* Facility Investigation (RFI report issued in 1995); Appendix II, Phase 2 RFI (RFI report issued in 1997); and a Corrective Measures Study (CMS report issued in 2000)

Surface and subsurface soils at SWMU 9-16 were first investigated during the Appendix II, Stage 2B RFI (USAF, 1995). The purpose of this investigation was to determine the presence of contamination in subsurface soils in and adjacent to the evaporation/infiltration pond. Four boreholes were advanced adjacent (south: borehole 2506, west: borehole 2507, north: borehole

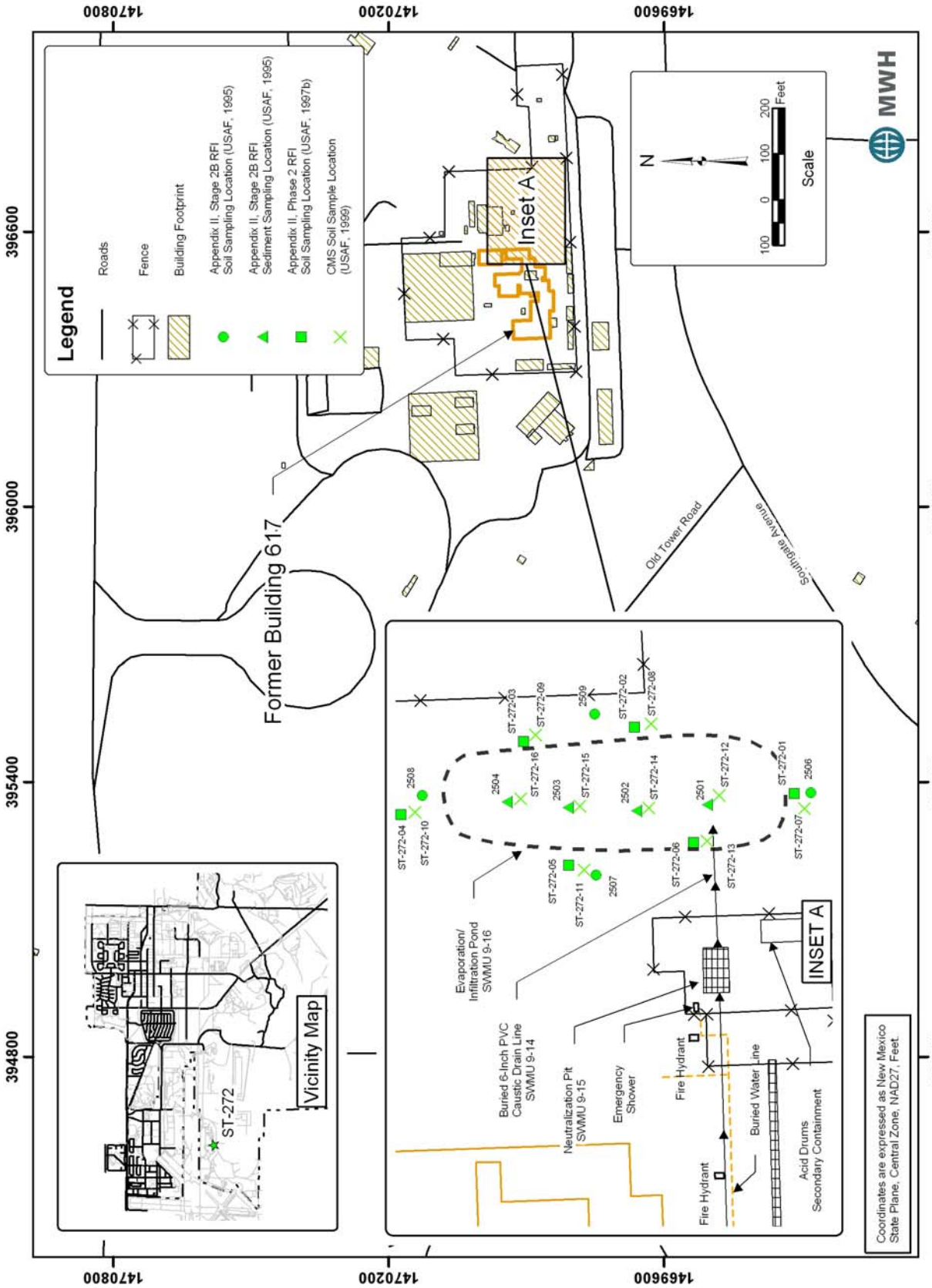

Figure 4. Soilid Waste Management Unit 9-16

2508, and east: borehole 2509) to the evaporation/infiltration pond. Borehole 2505 was installed at the northeast corner of the SWMU for background data. Soil samples were collected from boreholes 2507 through 2509 at the surface and at 8 to 10 feet (ft) below ground surface (bgs). Soil samples were collected only at the surface in borehole 2506 and at 4 to 8 ft bgs in background borehole 2505. Samples (2501 through 2504) were also collected inside the evaporation/infiltration pond.

Exceedances of the NMED-HWB approved background concentrations (NMED, 1997) were:

- Antimony (4.6 milligrams per kilogram [mg/kg]) -- analyzed in surface sample 2501 at a concentration greater than its NMED-HWB approved background concentration (3.9 mg/kg), but below the NMED residential soil screening level (SSL) (NMED, 2004b) of 31.3 mg/kg.
- Barium -- analyzed in background borehole 2505 in the 4 to 8 ft bgs interval at 428 mg/kg). Its concentration in an associated field replicate was 256 mg/kg. These concentrations are greater than the NMED HWB approved background concentration for barium in subsurface soils (200 mg/kg) but below the NMED residential SSL of 5,450 mg/kg.
- Copper -- analyzed above its NMED HWB approved background concentration (17 mg/kg) in three of the four surface samples collected inside the evaporation/infiltration pond. The concentrations of copper were 50.9 mg/kg in sample 2502, 172 mg/kg in sample 2503, and 96.3 mg/kg in sample 2504. These concentrations are below the NMED residential SSL of 3,130 mg/kg.
- Lead -- analyzed above its NMED HWB approved background concentration (39 mg/kg) in each of the four surface samples collected inside the evaporation/infiltration pond. The concentrations of lead were 45.4 mg/kg in sample 2501, 39.5 mg/kg in sample 2502, 271 mg/kg in sample 2503, and 237 mg/kg in sample 2504. These concentrations are below the NMED residential SSL of 400 mg/kg.
- Zinc -- analyzed above its NMED HWB approved background concentration (76 mg/kg) in two of the four surface samples collected inside the evaporation/infiltration pond. The concentrations of zinc were 192 mg/kg in sample 2503 and 147 mg/kg in sample 2504. These concentrations are below the NMED residential SSL of 23,500 mg/kg.

The objective of the Appendix II, Phase 2 RFI at SWMU 9-16 was to determine the nature and extent of potential metals contamination in subsurface soils (USAF, 1997). Six boreholes (ST-272-01 through ST-272-06) were installed and sampled using direct-push technology (DPT). Samples were collected from each borehole from 5 to 7, 10 to 12, 15 to 17, 20 to 22, 25 to 27, and 30 to 32 ft bgs and analyzed for target analyte list (TAL) metals (except mercury) and molybdenum. The following analytes exceeded NMED residential SSLs and/or NMED HWB approved background levels for subsurface soils.

- Arsenic results indicated levels of 12.4 mg/kg in borehole ST-272-05 (20 to 22 ft bgs) and 14.3 mg/kg in borehole ST-272-06 (25 to 27 ft bgs). NMED HWB-approved background concentrations are 4.4 mg/kg and the NMED residential SSL are 3.9 mg/kg.

- Barium exceeded the NMED HWB approved background concentration of 200 mg/kg in borehole ST-272-02 from 5 to 7 ft bgs (207 mg/kg), 10 to 12 ft bgs (305 mg/kg), and 25 to 27 ft bgs (513 mg/kg); in borehole ST-272-04 at 5 to 7 ft bgs (436 mg/kg); in borehole ST-272-05 at 10 to 12 ft bgs (284 mg/kg) and 25 to 27 ft bgs (237 mg/kg); and in borehole ST-272-06 at 5 to 7 ft bgs (207 mg/kg), 10 to 12 ft bgs (957 mg/kg), and 20 to 22 ft bgs (206 mg/kg). However, all of these concentrations are much lower than the NMED HWB residential SSL of 5,450 mg/kg.

- Beryllium was measured at 0.92 mg/kg in borehole ST-272-01 at 15 to 17 ft bgs. This value is greater than the NMED HWB approved background concentration (0.8 mg/kg), but lower than the residential SSL of 156 mg/kg.

- Copper was measured at 21.6 mg/kg in borehole ST-272-04 (30 to 32 ft bgs). This value is greater than the NMED HWB approved background concentration (17 mg/kg), but is lower than the residential SSL of 3,130 mg/kg.

- Vanadium exceeded the NMED HWB approved background concentration of 33 mg/kg in borehole ST-272-02 at 25 to 27 ft bgs (43.1 mg/kg), in borehole ST-272-03 at 15 to 17 ft bgs (36.1 mg/kg), in borehole ST-272-04 at 10 to 12 ft bgs (41.4 mg/kg), and in borehole ST-272-05 at 20 to 22 ft bgs (34.3 mg/kg). However, these concentrations are much lower than the residential SSL of 548 mg/kg.

The CMS, conducted in January 1999 (USAF, 2000), included additional soil sampling at SWMU 9-16 for analysis with lower limits of quantitation than those achieved during the RFI. The lower quantitation limits were necessary for preparing the baseline human health risk assessment. The RFI laboratory detection limits (LDLs) for antimony, arsenic, selenium, silver, and thallium were higher than their respective U.S. Environmental Protection Agency (EPA) Region 6 HHRB screening levels and NMED HWB approved background concentrations.

Ten boreholes were completed with samples collected at 1 to 3, 4 to 6, and 8 to 10 ft bgs. The samples were analyzed for TAL metals and pH. Analytes with measurements exceeding NMED residential SSLs and/or NMED HWB approved background concentrations for subsurface soils were as follows.

- Arsenic was observed in all samples. However, only two subsurface measurements (4.5 and 5.5 mg/kg) were found to be above the NMED HWB approved background concentrations (4.4 mg/kg) and the NMED residential SSL of 3.9 mg/kg.

- Barium was analyzed above its NMED HWB approved background concentrations (281 mg/kg for subsurface soils) in borehole ST-272-09 (534 mg/kg at 8 to 10 ft bgs). However, this concentration was significantly below the NEMD residential SSL of 5,450 mg/kg.

- Copper was analyzed above the NMED HWB approved background concentrations (17 mg/kg for surface and subsurface soils) in boreholes ST-272-08 (21.5 mg/kg at 1 to 3 ft bgs), ST-272-10 (27.1 mg/kg at 8 to 10 ft bgs), ST-272-12 (194 mg/kg at 8 to 9 ft bgs), ST-

272-13 (24.9 mg/kg at 8 to 10 ft bgs), ST-272-14 (20 mg/kg at surface), ST-272-15 (53.7 mg/kg at surface), and ST-272-16 (55.5 mg/kg at surface, 23.1 mg/kg at 1 to 3 ft bgs, and 86.8 mg/kg at 8 to 9 ft bgs). However, these concentrations are significantly below the NMED residential SSL for copper (3,130 mg/kg).

- Lead was analyzed above its NMED HWB approved background concentrations (39 mg/kg for surface soils) but below its NMED residential SSL (400 mg/kg) in boreholes ST-272-15 (86.3 mg/kg at surface) and ST-272-16 (106 mg/kg at surface).

- Nickel was analyzed above its NMED HWB approved background concentrations (21 mg/kg for surface soils) but below its NMED residential SSL (1,560 mg/kg) in boreholes ST-272-14 (29.2 mg/kg at surface), ST-272-15 (39.6 mg/kg at surface), and ST-272-16 (26.9 mg/kg at surface).

- For Vanadium, the NMED HWB approved background concentration of 33 mg/kg for subsurface soils was exceeded in borehole ST-272-10 (34.6 mg/kg at 8 to 10 ft bgs). However, this concentration is much lower than the NMED residential SSL of 548 mg/kg.

- Zinc was analyzed above its NMED HWB approved background concentrations (76 mg/kg for surface and subsurface soils) but significantly below the residential SSL (23,500 mg/kg) in boreholes ST-272-07 (120 mg/kg at surface), ST-272-10 (117 mg/kg at surface), ST-272-12 (130 mg/kg at 8 to 9 ft bgs), ST-272-14 (149 mg/kg at surface), ST-272-15 (279 mg/kg at surface), and ST-272-16 (198 mg/kg at surface).

In January 2003, corrective measures proposed in the voluntary corrective measures (VCM) work plan were implemented at SWMU 9-16 (USAF, 2003). VCM activities consisted of excavating approximately 1 ft of soil across the bottom of the evaporation pond, pushing dirt berms into the center of the pond, backfilling the remaining depression with clean compacted top soil, and grading the site for drainage and to match the surrounding topography. Two confirmation soil samples were collected from the base of the pond once the soil was removed. Confirmation soil samples were analyzed for volatile organic compounds, semivolatile organic compounds, and TAL metals. None of these analytes was found to exceed NMED residential SSLs. The former pond area was seeded with native vegetation and four trees were planted.

The potential residential cancer risks and hazard indices (HI) at SWMU 9-16 were not calculated because no COPCs exceeding residential SSLs were identified in the surface soil. The potential cancer risk and HI were calculated for a construction worker (subsurface soil) and both were below the NMED target levels (cancer risk = 7.2×10^{-7} with a target level of 10^{-5} and the HI = 0.4 with a target level of 1.0).

Basis for Determination

In a letter dated August 26, 2004, the NMED's HWB stated that SWMU 9-16 is suitable for a no further action (NFA) petition (NMED, 2004a). This NFA proposal is based upon NMED's NFA Criterion 5: SWMU 9-16 has been characterized and remediated in accordance with applicable

state or federal regulations and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

References

NMED, 2004a. Correspondence from William S. McDonald, KAFB Project Leader, Permits Management Program, Hazardous Waste Bureau, New Mexico Environment Department to Carl Lanz, Chief, Restoration Section, Environmental Management Branch, Kirtland Air Force Base, Re: Response to Request for Supplemental Information: Voluntary Corrective Measures Report for Solid Waste Management Units 9-14, Building 617, Buried Caustic Drain Line (ST-270); 9-15, Building 617, Neutralization Pit (ST-271); and 9-16, Building 617, Evaporation/Infiltration Pond (ST-272), November 2003, Kirtland Air Force Base, ID# NMD9570024423, Task # HWB-KAFB-04-002. August 26, 2004.

NMED, 2004b. Technical Background Document for Development of Soil Screening Levels, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program.

NMED, 1997. *Approved Background Concentrations Sandia National Laboratories/Kirtland Air Force Base.* New Mexico Environment Department, Hazardous and Radioactive Materials Bureau, RCRA Permits Management Program, Santa Fe, New Mexico. September 24, 1997.

USAF, 2003. *Voluntary Corrective Measures Report for Solid Waste Management Units 9-14, Building 617, Buried Caustic Drain Line (ST-270); 9-15, Building 617, Neutralization Pit (ST-271); and 9-16, Building 617, Evaporation/Infiltration Pond (ST-272),* U.S. Air Force, Kirtland Air Force Base, New Mexico. November 17, 2003.

USAF, 2000. Corrective Measures Study Report for SWMUs 6-30, 6-32, 9-15 and 9-16. Kirtland AFB, NM. August 1, 2000.

USAF, 1997. *RCRA Facility Investigation Report: Appendix II Phase 2 (HNUS), Draft Final*. United States Air Force, Installation Restoration Program, Kirtland Air Force Base, New Mexico. July1, 1997.

USAF, 1995. *Final RCRA Facility Investigation (RFI) Report, Appendix II, Stage 2B with Notice of Deficiency Response*. United States Air Force, Installation Restoration Program, Kirtland Air Force Base, New Mexico. July 5, 1995.

4. Area of Concern 6-A2: RW-004, Radioactive Holding Tank #4

Location and Current Land Use

Area of Concern (AOC) 6-A2 consists of five emergency underground holding tanks: RW-004, RW-005, RW-017, RW-019 and RW-023. AOC 6-A2 is located at the former Manzano Weapons Storage Area (MWSA), comprising 2,880 acres within Kirtland Air Force Base (AFB) in the west foothills of the Manzanita Mountains. A high-security fence line consisting of four separate fences encloses the former MWSA. RW-004 is associated with Building 37000 (Plant 1) and was connected to the floor drains in that building. The land use in this area is urban/industrial.

Projected Future Land Use

The projected future land use for AOC 6-A2 is urban/industrial; however, a residential scenario was used for risk-based screening assessments.

History

Former underground emergency holding tank RW-004 was an inactive unit designated as an AOC during the RFA. It was in a fenced area on the west side of the former MWSA, 140 ft southwest of the south entrance to Building 37000 (Plant 1) (Figure 5). Based on original drawings, RW-004 was connected to floor drains in Plant 1. RW-004 was a 10,000-gallon, carbon-steel underground holding tank designed to contain washdown fluids from accidental releases associated with activities in Plant 1. The tank and its associated piping were installed between 1947 and 1949. No known radiological releases occurred that required washdowns and records do not indicate that the tank ever received any radioactive materials or waste; however, the tank and associated piping did contain approximately 10,200 gallons of water when the Stage 2D-2 field investigation began. This water is believed to be associated with seepage of groundwater and normal housekeeping washdowns. An investigation was performed on RW-004 in April and May of 1995, and the tank was excavated and removed in April 1996.

Evaluation of Relevant Information

The objective of the investigation at RW-004 was to determine the nature and extent of potential soil contamination that could be attributed to an unknown release from the holding tank (USAF, 1996). On April 25 and 26, 1995, the tank contents were sampled for volatile organic compounds (VOCs), metals, tritium, gross alpha and beta emissions, and gamma-emitting isotopes; only a liquid sample was collected from the tank since no sludge was present on the tank bottom. Additionally, shallow soil samples were collected from four locations near the tank discharge point and analyzed for the same list of analytes.

On May 11, 1995, two boreholes were drilled with a Geoprobe outside the fenced area to collect soil samples for background concentration data. Two soil samples per background borehole were collected: one at the surface, and the other at a depth approximately equal to the base of the

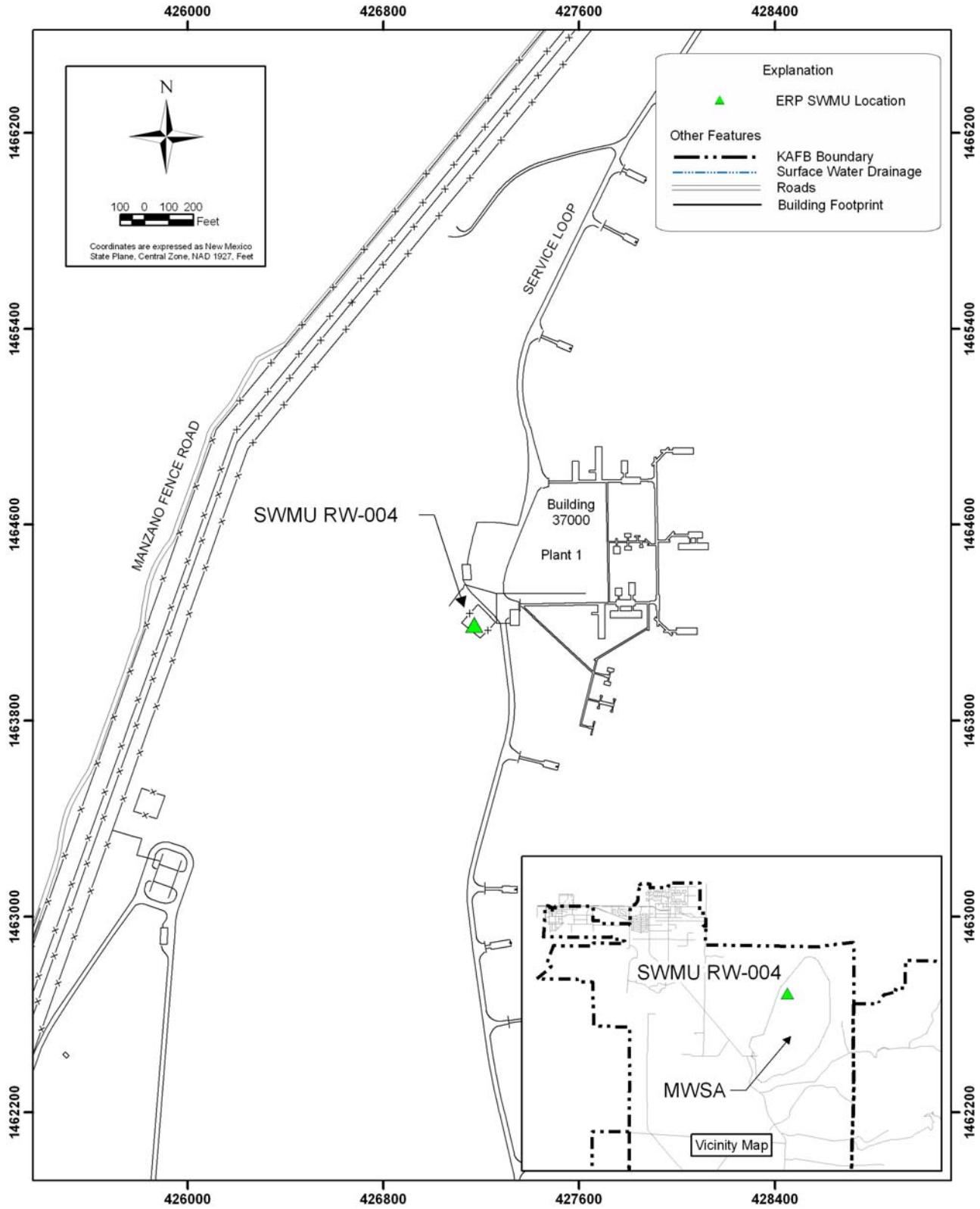

Figure 5. Area of Concern 6-A2: RW-004

holding tank. Because of subsurface lithologic conditions, the maximum sampling depth attained was 7 feet (ft) below ground surface (bgs).

Analytical data from these samples indicated that the tank contents and soil at RW-004 did not contain hazardous constituents and did not contain radiation levels above background. Based on these results, RW-004 was excavated and removed on April 15, 1996. Prior to tank excavation and removal activities, tank contents were removed and all connecting floor drains inside Building 37000 were sealed with concrete. Following tank removal, the exposed drainpipe leading from the building was sealed with concrete. Tank contents were disposed of in accordance with all applicable regulations. During excavation soil samples were collected from the area immediately below, and at 5, 10, and 21 ft below each end of the tank. Bedrock was encountered at 23 ft bgs, therefore, no additional soil samples were collected.

Analysis from the soil samples found the following:

- Arsenic was detected in two samples collected directly under the former tank (1.8 and 2.7 milligrams per kilogram [mg/kg]). These concentrations are below both the New Mexico Environment Department (NMED) Hazardous Waste Bureau (HWB) approved background concentration of 4.4 mg/kg (NMED, 1997), and the NMED residential soil screening level (SSL) of 3.9 mg/kg (NMED, 2004a).

- Manganese was detected in all samples. One sample from 5-7 ft bgs (1,730mg/kg) was found to have a concentration above the NMED residential SSL of 1,550 mg/kg (NMED, 2004a). There is no NMED HWB approved background concentration for manganese (NMED, 1997).

- Thallium (0.39 mg/kg) and lead (28.7 mg/kg) were detected at concentrations below NMED HWB approved background levels (<1.1 mg/kg and 39 mg/kg) (NMED, 1997), and below residential SSLs (5.16 mg/kg and 400 mg/kg) (NMED, 2004a).

- Iron (12,600 mg/kg – 37,800 mg/kg) was detected in all thirteen samples. Eleven samples contained iron concentrations above the NMED residential SSL of 23,500 mg/kg (NMED, 2004a). There is no NMED HWB approved background concentration for iron (NMED, 1997).

These concentrations of metals appear to be in the range of natural background concentrations for this area.

A baseline residential risk assessment was not conducted due to the lack of COPCs at this site.

Basis for Determination

In a letter dated May 14, 2004, the NMED's HWB stated that AOC 6-A2: RW-004 is suitable for a no further action (NFA) petition (NMED, 2004). This NFA proposal is based upon NMED's NFA Criterion 5: RW-004 has been characterized and remediated in accordance with applicable

state or federal regulations and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

References

NMED, 2004a. Technical Background Document for Development of Soil Screening Levels, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program.

NMED, 2004b. Correspondence from William S. McDonald, KAFB Project Leader, Permits Management Program, Hazardous Waste Bureau, New Mexico Environment Department to Carl Lanz, Chief, Restoration Program, Environmental Management Branch, Kirtland Air Force Base, Re: RCRA Facility Investigation Report, Appendix IV Stage 2D-2 Areas of Concern 6-A2 (RW-004, RW-005, RW-017, RW-019 and RW-023). June 28, 1996. Kirtland Air Force Base, ID# NMD9570024423, Task # HWB-DKAFB-04-001. May 14, 2004.

NMED, 1997. *Approved Background Concentrations Sandia National Laboratories/Kirtland Air Force Base.* New Mexico Environment Department, Hazardous and Radioactive Materials Bureau, RCRA Permits Management Program, Santa Fe, New Mexico. September 24.

USAF, 1996. *RCRA Facility Investigation Report Appendix IV Stage 2D-2 Areas of Concern*, U.S. Air Force, Installation Restoration Program, Kirtland Air Force Base, New Mexico. June 28, 1996.

5. Area of Concern 6-A2: RW-005, Radioactive Holding Tank #5

Location and Current Land Use

Area of Concern (AOC) 6-A2 consists of five emergency underground holding tanks, RW-004, RW-005, RW-017, RW-019 and RW-023. AOC 6-A2 is located at the former Manzano Weapons Storage Area (MWSA), comprising 2,880 acres within Kirtland Air Force Base (AFB) in the west foothills of the Manzanita Mountains. A high-security barrier consisting of four separate fences encloses the former MWSA. RW-005 was a 1,000-gallon, carbon-steel underground holding tank connected to floor drains in Building 37200. The land use in this area is urban/industrial.

Projected Future Land Use

The projected future land use for AOC 6-A2 is urban/industrial; however, a residential scenario was used for risk-based screening assessments.

History

RW-005 was a 1,000-gallon, carbon-steel underground holding tank connected to floor drains in Building 37200 (Figure 6). The tank was designed to contain washdown fluids from accidental releases associated with activities in the building and was buried approximately 10 feet (ft) below ground surface (bgs). The tank and associated piping were installed between 1947 and 1955. No known radiological releases occurred that required washdowns and records do not indicate that the tank ever received any radioactive material or waste; no liquid was present in the tank during the Stage 2D-2 field investigation. Approximately 1 inch of sludge was present on the tank bottom. The sediment was possibly residue from dust-containing water associated with normal housekeeping washdowns in Plant 3. An investigation was conducted at RW-005 in April and May of 1995, and the tank was excavated and removed in April 1996.

Evaluation of Relevant Information

The objective of the investigation at RW-005 was to determine the nature and extent of potential soil contamination that could be attributed to an unknown release from the holding tank (USAF, 1996). On April 25, 1995, the tank contents were sampled for volatile organic compounds (VOCs), metals, tritium, gross alpha and beta emissions, and gamma-emitting isotopes. Additionally, eight shallow soil samples were collected from four locations near the vent standpipe and analyzed for the same list of parameters. As only sludge was present in the tank, only a sludge sample was collected. No free liquid was present in the tank. On May 11 and 12, 1995, two boreholes were drilled with a Geoprobe outside the fenced area to collect soil samples for background concentration data.

Analytical data from the samples collected at RW-005 indicated that the tank contents and soil around the vent standpipe did not contain hazardous chemical constituents or radiation levels above background. Based on these results, RW-005 was excavated and removed on April 12, 1996.

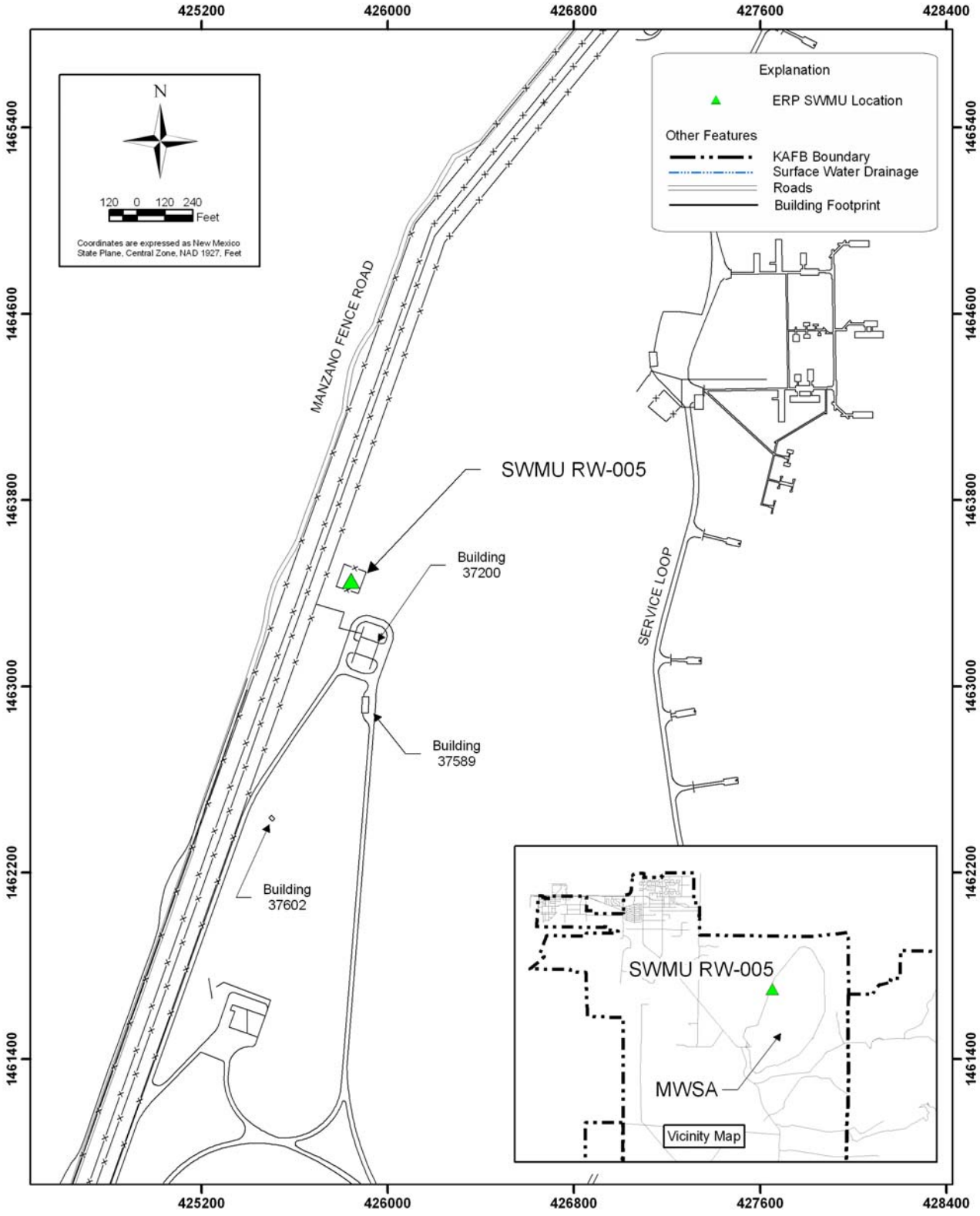

Figure 6. Area of Concern 6-A2: RW-005

Prior to tank excavation and removal activities, the tank contents were removed and all connecting floor drains inside Building 37200 were sealed with concrete. Following tank removal, the exposed drainpipe leading from the building was sealed with concrete. Tank contents were disposed of in accordance with applicable regulations. During excavation, soil samples were collected from below each end of the tank beginning at 10 ft bgs, the depth immediately below the tank. Bedrock was encountered at 12-ft bgs halting excavation; therefore, no additional soil samples were collected.

Analysis from the soil samples indicated that iron was the only potential contaminant present at levels above the New Mexico Environment Department (NMED) residential soil screening level of 23,500 milligrams per kilogram (NMED, 2004a). There is no NMED Hazardous Waste Bureau (HWB) approved background concentration for iron (NMED, 1997). This concentration of iron appears to be in the range of natural background concentrations for this area.

A baseline residential risk assessment was not conducted due to the lack of COPCs at this site.

Basis for Determination

In a letter dated May 14, 2004, the NMED's HWB stated that AOC 6-A2: RW-005 is suitable for a NFA petition (NMED, 2004b). This no further action (NFA) proposal is based upon NMED's NFA Criterion 5: RW-005 has been characterized and remediated in accordance with applicable state or federal regulations and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

References

NMED, 2004a. Technical Background Document for Development of Soil Screening Levels, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program. February.

NMED, 2004b. Correspondence from William S. McDonald, KAFB Project Leader, Permits Management Program, Hazardous Waste Bureau, New Mexico Environment Department to Carl Lanz, Chief, Restoration Program, Environmental Management Branch, Kirtland Air Force Base, Re: RCRA Facility Investigation Report, Appendix IV Stage 2D-2 Areas of Concern 6-A2 (RW-004, RW-005, RW-017, RW-019 and RW-023). June 28, 1996. Kirtland Air Force Base, ID# NMD9570024423, Task # HWB-DKAFB-04-001. May 14, 2004.

NMED, 1997. *Approved Background Concentrations Sandia National Laboratories/Kirtland Air Force Base.* New Mexico Environment Department, Hazardous and Radioactive Materials Bureau, RCRA Permits Management Program, Santa Fe, New Mexico. September 24.

USAF, 1996. *RCRA Facility Investigation Report Appendix IV Stage 2D-2 Areas of Concern*, U.S. Air Force, Installation Restoration Program, Kirtland Air Force Base, New Mexico. June28, 199

6. Area of Concern 6-A2: RW-017, Radioactive Holding Tank #6

Location and Current Land Use

Area of Concern (AOC) 6-A2 consists of five emergency underground holding tanks, RW-004, RW-005, RW-017, RW-019 and RW-023. AOC 6-A2 is located at the former Manzano Weapons Storage Area (MWSA), comprising 2,880 acres within Kirtland Air Force Base (AFB) in the west foothills of the Manzanita Mountains. A high-security fence line consisting of four separate fences encloses the former MWSA. RW-017 was a 1,000-gallon, carbon-steel underground holding tank connected to floor drains in Building 37122. The land use in this area was considered to be industrial.

Projected Future Land Use

The projected future land use for AOC 6-A2 is urban/industrial; however, a residential scenario was used for risk-based screening assessments.

History

Prior to removal, RW- 017 was a 1,000-gallon, carbon-steel underground holding tank located in a fenced area approximately 100 ft southeast of Building 37122, a storage/maintenance facility (short igloo) on the northeast side of the former MWSA (Figure 7). The tank was connected by floor drains to Building 37122 and was originally designed to contain washdown fluids from accidental releases associated with activities in the building. The tank and associated piping were installed between 1947 and 1954. No known radiological releases occurred that required washdowns. Records do not indicate that the tank ever received any materials, spills, or waste; however, the tank did contain approximately 80 gallons of water and sediment when the Stage 2D-2 field investigation began. This water and sediment are believed to be associated with normal housekeeping washdowns in Building 37122. RW-017 was investigated during April and May 1995. The tank was excavated and removed in April 1996.

Evaluation of Relevant Information

The objective of the investigation at RW-017 was to determine the nature and extent of potential soil contamination that could be attributed to an unknown release from the holding tank (USAF, 1996). On April 25 and 26, 1995, the tank contents were sampled for volatile organic compound (VOCs), metals, tritium, gross alpha and beta emissions, and gamma-emitting isotopes. Additionally, eight shallow soil samples were collected from four locations near the vent standpipe and analyzed for the same analytes as the tank contents. Two water and sediment samples were collected from the tank and submitted for analysis. At the time of the field investigation, the tank contained approximately 6 inches of rust-laden liquid (water plus sediment). Since a distinction could not be made between the liquid and the sludge, two samples were collected; one was submitted as a sludge sample and the other as a liquid sample. Two boreholes were drilled with a Geoprobe outside the fenced area to collect soil samples for

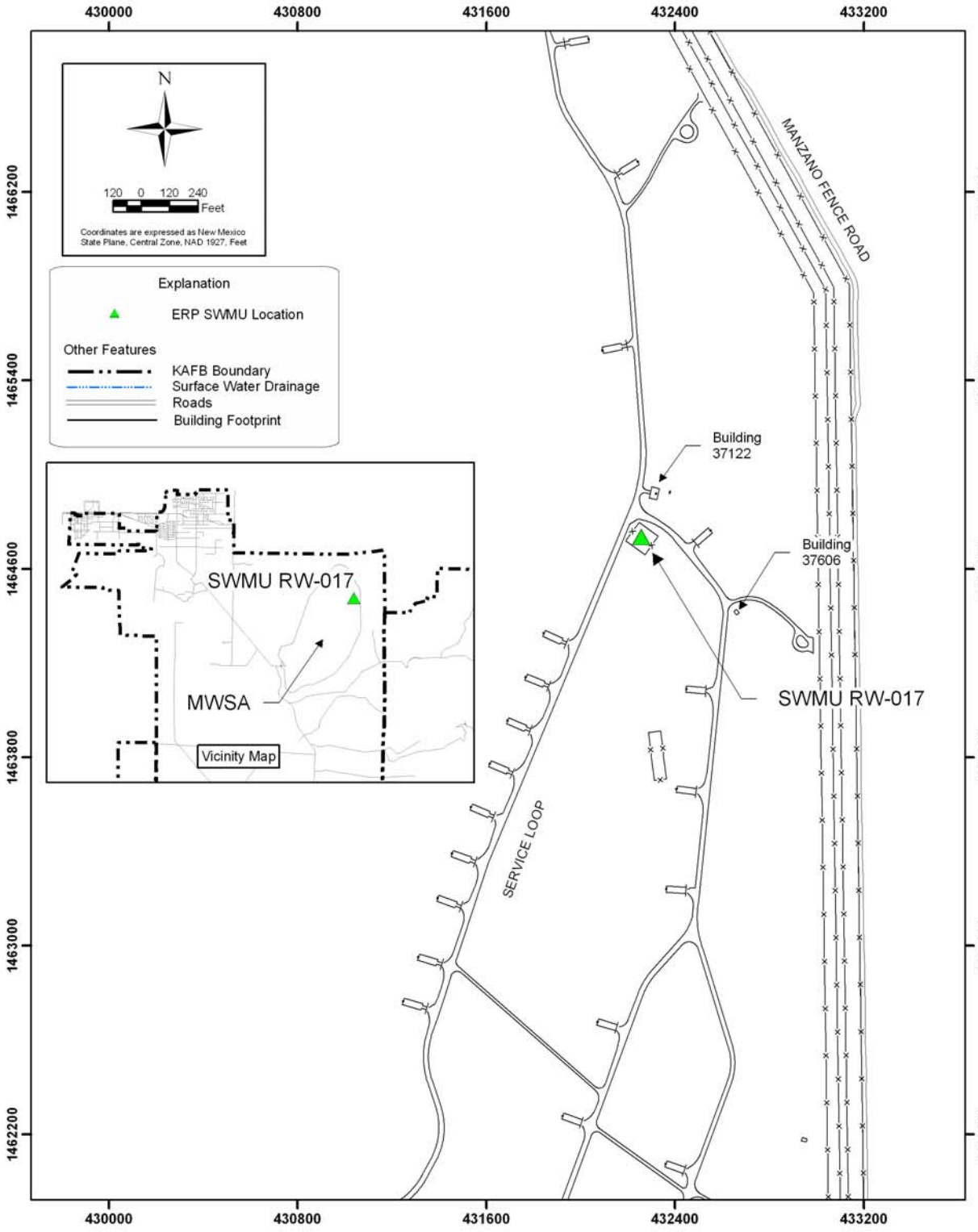

Figure 7. Area of Concern 6-A2: RW-017

background concentration data. Due to the subsurface lithologic conditions, the maximum depth attained with the Geoprobe in these locations was limited to 2 feet (ft) below ground surface (bgs).

Analytical data from these samples indicated that the tank contents and soil samples collected at RW-017 did not contain hazardous chemical constituents or radiation levels above background. Based on these results, RW-017 was excavated and removed on April 12, 1996. Prior to tank excavation and removal activities, all connecting floor drains inside Building 37122 were sealed with concrete. Following tank removal, the exposed drainpipe leading from the building was sealed with concrete. Tank contents were removed and disposed of in accordance with applicable regulations. During excavation, soil samples were collected from below each end of the tank beginning at 8-ft bgs, the depth immediately below the tank and at 13-ft bgs. Bedrock was encountered at 15-ft bgs; therefore, no additional soil samples were collected.

Analysis from the soil samples showed that only iron was found to exceed the New Mexico Environment Department (NMED) residential soil screening level of 23,500 milligrams per kilogram (mg/kg) (NMED, 2004a). This screening level was exceeded in 11 of the 15 samples with a range from 18,200 mg/kg to 31,700 mg/kg. There is no NMED Hazardous Waste Bureau (HWB) approved background concentration for iron (NMED, 1997). This concentration of iron appears to be in the range of natural background concentrations for this area.

A baseline residential risk assessment was not conducted due to the lack of COPCs at this site.

Basis for Determination

In a letter dated May 14, 2004, the NMED's HWB stated that AOC 6-A2: RW-017 is suitable for a no further action (NFA) petition (NMED, 2004b). This NFA proposal is based upon NMED's NFA Criterion 5: RW-017 has been characterized and remediated in accordance with applicable state or federal regulations and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

References

NMED, 2004a. Technical Background Document for Development of Soil Screening Levels, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program. February.

NMED, 2004b. Correspondence from William S. McDonald, KAFB Project Leader, Permits Management Program, Hazardous Waste Bureau, New Mexico Environment Department to Carl Lanz, Chief, Restoration Program, Environmental Management Branch, Kirtland Air Force Base, Re: RCRA Facility Investigation Report, Appendix IV Stage 2D-2 Areas of Concern 6-A2 (RW-004, RW-005, RW-017, RW-019 and RW-023). June 28, 1996. Kirtland Air Force Base, ID# NMD9570024423, Task # HWB-DKAFB-04-001. May 14, 2004.

NMED, 1997. *Approved Background Concentrations Sandia National Laboratories/Kirtland Air Force Base.* New Mexico Environment Department, Hazardous and Radioactive Materials Bureau, RCRA Permits Management Program, Santa Fe, New Mexico. September 24.

USAF, 1996. *RCRA Facility Investigation Report Appendix IV Stage 2D-2 Areas of Concern*, U.S. Air Force, Installation Restoration Program, Kirtland Air Force Base, New Mexico. June 28, 1996.

7.Area of Concern 6-A2: RW-019, Radioactive Holding Tank #8

Location and Current Land Use

Area of Concern (AOC) 6-A2 consists of five emergency underground holding tanks, RW-004, RW-005, RW-017, RW-019 and RW-023. AOC 6-A2 is located at the former Manzano Weapons Storage Area (MWSA), comprising 2,880 acres within Kirtland Air Force Base (AFB) in the west foothills of the Manzanita Mountains. A high-security fence line consisting of four separate fences encloses the former MWSA. RW-019 was a 10,000-gallon, carbon-steel underground holding tank connected to floor drains in Building 37100. The land use in this area is urban/industrial.

Projected Future Land Use

The projected future land use for AOC 6-A2 is urban/industrial; however, a residential scenario was used for risk-based screening assessments.

History

Prior to removal, RW-019 was a 10,000-gallon, carbon-steel underground holding tank located in a fenced area approximately 100 feet (ft) southeast of the northern entrance of Building 37100 (Plant 2), on the southeast portion of the former MWSA (Figure 8). Connected by floor drains, the tank was originally designed to contain washdown fluids from accidental releases associated with activities in Plant 2. The tank and associated piping were installed between 1947 and 1949. No known radiological releases occurred that required washdowns. Records do not indicate that the tank ever received any materials, spills, or waste; however, the tank was full of water when the Stage 2D-2 field investigation began. This water is believed to be associated with normal housekeeping washdowns. RW-019 was investigated in April and May of 1995. The tank was excavated and removed in April 1996.

Evaluation of Relevant Information

The objective of the investigation at RW-019 was to determine the nature and extent of a chemical release to the soil that could be attributable to a release from the holding tank (USAF, 1996). On April 25 and 26, 1995, the tank contents were sampled for VOCs, metals, tritium, gross alpha and beta emissions, and gamma-emitting isotopes. Additionally, four surface soil samples were collected from four locations around the tank outlet pipe and analyzed for the same list of chemicals. At RW-019, one liquid sample was collected from the tank and submitted for analysis. No sludge was detected on the bottom of the tank. Two boreholes were drilled with a Geoprobe outside the fenced area to collect soil samples for background concentration data. Due to the subsurface lithologic conditions, the maximum depth attained with the Geoprobe in these locations was 2-ft below ground surface (bgs).

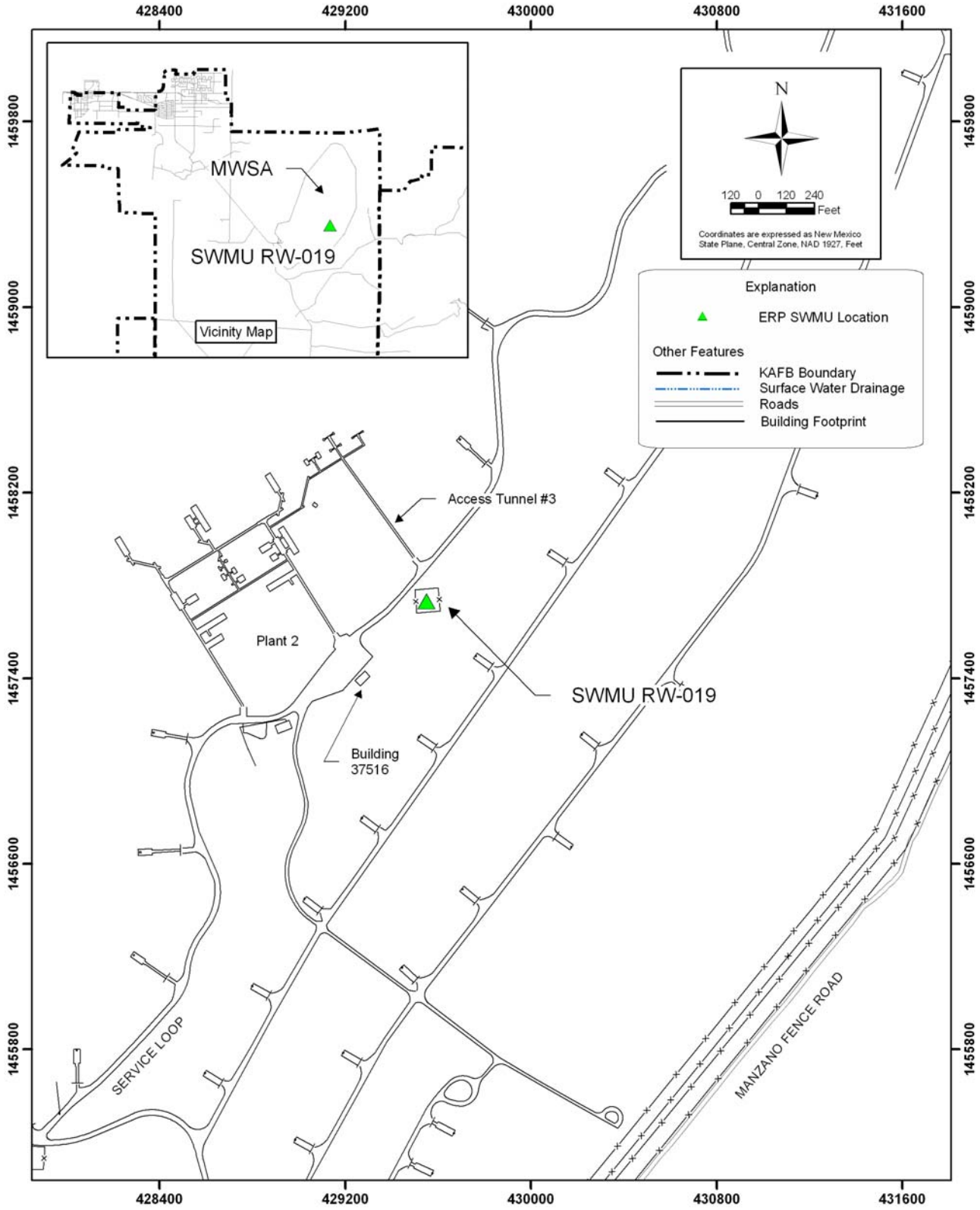

Figure 8. Area of Concern 6-A2: RW-019

Analytical data from the samples indicated that the tank contents and soil samples collected at RW-019 did not contain hazardous chemicals and did not contain radiation levels above background. Based on these results, RW-019 was excavated and removed on April 15, 1996.

Prior to tank excavation and removal activities, all connecting floor drains inside Building 37100 were sealed with concrete. In locations where connecting floor drains could not be accessed and sealed, signs were posted stating that the drains were no longer in use. Following tank removal, the exposed drainpipe leading from the building was sealed with concrete. Tank contents were removed and disposed of in accordance with applicable regulations. Soil samples were collected from below each end of the tank beginning at 12 ft bgs, the depth immediately below the tank. Bedrock was encountered at 14-ft bgs; therefore, no additional soil samples were collected.

Sample analyses indicated that only iron exceeded its New Mexico Environment Department (NMED) residential soil screening level (23,500 mg/kg) (NMED, 2004a). This level was exceeded in 4 of the 8 samples collected at this site. There is no NMED Hazardous Waste Bureau (HWB) approved background concentration for iron (NMED, 1997). This concentration of iron appears to be in the range of natural background concentrations for this area.

A baseline residential risk assessment was not conducted due to the lack of COPCs at this site.

Basis for Determination

In a letter dated May 14, 2004, the NMED's HWB stated that AOC 6-A2: RW-019 is suitable for a NFA petition (NMED, 2004b). This NFA proposal is based upon NMED’s NFA Criterion 5: RW-019 has been characterized and remediated in accordance with applicable state or federal regulations and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

References

NMED, 2004a. Technical Background Document for Development of Soil Screening Levels, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program. February.

NMED, 2004b. Correspondence from William S. McDonald, KAFB Project Leader, Permits Management Program, Hazardous Waste Bureau, New Mexico Environment Department to Carl Lanz, Chief, Restoration Program, Environmental Management Branch, Kirtland Air Force Base, Re: RCRA Facility Investigation Report, Appendix IV Stage 2D-2 Areas of Concern 6-A2 (RW-004, RW-005, RW-017, RW-019 and RW-023). June 28, 1996. Kirtland Air Force Base, ID# NMD9570024423, Task # HWB-DKAFB-04-001. May 14, 2004.

NMED, 1997. *Approved Background Concentrations Sandia National Laboratories/Kirtland Air Force Base.* New Mexico Environment Department, Hazardous and Radioactive

Materials Bureau, RCRA Permits Management Program, Santa Fe, New Mexico. September 24.

USAF, 1996. *RCRA Facility Investigation Report Appendix IV Stage 2D-2 Areas of Concern*, U.S. Air Force, Installation Restoration Program, Kirtland Air Force Base, New Mexico. June.

8. Area of Concern 6-A2: RW-023, Radioactive Holding Tank #9

Location and Current Land Use

Area of Concern (AOC) 6-A2 consists of five emergency underground holding tanks, RW-004, RW-005, RW-017, RW-019 and RW-023. AOC 6-A2 is located at the former Manzano Weapons Storage Area (MWSA), comprising 2,880 acres within Kirtland Air Force Base (AFB) in the west foothills of the Manzanita Mountains. A high-security fence line consisting of four separate fences encloses the former MWSA. RW-023 was a 1,000-gallon, carbon-steel underground holding tank connected to floor drains in Building 37123. The land use in this area is urban/industrial.

Projected Future Land Use

The projected future land use for AOC 6-A2 is urban/industrial; however, a residential scenario was used for risk-based screening assessments.

History

Prior to removal, RW-023 was a 1,000-gallon, carbon-steel underground holding tank located in a fenced area approximately 100 feet (ft) south of Building 37123, storage/maintenance facility (short igloo), on the southeast side of the former MWSA (Figure 9). Connected by floor drains, the tank was originally designed to contain washdown fluids from accidental releases associated with activities in Building 37123. The tank and associated piping were installed between 1947 and 1954. No known radiological releases occurred that required washdowns. Records do not indicate that the tank ever received any materials, spills, or waste, however, the tank did contain approximately 215 gallons of water when the Stage 2D-2 field investigation began. This water is believed to be associated with normal housekeeping washdowns at Building 37123. RW-023 was investigated during April and May 1995. The tank was excavated and removed in April 1996.

Evaluation of Relevant Information

The objective of the investigation at RW-023 was to determine the nature and extent of potential soil contamination that could be attributed to an unknown release from the holding tank (USAF, 1996). On April 25 and 26, 1995, the tank contents were sampled for volatile organic compounds (VOCs), metals, tritium, gross alpha and beta emissions, and gamma-emitting isotopes. Additionally, eight shallow soil samples were collected from four locations near the vent standpipe and analyzed for the same list of parameters. One liquid sample was collected from the tank and submitted for analysis. Since no sludge was detected on the bottom of the tank, no sludge sample was available for submittal. Two boreholes were drilled with a Geoprobe outside the fenced area to collect soil samples for background concentration data. Due to the subsurface lithologic conditions, the maximum depth attained with the Geoprobe in these locations was 6 ft below ground surface (bgs).

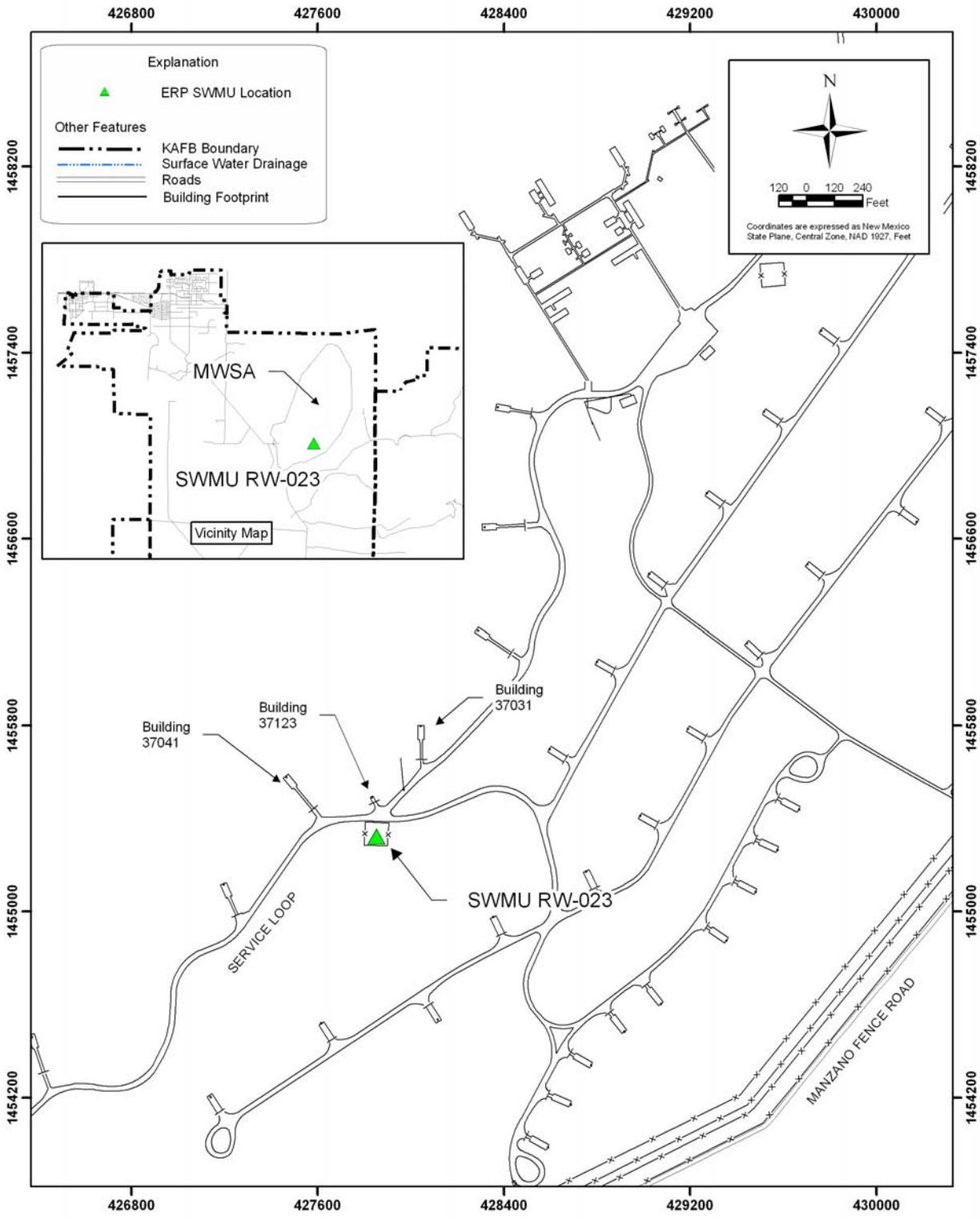

Figure 9. Area of Concern 6-A2: RW-023

Analytical data from the samples collected indicated that the tank contents and soil samples collected at RW-023 did not contain hazardous chemical constituents or radiation levels above background. RW-023 was excavated and removed on April 12, 1996. Prior to tank excavation and removal activities, all connecting floor drains inside Building 37123 were sealed with concrete and signs were posted stating that the drains were no longer in use. Following tank removal, the exposed drainpipe leading from the building was sealed with concrete. Tank contents were removed and disposed of in accordance with all applicable regulations. During excavation, soil samples were collected from below each end of the tank beginning at 8-ft bgs, the depth immediately below the tank. Bedrock was encountered at 10-ft bgs; therefore, no additional soil samples were collected below 10 ft.

Analyses from the soil samples collected from beneath the tank indicated that iron exceeded the New Mexico Environment Department (NMED) approved residential soil screening level of 23,500 milligrams per kilogram (mg/kg) in 10 of the 14 samples (NMED, 2004a). Iron concentrations ranged from 21,100 mg/kg to 35,200 mg/kg. There is no NMED Hazardous Waste Bureau (HWB) approved background concentration for iron (NMED, 1997). This concentration of iron appears to be in the range of natural background concentrations for this area.

A baseline residential risk assessment was not conducted due to the lack of COPCs at this site.

Basis for Determination

In a letter dated May 14, 2004, the NMED's HWB stated that AOC 6-A2: RW-023 is suitable for a no further action (NFA) petition (NMED, 2004b). This NFA proposal is based upon NMED's NFA Criterion 5: RW-023 has been characterized and remediated in accordance with applicable state or federal regulations and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

References

NMED, 2004a. Technical Background Document for Development of Soil Screening Levels, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program. February.

NMED, 2004b. Correspondence from William S. McDonald, KAFB Project Leader, Permits Management Program, Hazardous Waste Bureau, New Mexico Environment Department to Carl Lanz, Chief, Restoration Program, Environmental Management Branch, Kirtland Air Force Base, Re: RCRA Facility Investigation Report, Appendix IV Stage 2D-2 Areas of Concern 6-A2 (RW-004, RW-005, RW-017, RW-019 and RW-023). June 28, 1996. Kirtland Air Force Base, ID# NMD9570024423, Task # HWB-DKAFB-04-001. May 14, 2004.

NMED, 1997. *Approved Background Concentrations Sandia National Laboratories/Kirtland Air Force Base.* New Mexico Environment Department, Hazardous and Radioactive Materials Bureau, RCRA Permits Management Program, Santa Fe, New Mexico. September 24.

USAF, 1996. *RCRA Facility Investigation Report Appendix IV Stage 2D-2 Areas of Concern*, U.S. Air Force, Installation Restoration Program, Kirtland Air Force Base, New Mexico. June 28, 1996.

9. Solid Waste Management Unit 6-8, Landfill B (LF-015)

Location and Current Land Use

Solid Waste Management Unit 6-8, Landfill B (LF-015) is located in the eastern portion of Kirtland Air Force Base (AFB), approximately 500 feet (ft) east of former Lake Christian (OT-046) and south of the Manzano Weapons Storage Area (MWSA) (Figure 10). The site covers approximately 1 acre, and is bounded to the north by an unnamed arroyo and to the east, west, and south by gravel roads.

Projected Future Land Use

The projected future land use for SWMU 6-8 is urban/industrial; however, a residential scenario was used for risk-based screening assessments.

History

SWMU 6-8, Landfill B (LF-015) was used to dispose of laboratory waste consisting of animal carcasses, animal cages, broken glass, and demolition debris from the Inhalation Toxicology Research Institute and OT-046. The extent of the landfill was determined to be 100 ft by 30 ft by 10 ft deep by a field investigation conducted in November 2001. In June 2002, voluntary corrective measures (VCM) were conducted at the site. Field activities associated with the VCM included site excavation, material screening and disposal, collection and analysis of confirmation samples, excavation backfilling, and site reseeding.

Evaluation of Relevant Information

Following the excavation of the landfill in June 2002, seven confirmation samples were collected from the excavated trench walls and floor. Additionally, six samples were collected from the stockpiled soil to determine if this soil could be used as backfill. NMED approved the use of the stockpiled soil as backfill after inspecting the site and reviewing all available sample analysis data (NMED, 2002). All soil samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), explosives, target analyte list metals, gross alpha, gross beta, and gamma spectrometry (USAF, 2003). Except for arsenic, all analyte detections were below New Mexico Environment Department (NMED) residential soil screening levels (SSLs) (NMED, 2004a). Arsenic detections were near the NMED approved background of 4.4 milligrams per kilogram (mg/kg) (NMED, 1997) except for one value of 19.5 mg/kg, which was considered to be anomalous. Radioactivity fell within background ranges (USAF, 2003).

There were three investigations at SWMU 6-8, former Landfill B (LF-015) prior to the VCM activities performed in June 2002: a Stage 2A RFI in 1993, a Phase 2 RFI in 1997, and a Supplemental Assessment of Multiple Landfills in 2001.

The Stage 2A RFI was completed as part of the Kirtland AFB ERP Program, to determine the boundaries of the site, and the extent of contamination (USAF, 1993). Analytical results from

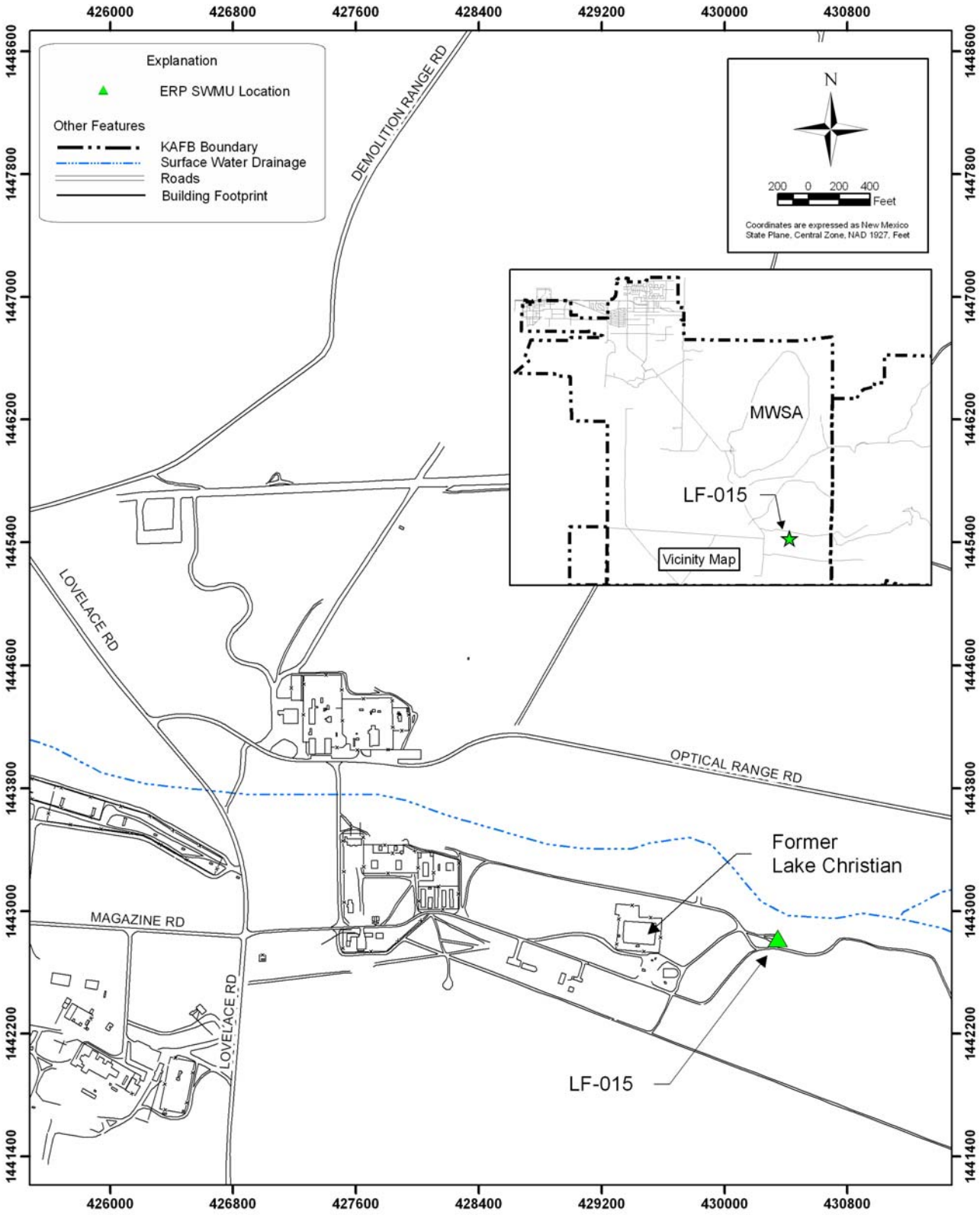

Figure 10. Solid Waste Management Unit 6-8, Former Landfill B (LF-015)

the soil samples collected during the Stage 2A RFI were below NMED residential SSLs (NMED, 2004a).

In 1997, a Phase 2 RFI was performed to determine the nature and extent of contamination of the vadose zone directly beneath the site, and to collect data to support a risk assessment (USAF, 1997). A geophysical survey was conducted across the site to identify disposal trenches or pits, and to target boring locations. Two soil borings were drilled adjacent to the main trench in the landfill to characterize the vadose zone to a depth of approximately 62-ft below the landfill base. Below 62 ft, the subsurface appeared to be consolidated bedrock. Soil samples were collected at depths ranging from 1 to 62 ft and analyzed for VOCs, SVOCs, herbicides, pesticides, polychlorinated biphenyls, and metals. All of the metal analytes were detected but concentrations were below NMED residential SSLs, with the exception of arsenic (NMED, 2004a). Arsenic was detected above the NMED residential SSL of 3.9 mg/kg in borehole A at 40.0-41.5 ft (5.4 mg/kg), and in borehole B at 1.0 – 2.0 ft (5.5 mg/kg). Both of these values are slightly above the NMED-approved background concentration of 4.4 mg/kg for arsenic but still within the range of background (NMED, 1997).

In 2001, the Supplemental Assessment of Multiple Landfills was prepared in response to a RSI submitted by NMED (USAF, 2002). During this investigation, 55 soil gas points were monitored for methane, VOCs, and SVOCs. Methane was not detected in any active soil gas samples. Four VOCs were detected in passive soil gas samples (chloroform, m-&p-xylenes, styrene, and toluene). Chloroform was detected in 20 samples. M-&p-xylenes, styrene, and toluene were detected in two samples, and their presence was determined to be the result of vehicle exhaust, which contaminated the modules at locations close to the road. Chloroform was not detected in subsequent soil sample analysis.

A residential risk ratio calculation was conducted utilizing the June 2002 post-excavation confirmation sampling results (USAF, 2003). None of the summed ratios of maximum detected concentrations calculated for both carcinogenic constituents (0.12) and noncarcinogenic constituents (0.26) exceeded 1.0, indicating that the soils are unlikely to result in adverse health effects or to contaminate ground water in the future. An ecological risk calculation showed minimal impacts to ecological receptors.

Basis for Determination

In a letter dated June 2, 2004, the NMED's Hazardous Waste Bureau (HWB) stated that SWMU 6-8, Landfill B (LF-15) is suitable for a NFA petition (NMED, 2004b). This no further action (NFA) proposal is based upon NMED’s NFA Criterion 5: SWMU 6-8, Landfill B (LF-015) has been characterized and/or remediated in accordance with applicable state or federal regulations and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

References

NMED, 2004a. Technical Background Document for Development of Soil Screening Levels, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program. February.

NMED, 2004b. Correspondence from William S. McDonald, KAFB Project Leader, Permits Management Program, Hazardous Waste Bureau, New Mexico Environment Department to Carl Lanz, Chief, Restoration Program, Environmental Management Branch, Kirtland Air Force Base, Re: KAFB Response to November 2003 Request for Supplemental Information: Completion Report for the Voluntary Corrective Measure of Solid Waste Management Unit 6-8, Landfill B (LF-15). May 2003. Kirtland Air Force Base, ID# NMD9570024423, Task # HWB-KAFB-03-020. June 2, 2004.

NMED, 2002. Correspondence from Richard Kilbury, NMED, HWB to Jerroll Sillerud, KAFB. September 24, 2002.

NMED, 1997. *Approved Background Concentrations Sandia National Laboratories/Kirtland Air Force Base.* New Mexico Environment Department, Hazardous and Radioactive Materials Bureau, RCRA Permits Management Program, Santa Fe, New Mexico. September 24.

USAF, 2003. *Completion Report for the Voluntary Corrective Measure of Solid Waste Management Unit 6-8, Landfill B (LF-015)*, Installation Restoration Program, Kirtland Air Force Base, New Mexico. May 30, 2003.

USAF, 2002. Supplemental Assessment of Multiple Landfills, Kirtland AFB, NM. December 20, 2002.

USAF, 1997. Phase 2 RFI Report for Multiple SWMUs, Kirtland AFB, NM. August 1, 1997.

USAF, 1993. RFI Report, Appendix I, Phase II, Stage 2A, Kirtland AFB, NM. December 1, 1993.

10. Solid Waste Management Unit 6-29, Manzano Landfill (LF-020)

Location and Current Land Use

Solid Waste Management Unit (SWMU) 6-29, Manzano Landfill (LF-020) is located on Kirtland Air Force Base (AFB) between two fenced areas in the southwest corner of the former Manzano Weapons Storage Area (Figure 11). The site is bounded on the north by a chain-link fence with a locked gate preventing easy access, by Vandenberg Road to the east, and by an unnamed service road to the south and west. The site covers approximately 8 acres.

Projected Future Land Use

The projected future land use for SWMU 6-29, Manzano Landfill (LF-020) is urban/industrial; however, a residential scenario was used for risk-based screening assessments.

History

According to facility representatives, the area was first used for fire training (designated Environmental Restoration Program (ERP) site SWMU 6-32, Manzano Fire Training Area) and, later, as a disposal and open burning area for general refuse from the Manzano Base housing area, whose buildings are directly east of LF-020. These building are now used for training, offices, or are vacant.

Evaluation of Relevant Information

In 1993, Stage 2A RFI field activities were performed at LF-020 (USAF, 1993). Six soil borings were drilled to 100-ft bgs, and two shallow borings were drilled to 3 feet (ft) below ground surface (bgs). Soil samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and target analyte list (TAL) metals (USAF, 2003). Arsenic was detected above the New Mexico Environment Department (NMED) residential soil screening level (SSL) of 3.9 milligrams per kilogram (mg/kg) (NMED, 2004a) in one sample (48.8 mg/kg at 102 ft bgs). Iron was detected above the NMED residential SSL of 23,500 mg/kg (NMED, 2004a) in 9 samples (26,100 mg/kg at 52 ft bgs; 35,600 at 98.5 ft bgs; 24,300 mg/kg at 50 ft bgs; 31,600 mg/kg at 100 ft bgs and 324,000 mg/kg in the duplicate of that sample; 31,800 mg/kg at 100 ft bgs; 36,200 mg/kg at 51 ft bgs; 28,600 mg/kg at 100 ft bgs; and 46,600 mg/kg at 50 ft bgs). There were no VOC or SVOC analytes detected above NMED residential SSLs (USAF, 2003).

In 1996, Phase 2 RFI field activities were performed at SWMU 6-29, Manzano Landfill (LF-020) (USAF, 1997). Twenty (20) soil gas survey points were installed to a depth of 9 ft and were analyzed for VOCs; there were no VOCs detected in any of the survey points (USAF, 2003). Soil samples were collected from two hollow stem auger borings at 40 ft, 60 ft, 80 ft, and 100 ft, and were analyzed for VOCs, SVOCs, TAL metals, pesticides, herbicides, and PCBs.

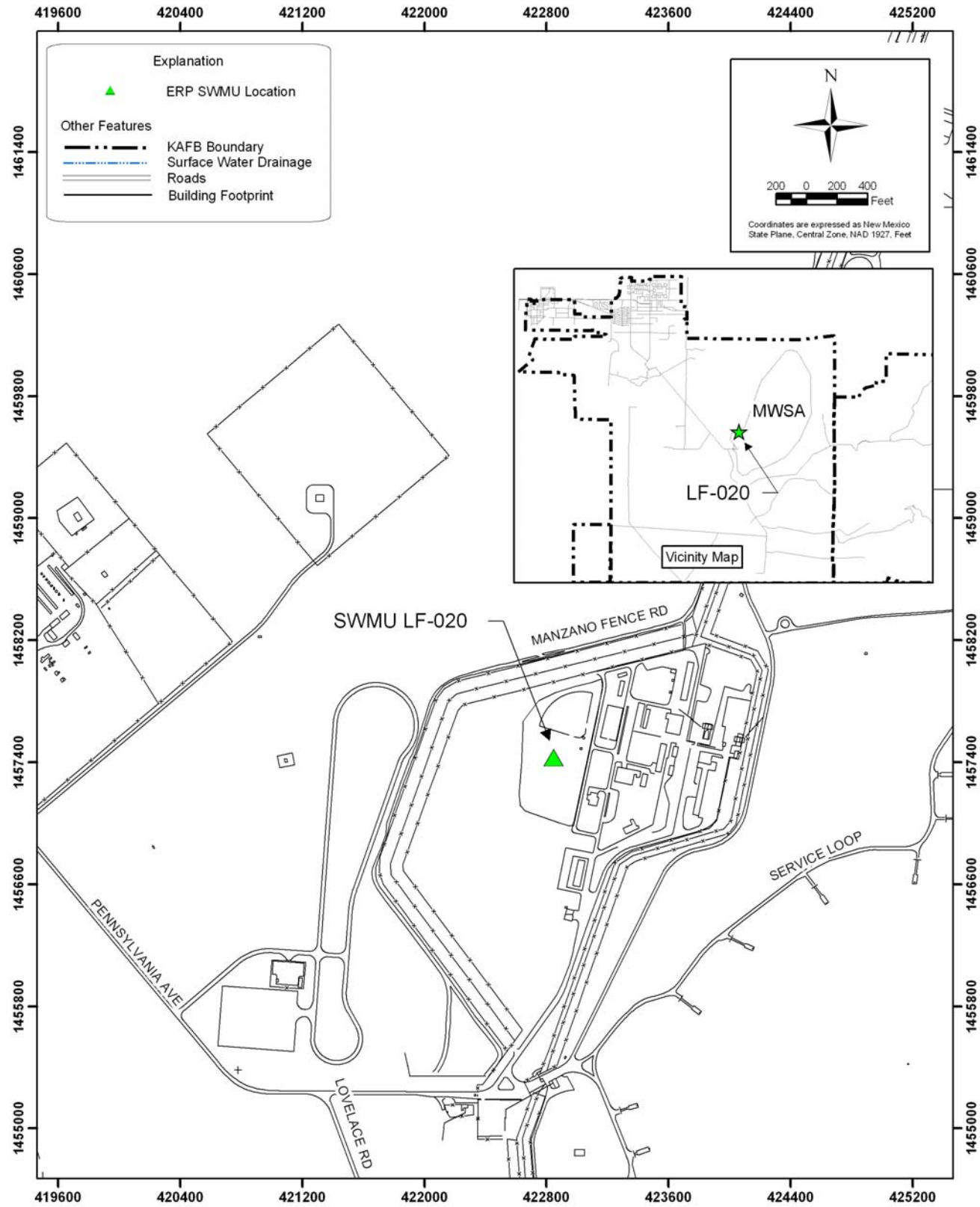

Figure 11. Solid Waste Management Unit 6-29, Manzano Landfill (LF-20)

VOCs, herbicides, pesticides, and polychlorinated biphenyls (PCBs) were not detected in these samples (USAF, 2003). Arsenic was detected in 6 samples above the NMED residential SSL of 3.9 mg/kg. Arsenic was found at concentrations of 4.7, 6.6, 5.5, 11.0, 6.6, and 9.5 mg/kg at depths of 40 to 100 ft bgs. Iron was detected in 5 samples above the NMED residential SSL of 23,500 mg/kg at concentrations of 26,000, 33,000, 32,000, 50,000, and 45,000 mg/kg at depths of 40, 60, and 100 ft bgs (USAF, 20031997).

In 1999, 12 soil samples were collected to depths of 10 ft at 4 locations, and were analyzed for VOCs, SVOCs, TAL metals, pesticides, herbicides, and PCBs as part of a corrective measures study (USAF, 2003). Some VOC and SVOC analytes were detected but did not exceed NMED residential SSLs (NMED, 2004a). There were 4 detections of arsenic above the NMED residential SSL of 3.9 mg/kg (NMED, 2004a) (4.0, 4.2, and 4.0 mg/kg in 3 surface samples, and 4.5 mg/kg at a 10 ft depth). All 4 of these detections were below the NMED approved background value for arsenic of 4.4 mg/kg (NMED, 1997). There were 2 detections of iron exceeding the NMED residential SSL of 23,500 mg/kg (24,300 and 26,700 mg/kg) (NMED, 2004a) in surface samples. Pesticide, herbicide, and PCB analytes were detected but were below NMED residential SSL (USAF, 2003).

In January 2002, a Phase 3 RFI was conducted at SWMU 6-29, Manzano Landfill (LF-020) (USAF, 2003). Fourteen test pits were excavated to a depth of 11 to 14 ft bgs and a length of 15 to 18 ft to investigate buried debris and possible soil contamination. Soil samples were collected at the surface (0-0.5 ft bgs) and from the bottom of each excavation, and were analyzed for VOCs, SVOCs, TAL metals, high explosives, gross alpha, gross beta, and gamma spectroscopy (USAF, 2003). Some VOC and SVOC analytes were detected but did not exceed NMED residential SSLs (NMED, 2004a). No explosives were detected in any of the soil samples collected. Of the 28 samples collected, two had detections of arsenic above the NMED residential SSL of 3.9 mg/kg (5.5 and 4.8 mg/kg) in surface samples; however, both were below the NMED-approved 5.6 mg/kg background value for arsenic (NMED, 1997). There were 15 detections of iron exceeding the NMED residential SSL of 23,500 mg/kg (NMED, 2004a), with the maximum value of 36,300 mg/kg detected in one of the surface samples. One radiological analyte, Cesium-137, was detected but below the NMED approved maximum background value of 0.908 picocuries per gram (KAFB, 2004). Other radiological analytes detected in soil samples include gross alpha, gross beta, bismuth-212, bismuth-214, actinium-228, potassium-40, thallium-208, thorium-234, lead-212, and lead-214. Although there are no NMED radiological screening levels, all of the detected radionuclides were less than radio-ecological screening values. It should be noted that these radionuclides are not anticipated to cause adverse ecological risk because they were detected at concentrations only slightly exceeding the laboratory detection limits.

A residential risk ratio calculation was conducted utilizing the January 2002 test pit confirmation sampling results (USAF, 2003). The summed ratios of maximum detected concentrations for carcinogenic constituents was 0.29 and for noncarcinogenic constituents was 0.52 – summed ratios less than 1.0 indicates that the soils are unlikely to result in adverse health effects or to contaminate ground water in the future. An ecological risk calculation showed minimal impacts to ecological receptors.

Basis for Determination

In a letter dated June 2, 2004, the NMED's Hazardous Waste Bureau (HWB) stated that SWMU 6-29, Manzano Landfill (LF-20) is suitable for a NFA petition (NMED, 2004b). This no further action (NFA) proposal is based upon NMED's NFA Criterion 3: no release to the environment has occurred or is likely to occur in the future from SWMU 6-29, Manzano Landfill (LF-020).

References

NMED, 2004a. Technical Background Document for Development of Soil Screening Levels, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program. February.

NMED, 2004b. Correspondence from William S. McDonald, KAFB Project Leader, Permits Management Program, Hazardous Waste Bureau, New Mexico Environment Department to Carl Lanz, Chief, Restoration Program, Environmental Management Branch, Kirtland Air Force Base, Re: Phase 3 RCRA Facility Investigation Report for Solid Waste Management Unit 6-29, Manzano Landfill (LF-20). Kirtland Air Force Base, ID# NMD9570024423, Task # HWB-KAFB-04-027. June 2, 2004.

NMED, 1997. *Approved Background Concentrations Sandia National Laboratories/Kirtland Air Force Base.* New Mexico Environment Department, Hazardous and Radioactive Materials Bureau, RCRA Permits Management Program, Santa Fe, New Mexico. September 24.

USAF, 2004. *Kirtland Air Force Base, Base-Wide Plans for the Installation Restoration Program*. U.S. Air Force, Kirtland Air Force Base, New Mexico. April.

USAF, 2003. *Phase 3 RCRA Facility Investigation Report for Solid Waste Management Unit (SWMU) 6-29, Manzano Landfill (LF-020),* Installation Restoration Program, Kirtland Air Force Base, New Mexico. May 30, 2003.

USAF, 2002. Supplemental Assessment of Multiple Landfills, Kirtland AFB, NM. December 20, 2002.

USAF, 1997. Phase 2 RFI Report for Multiple SWMUs, Kirtland AFB, NM. August 1, 1997.

USAF, 1993. RFI Report, Appendix I, Phase II, Stage 2A, Kirtland AFB, NM. December 1, 1993.

11. Solid Waste Management Unit ST-355 (10-21-OO), Building 48062 Septic Tank

Location and Current Land Use

Solid Waste Management Unit (SWMU) ST-355, Riding Stables Residence Septic Tank (Building 48062), is associated with the Kirtland Air Force Base (AFB) riding stables, located in a flat area just north of the intersection of Pennsylvania Street and the U.S. Department of Energy Area III/V Road, approximately 1 mile southeast of Tijeras Arroyo (Figure 12). The current land use is urban/industrial.

Projected Future Land Use

The projected future land use for SWMU ST-355 is urban/industrial; however, a residential scenario was used for risk-based screening assessments.

History

SWMU ST-355 is an active 1,400-gallon septic tank and leachfield, which accepts only sanitary waste from the residence of the stable manager (USAF, 2000).

Evaluation of Relevant Information

A site inspection verifying the location and existence of SWMU ST-355 was performed on January 19, 2000 (USAF, 2000). ST-355 is active; therefore, no excavation was performed. No assessment samples have been collected from ST-355, because available information indicates that only sanitary waste enters the system (USAF, 2000).

Basis for Determination

In a letter dated July 29, 2004, the New Mexico Environment Department's (NMED's) Hazardous Waste Bureau (HWB) stated that SWMU ST-355, Riding Stables Residence, is suitable for a no further action (NFA) petition (NMED, 2004). This NFA proposal is based upon NMED's NFA Criterion 2: the SWMU has never been used for the management (i.e., generation, treatment, storage, and/or disposal) of *Resource Conservation and Recovery Act* (RCRA) solid waste or hazardous wastes and/or constituents or other *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) hazardous substances.

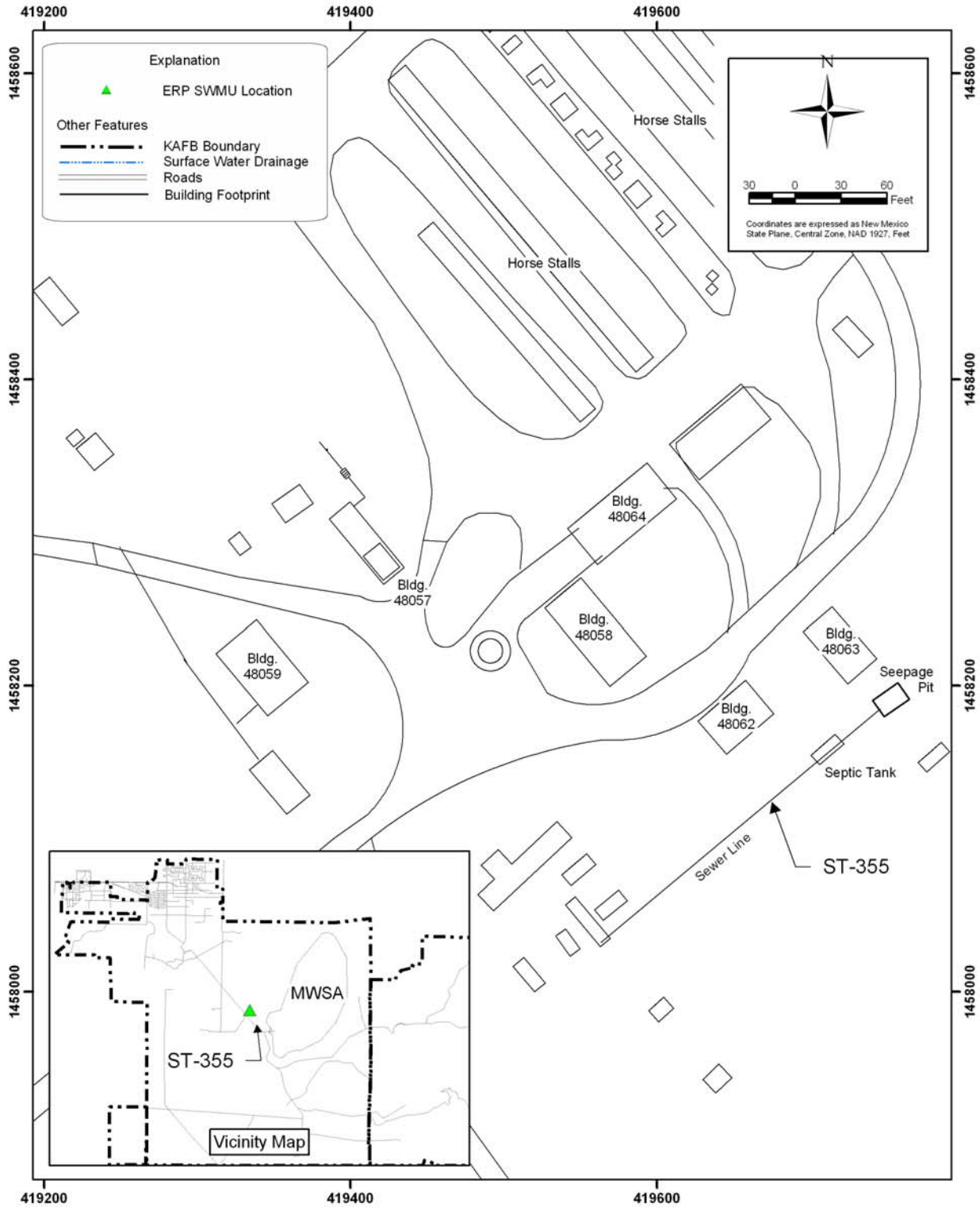

Figure 12. SWMU ST-355, Riding Stables Residence (Building 48062)

References

NMED, 2004. Correspondence from William S. McDonald, KAFB Project Leader, Permits Management Program, Hazardous Waste Bureau, New Mexico Environment Department to Carl Lanz, Chief, Restoration Program, Environmental Management Branch, Kirtland Air Force Base, Re: Request for Supplemental Information: Release Assessment Report for ST-353, ST-354, ST-355, ST-347, ST-356, ST-348, ST-349, ST-350, ST-351, ST-352, and SS-102, December 12, 2000, Kirtland Air Force Base, ID# NMD9570024423, Task # HWB-KAFB-04-007. July 29, 2004.

USAF, 2000. Final Release Assessment Report ST-353, ST-354, ST-355, ST-347, ST-356, ST-348, ST-349, ST-350, ST-351, ST-352, and SS-102, U.S. Air Force, Kirtland Air Force Base, New Mexico. December 12, 2000.

12. Solid Waste Management Unit ST-100, Coyote Springs Cesspool

Location and Current Land Use

Solid Waste Management Unit (SWMU) ST-100 is located near Coyote Springs Road in the eastern portion of Kirtland Air Force Base (AFB) (Figure 13). The general ST-100 area has been used for encampments for military training on base. The land use in and around ST-100 is urban/industrial.

Projected Future Land Use

The projected future land use for ST-100 is urban/industrial; however, a residential scenario was used for risk-based screening assessments.

History

Coyote Springs was spring originally used in the early 1900s as a source of drinking water for the City of Albuquerque. Following World War II in the 1950s, the area was developed as a picnic ground for base activities. A set of outhouses with an associated septic tank and leach field (ST-100) was installed at that time. The SWMU title incorrectly describes the site as a "cesspool"; the outhouses discharged to a septic tank and leach field, and not a cesspool.

Evaluation of Relevant Information

A site assessment was performed in August 2000 to determine if any chemicals of concern (COCs) existed at ST-100. The SA consisted of collecting surface and subsurface soil samples from five (5) hollow stem auger (HSA) boreholes. Due to the presence of bedrock, the maximum depth of the boreholes was 11 feet (ft) below ground surface (bgs). Soil samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH), metals, and nitrites and nitrates, chemicals that may have entered the septic tank.

None of the VOC or SVOC analytes detected exceeded the 2004 New Mexico Environment Department (NMED) residential soil screening levels (SSLs) (NMED, 2004a). One surface soil sample had a diesel-range organic (DRO) concentration of 453 milligrams per kilogram (mg/kg). This level is below the updated NMED TPH-DRO residential action level of 880 mg/kg (NMED, 2003). Nitrates were not detected in any of the soil samples collected from ST-100. Arsenic, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, nickel, and zinc were detected in some samples at concentrations exceeding the NMED approved background concentrations (NMED, 1997). However, only arsenic and lead exceeded the NMED SSLs (NMED, 2004a).

Arsenic has a residential SSL of 3.9 mg/kg and an approved background concentration of 9.8 mg/kg (NMED, 1997). Arsenic, exceeding the approved background concentrations, was found in seven samples (including the field duplicate) ranging from 9.9 mg/kg to 600 mg/kg.

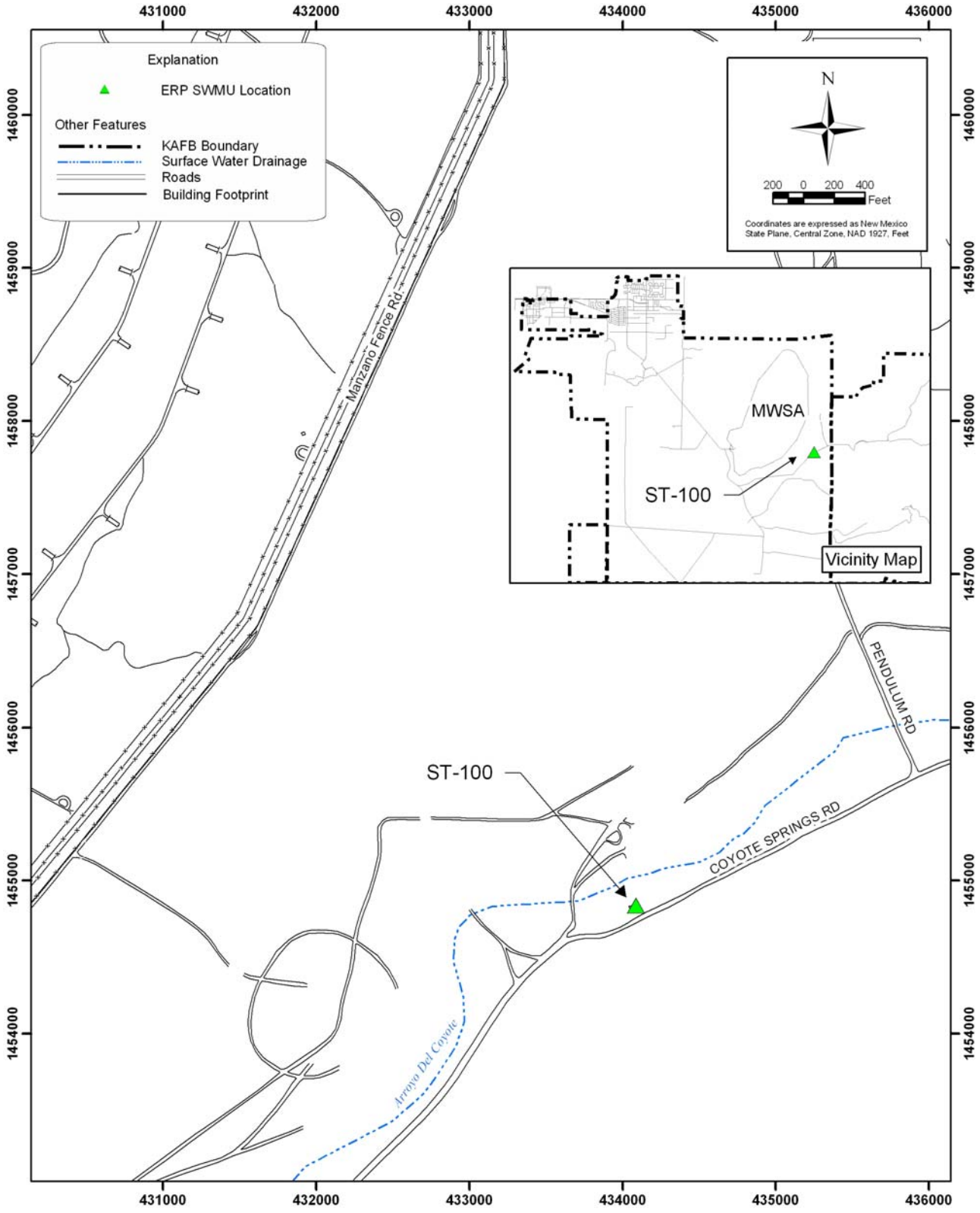

Figure 13. Solid Waste Management Unit ST-100, Coyote Springs Cesspool

Lead was detected in one surface soil sample at a concentration of 1,170 mg/kg. This concentration in exceeded the residential SSL of 400 mg/kg. The lead concentration from the 5- to 6-ft bgs interval of this boring had only 5.5-mg/kg lead, indicating that elevated lead concentrations are confined to the surface soil in this location. This isolated lead concentration is likely due to corrosion of a nail or bolt used in the construction of the outhouse. None of the other soil samples exceeded the SSLs for lead and therefore, ST-100 is not believed to pose an unacceptable risk to human heath for lead.

At the request of NMED, additional soil samples and a water sample from the site spring were collected from the ST-100 site. Three soil samples were collected around sample location SB-02 to define the horizontal extent of the TPH detected in the surface soil sample from SB-02. Because SVOC analytes were detected in surface-soil sample SB-04, three samples were collected from around SB-04 to determine if any soils exceeded the SSLs for SVOCs. None of the soil analytical results exceeded the NMED SSLs for VOCs or SVOCs, TPH, nitrates or metals. None of the results for the spring water sample exceeded the EPA maximum contaminant levels (MCLs).

Basis for Determination

In a letter dated April 12, 2004, the NMED's Hazardous Waste Bureau (HWB) stated that AOC ST-100, Coyote Springs Cesspool is suitable for a no further action (NFA) petition (NMED, 2004b). This NFA proposal is based on ST-100 having been a domestic septic system. This NFA proposal is based upon NMED's NFA Criterion 2: the SWMU has never been used for the management (i.e., generation, treatment, storage, and/or disposal) of *Resource Conservation and Recovery Act* (RCRA) solid waste or hazardous wastes and/or constituents or other *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) hazardous substances.

References

NMED, 1997. *Approved Background Concentrations Sandia National Laboratories/Kirtland Air Force Base.* New Mexico Environment Department, Hazardous and Radioactive Materials Bureau, RCRA Permits Management Program, Santa Fe, New Mexico. September 24

NMED, 2003. New Mexico Environment Department TPH Screening Guidelines. New Mexico Environment Department, Santa Fe, New Mexico. June 24.

NMED, 2004a. Technical Background Document for Development of Soil Screening Levels, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program. February.

NMED, 2004b. Correspondence from William S. McDonald, KAFB Project Leader, Permits Management Program, Hazardous Waste Bureau, New Mexico Environment Department to Carl Lanz, Chief, Restoration Program, Environmental Management Branch, Kirtland Air Force Base, Re: Request for Supplemental Information: Site Assessment Report, Areas of Concern ST-100, Coyote Springs Cesspool and DP-101, Old EOD Disposal Pit, January 29, 2001, Kirtland Air Force Base, ID# NMD9570024423, Task # HWB-KAFB-00-010. April 12, 2004.

USAF, 2001. *Site Assessment Report Areas of Concern ST-100, Coyote Springs Cesspool and DP-101, Old EOD Disposal Pit*, U.S. Air Force, Installation Restoration Program, Kirtland Air Force Base, New Mexico. January 30, 2001.

13. Solid Waste Management Unit ST-341, Building 1033, Condensate Holding Tank

Location and Current Land Use

Solid Waste Management Unit (SWMU) ST-341 consists of a former condensate holding tank/Underground Storage Tank (UST), a former unlined evaporation pond, and an abandoned buried 240-ft steel overflow pipe, which extended from the UST to the overflow pond. SWMU ST-341 is located near Building 1033 in the fuel management section of the New Mexico Air National Guard complex, in the western portion of Kirtland Air Force Base (AFB). The land use in this area is industrial.

Projected Future Land Use

The projected future land use for SWMU ST-341 is industrial; however, a residential scenario was used for risk-based screening assessments. There are no proposed land use changes for the site.

History

The condensate tank was used to collect a fuel/water mixture from water condensers that were part of the fuel pumping systems within Building 1033. The buried steel overflow pipe extended about 240 ft from the southwest of the UST to an unlined evaporation pond, and was used to transport the mixture to the pond. In July 1996, the 250-gallon condensate holding tank was removed and replaced with a self-contained, 300-gallon, vaulted UST. The overflow line was disconnected from the condensate collection system during the tank removal and was abandoned in place during tank replacement activities (USAF, 1997). The new UST is not considered part of SWMU ST-341 and is managed under the Kirtland AFB Environmental Compliance Program (ECP). Berms around the evaporation pond were removed in 1999.

Evaluation of Relevant Information

SWMU ST-341 was investigated under the Phase 1 and Phase 2 Appendix III *Resource Conservation and Recovery Act* (RCRA) Facility Investigations (RFIs) (USAF, 1995 and 1997). The objective of the Phase 1 Appendix III RFI (USAF, 1995) was to perform limited soil sampling in the vicinity of the condensate holding tank, the evaporation pond, and a background location. Sampling was performed for the purpose of establishing whether or not a release had occurred from the tank. Thirty samples collected from 6 boreholes were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and total petroleum hydrocarbons (TPH -- diesel-range organic [DRO] plus gasoline-range organics [GRO]).

Xylene was detected in one sample above its New Mexico Environment Department (NMED) soil screening levels (SSL) of 80 mg/kg at 150 mg/kg (NMED, 2004a) during the Phase I Appendix III RFI. One SVOC, benzo(a)pyrene, was detected in two samples above the NMED SSL of 0.621 mg/kg at 1.8 mg/kg and 0.85 mg/kg. TPH-DRO concentrations exceeded the

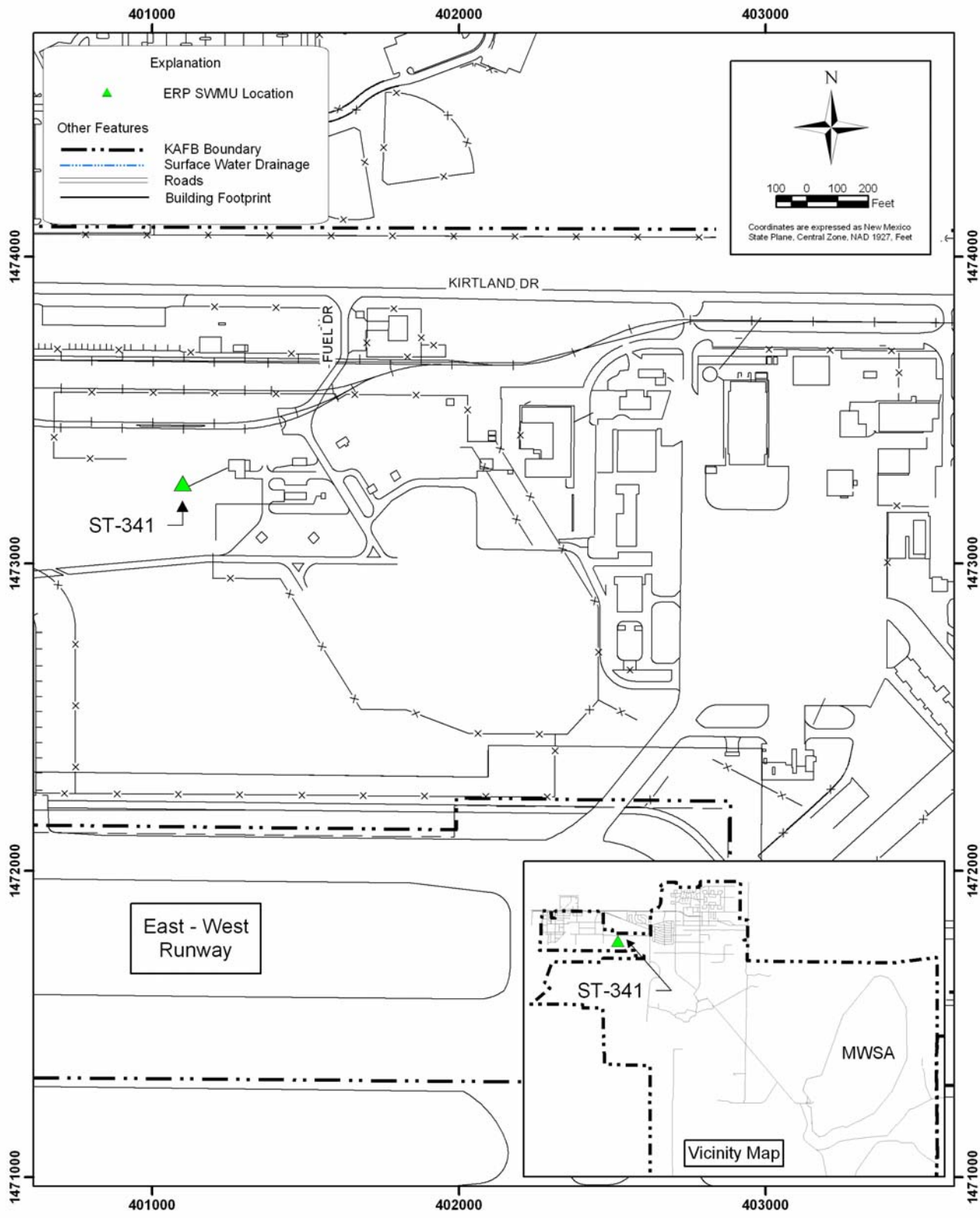

Figure 14. Solid Waste Management Unit ST-341, Condensate Holding Tank

NMED TPH residential SSL of 2,500 mg/kg (NMED, 2003) for two soil samples: the 2 to 4 feet (ft) below ground surface (bgs) interval (3,700 mg/kg) and the 5- to 7-ft bgs interval (10,000 mg/kg).

TPH GRO concentrations detected in seven of thirty samples exceeded the NMED residential SSL of 2,500 mg/kg for TPH-contaminated soil. TPH-GRO concentrations in these samples ranged from 2,700 mg/kg to 360,000 mg/kg. The Phase 1 Appendix III RFI identified a release of petroleum hydrocarbon compounds in the immediate vicinity of the condensate tank and the evaporation pond (USAF, 1995).

The objective of the Phase 2 Appendix III RFI (USAF, 1997) was to define the lateral and vertical extent of petroleum hydrocarbon compounds identified in soil during the Phase 1 Appendix III RFI. Seventy-five soil samples collected from 8 Geoprobe and 8 hollow stem auger (HSA) borings were analyzed for VOCs, SVOCs, and TPH compounds. Analytical results indicated that all but two VOC analytes were found in concentrations below the 2004 NMED SSLs. In two soil samples, 1,1,2,2-tetrachloroethane was found at 6.2 mg/kg and 5.6 mg/kg, above the NMED SSL of 5.2 mg/kg. Xylene compounds (reported as total xylene) were detected in two samples above the NMED residential SSL of 132 mg/kg at 200 mg/kg and 310 mg/kg. No SVOCs were detected above the 2004 NMED SSLs. All TPH-DRO concentrations were below the NMED TPH residential SSL of 2,500 mg/kg for TPH-contaminated soil. TPH-GRO concentrations detected in five soil samples exceeded the NMED TPH residential SSL of 2,500 mg/kg, ranging from 4,100 mg/kg to 12,000 mg/kg.

A bio-venting feasibility site characterization study (USAF, 1998) was conducted in October 1997 to determine the applicability of in situ biological remediation as a possible final corrective measure for this site. Bioventing is an enhanced soil venting process that stimulates naturally occurring soil microbes to degrade organic chemicals through the introduction of air. Five boreholes were installed at the evaporation pond using a HSA rig. Soil boring locations were selected to define the geometry of the plume and to assess the best configuration for installing a remediation system. Samples collected during the biological remediation characterization study were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX); TPH-DROs; and TPH-GROs. None of the BTEX compounds were detected at concentrations above the 2004 NMED SSLs. One soil sample had concentrations of TPH-DRO that exceeded the NMED TPH residential screening level of 2,500 mg/kg at 6,300 mg/kg, and four soil samples had concentrations of TPH-GRO that exceeded the NMED TPH residential screening level of 2,500 mg/kg, ranging from 6,800 mg/kg to 13,000 mg/kg.

A soil gas survey was performed to evaluate the extent of hydrocarbon vapor and to establish ambient concentrations of naturally occurring soil gases. Soil gas survey results indicated that concentrations of TPH in soil gas were highest near the center of the evaporation pond and generally increased with depth to approximately 60 ft bgs. The results of the bio-venting feasibility site characterization study indicated that bio-venting would be a feasible remedial technology, and it was selected as the remedy for the evaporation pond area (USAF, 1998). An air injection system was installed at the evaporation pond in 1998 as part of the interim corrective measures (ICM). A water infiltration system was added in February 2000 as a means

to increase soil moisture and deliver nutrient solutions to enhance chemical degradation rates. The objectives of the ICM design implementation were to determine the optimum conditions to enhance organic chemical degradation in the evaporation pond soil and to use the findings to develop a final remedial action for the condensate holding tank area of the site (USAF, 1999a).

Water and nutrients were periodically added to enhance the chemical degradation rate (USAF, 2002b). During the ICM (USAF, 2002a), the northwestern and southeastern extent of the petroleum hydrocarbon plume was characterized to determine the applicability of a chemical oxidation treatment for hydrocarbon-contaminated soils to reduce TPH levels below the regulatory screening level of 5,000 mg/kg at depths deeper than 10' bgs.

During the ICM, the extent of petroleum hydrocarbons near the condensate holding tank was found to be limited to a depth of about 40 ft bgs and a radius of approximately 15 ft. Chemical oxidation using the BIOX® process, a proprietary chemical oxidation treatment that uses metallic peroxides to oxidize contaminants, was performed in November 2000. NMED approval was obtained for discharge of the chemical oxidation reagents prior to treatment (USAF, 2004). The results of the ICM provided sufficient data to determine that chemical oxidation is a viable final treatment for the condensate holding tank area of the site. The TPH concentrations in all post-treatment samples were below the 5,000 mg/kg TPH regulatory screening level.

A Phase 3 post-ICM RFI sampling event was conducted to evaluate the effectiveness of the ICM in remediating petroleum hydrocarbon-contaminated soil at the evaporation pond and condensate holding tank locations (USAF, 2002c). Soil samples were collected from nine boreholes, using direct push technology (DPT) sampling methods, and analyzed for petroleum hydrocarbons. All VOCs concentrations were less than the 2004 NMED residential SSLs. One SVOC constituent, benzo(a)pyrene, was detected above the 0.621 mg/kg NMED residential SSL from the 9 ft to 10 ft bgs interval at a concentration of 0.7 mg/kg. No other SVOCs were detected at concentrations above the NMED residential SSLs. No TPH-DRO concentrations exceeded NMED residential SSLs. Only one TPH-GRO concentration, detected at 5,700 mg/kg in a sample from the 9- to 10-ft-bgs interval, exceeded the NMED residential SSL of 2,500 mg/kg.

Human health and ecological risk assessments showed no unacceptable risk to human health or the environment following completion of ICM activities. The calculated Hazard Index was 0.006 (far less than 1.0) and the cancer risk was 4E-06, indicating that the soils are unlikely to result in adverse health effects. An ecological risk calculation showed minimal impacts to ecological receptors. SESOIL modeling performed to evaluate potential groundwater contamination did not indicate future threats to groundwater quality from the remaining contamination. Groundwater and surface water assessments showed no future risks for cross-media transport (UDAF, 2004).

Basis for Determination

In a letter dated July 8, 2004, the NMED's Hazardous Waste Bureau (HWB) stated that SWMU ST-341, Building 1033, Condensate Holding Tank, is suitable for a no further action (NFA) petition (NMED, 2004b). This NFA proposal is based upon NMED's NFA Criterion 5: ST-341 has been characterized and remediated in accordance with applicable state or federal regulations

and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

References

EPA, 1995. *Manual for Bioventing Principles and Practice, Volumes I & II*. U.S. Environmental Protection Agency, Region 6, Cincinnati, Ohio. September.

NMED, 2000. Technical Background Document for Development of Soil Screening Levels. New Mexico Environment Department, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program, Santa Fe, New Mexico. December 18.

NMED, 2003. New Mexico Environment Department TPH Screening Guidelines. New Mexico Environment Department, Santa Fe, New Mexico. June 24.

NMED, 2004a. Technical Background Document for Development of Soil Screening Levels, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program.

NMED, 2004b. Correspondence from William S. McDonald, KAFB Project Leader, Permits Management Program, Hazardous Waste Bureau, New Mexico Environment Department to Carl Lanz, Chief, Restoration Program, Environmental Management Branch, Kirtland Air Force Base, Re: Phase 3 RCRA Facility Investigation Report for Solid Waste Management Unit ST-341, Condensate Holding Tank and Evaporation Pond, Building 1033. May 2004. Kirtland Air Force Base, ID# NMD9570024423, Task # HWB-KAFB-04-029. July 8, 2004.

USAF, 1995. *Phase I RCRA Facility Investigation Report, Appendix III, Non-Wasteline Sites, Draft Final*. U.S. Air Force, Kirtland Air Force Base, New Mexico. October 23, 1995.

USAF, 1997. *RCRA Facility Investigation Report for Appendix III Phase 2 (HNUS), Draft Final*. U.S. Air Force, Kirtland Air Force Base, New Mexico. July 1, 1997.

USAF, 1998. *Bioventing Feasibility Site Characterization Report for SWMU ST-341, Condensate Holding Tank and Evaporation Pond (ST-341).* U.S. Air Force, Kirtland Air Force Base, New Mexico. March 1, 1998.

USAF, 1999a. *Interim Corrective Measures Design for Corrective Action Unit SWMU ST-341, Condensate Holding Tank and Evaporation Pond (ST-341).* U.S. Air Force, Kirtland Air Force Base, Albuquerque, New Mexico. March 1, 1999.

USAF, 1999b. *Environmental Monitoring Plan for Corrective Action Unit SWMU ST-341, Condensate Holding Tank and Evaporation Pond (ST-341*). U.S. Air Force, Kirtland Air Force Base, Albuquerque, New Mexico. November 1, 1999.

USAF, 2002a. *Interim Corrective Measure Report for Corrective Action Unit ST-341, Condensate Holding Tank and Evaporation Pond, Building 1033 (ST-341).* Kirtland Air Force Base, New Mexico. January 1, 2002.

USAF, 2002b. *Annual Report for Environmental Monitoring at Corrective Action Unit ST-341, Condensate Holding Tank and Evaporation Pond (ST-341).* U.S. Air Force, Kirtland Air Force Base, New Mexico. April 1, 2002.

USAF, 2002c. *Resource Conservation and Recovery Act Facility Investigation Phase 3 Sampling and Analysis Plan for Corrective Action Unit ST-341, Condensate Holding Tank and Evaporation Pond, Building 1033 (ST-341).* U.S. Air Force, Kirtland Air Force Base, New Mexico. August 21, 2002.

USAF, 2004. *Phase 3 Resource Conservation and Recovery Act Facility Investigation Report for Solid Waste Management Unit ST-341, Condensate Holding Tank and Evaporation Pond, Building 1033 (ST-341),* U.S. Air Force, Installation Restoration Program, Kirtland Air Force Base, New Mexico. May 1, 2004.

14. Solid Waste Management Unit RW-075, South Tijeras Radiation Trench

Location and Current Land Use

The South Tijeras Radiation Trench, RW-075 is an approximately 5.1-acre area that lies in the central part of Kirtland Air Force Base (AFB), east of Pennsylvania Avenue, south of the Tijeras Arroyo, and west of the Kirtland AFB golf course (Figure 15). The current land use is urban.

Projected Future Land Use

The projected future land use for RW-075 is urban/industrial; however, a residential scenario was used for risk-based screening assessments.

History

Radioactive material was suspected of being buried at RW-075. RW-075 is adjacent to Sandia National Laboratories/New Mexico (SNL/NM) Environmental Restoration (ER) Site 23. RW-075 and ER Site 23 share a similar history of hearsay interviews, land surface disturbances, and old nearby "radioactive" placards. The SNL/NM ER Site 23 was first listed as a potential release site in 1985. Interviews indicated that radioactive sources from training exercises may have been left in the ground or later removed. The suspected sources were thought to contain thorium and were buried in one of three trenches (SNL/NM, 1995). In 1995, SNL/NM ER Site 23 was the subject of a no further action (NFA) petition filed by SNL/NM with the EPA based upon results of a SNL/NM site investigation (SNL/NM, 1995). SNL/NM ER Site 23 was granted NFA status by New Mexico Environment Department (NMED).

Potential contaminants of concern are radiation (primarily gamma) and metals from a possible buried sealed source, the source itself, and possible contamination of the subsurface soil with radioactive metals from within the source in the event it was breached.

Evaluation of Relevant Information

During August and September 1996, field activities were conducted at RW-075 to locate and characterize potential buried radioactive material (USAF, 1997). In addition to radionuclides, this material may have contained *Resource Conservation and Recovery Act* (RCRA) metals. Non-intrusive surface radiation and geophysical surveys were performed to provide coverage of the entire RW-075 area of concern. The gamma-radiation survey did not locate any areas of elevated radiation when compared to background levels. However, the geophysical surveys did identify 10 anomalies, eight of which may have been related to buried waste. These eight anomalies were investigated further by excavating test pits and collecting subsurface soil samples. The two remaining anomalies were interpreted as natural geologic variations, and therefore were not evaluated further.

In addition to the eight geophysical anomalies, four other locations were recommended for excavation based on the identification of undocumented land surface disturbance features. In

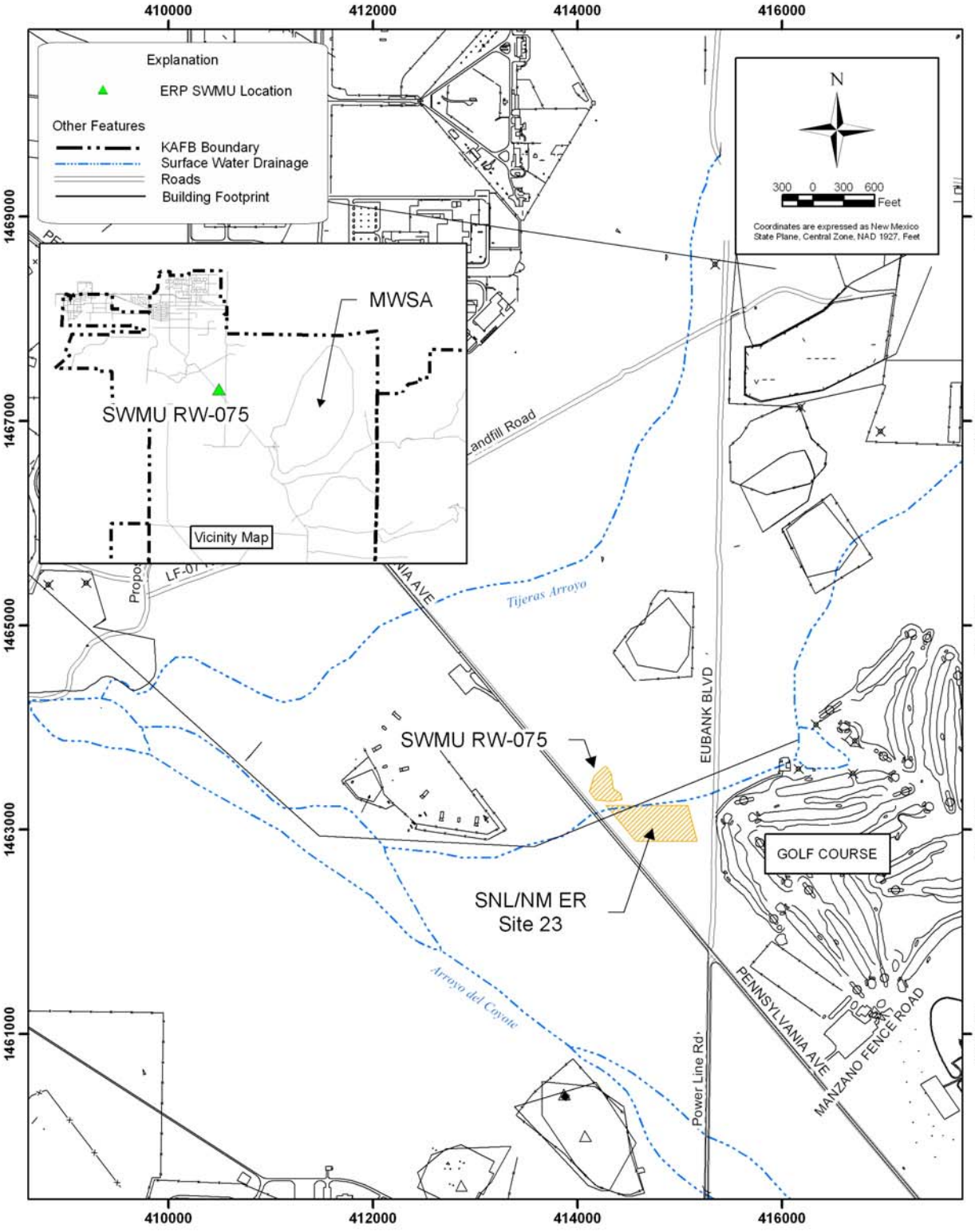

Figure 15. Solid Waste Management Unit RW-075, South Tijeras Radiation Trench

total, 12 test pits were excavated, typically to a depth of 8 to 12 feet (ft), using a backhoe. In all but one test pit, the results of the excavation indicated that the geophysical anomalies were due to natural variations in geology. This was determined from visual classification of the soil stratigraphy that indicated the soil profile was undisturbed. At Test Pit 5, a rusted metal conduit, most likely waste from the installation of a communications cable, was unearthed at approximately 0.5 ft below ground surface (bgs). One and one-half (1.5) feet of fill material composed of natural soil and a communications cable was located beneath the conduit. No buried waste was found in the excavations of the undocumented land surface features.

Subsurface soil samples were collected from 10 of the 12 test pits and were analyzed for RCRA metals and gamma-emitting radionuclides. Samples were only collected from the middle depth interval of the test pits since no recognizable contamination was observed at other intervals. Results of the soil sample analyses indicate that metals and radionuclides were present only at background levels. All RCRA metals concentrations, with the exception of one arsenic detection (7.1 mg/kg), were reported below the NMED SSLs (NMED, 2004a). All gamma-emitting radionuclides detected in soil samples were determined to be naturally occurring, with the exception of the detection of cesium-137 in the Test Pit 5 soil sample and cerium-144 at Test Pit 7. It was concluded that the detections of these two radionuclides were false positive detections; that the site history does not provide a known source for the presence of these radionuclides reinforces this conclusion.

The naturally occurring radionuclides detected in soil samples were Potassium-40 and the parent and daughter isotopes of the thorium-232, uranium-235, and uranium-238 decay series. Potassium-40 activities in site soil were within the background range (6.0-30.0 picocuries per gram [pCi/g]) established for SNL/NM (SNL/NM, 1996 and SNL/NM, 1994). Activities of radium-226, radium-228, lead-212, and lead-214 were within or slightly exceeded background activity ranges. No detections were at activity levels indicative of radiological contamination. Two detections of thorium-231 and one detection of uranium-238 were noted in the gamma spectroscopic data for site soil. The presence of these radionuclides was within the established background range for subsurface soil at Kirtland AFB and SNL/NM (SNL/NM, 1996 and SNL/NM, 1994).

Basis for Determination

In a letter dated August 4, 2004, the NMED's Hazardous Waste Bureau (HWB) stated that SWMU RW-075, South Tijeras Radiation Trench, is suitable for a no further action (NFA) petition (NMED, 2004b). This NFA proposal is based upon NMED’s NFA Criterion 5: the SWMU has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

References

NMED, 2004a. Technical Background Document for Development of Soil Screening Levels, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program.

NMED, 2004b. Correspondence from William S. McDonald, KAFB Project Leader, Permits Management Program, Hazardous Waste Bureau, New Mexico Environment Department to Carl Lanz, Chief, Restoration Program, Environmental Management Branch, Kirtland Air Force Base, Re: Response to Request for Supplemental Information for the Site Investigation at the South Tijeras Trench, RW-75, ID# NMD9570024423, Task # HWB-KAFB-04-008. August 4, 2004.

Sandia National Laboratories/New Mexico (SNL/NM), 1996. *Background Concentrations of Constituents of Concern to the Sandia National Laboratories/New Mexico Environmental Restoration Project and the Kirtland Air Force Base Installation Restoration Program*, Sandia National Laboratories/New Mexico, Environmental Restoration Department, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), 1995. *Proposal for No Further Action, Site 23, Disposal Trenches, Operable Unit 1309*, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), 1994. *Draft Background Concentrations of Constituents of Concern to the Sandia National Laboratories New Mexico Environmental Restoration Project, Phase H: Interim Report*, Sandia National Laboratories/New Mexico, Environmental Restoration Department, Albuquerque, New Mexico.

USAF, 1997. Site Investigation at the South Tijeras Trench, Kirtland AFB, NM. January 17, 1997

15. Solid Waste Management Unit OT-10, Radiation Sites TS5, TS6, and TS7

Location and Current Land Use

Solid Waste Management Unit (SWMU) OT-10, Radiation Training Sites (TS) TS5, TS6, and TS7, is located in the north-central part of Kirtland Air Force Base (AFB) (Figure 16). The current land use is urban/industrial.

Projected Future Land Use

The projected future land use for OT-10 is urban/industrial; however, a residential scenario was used for risk-based screening assessments.

History

In November 1961, eight radiation training sites were established at Kirtland AFB. The sites are owned by the United States government and are regulated by the Nuclear Regulatory Commission (NRC) under USAF Master Materials License No. 42-23539-01AF. Known quantities of thorium oxide sludge were applied and tilled into site soils to simulate dispersed plutonium. From 1961 to 1990, the sites were used to train U.S. Department of Defense (DoD), U.S. Department of Energy (DOE), Federal Emergency Management Agency (FEMA), and other federal and state personnel to detect dispersed contamination resulting from nuclear weapons accidents (USAF, 2002). Training activities were discontinued at TS5 through TS8 in 1990. Large pieces of military equipment, such as fuselages, vehicles, parts, and other debris, present at TS5 through TS8 were removed and redistributed at sites TS1 through TS4, which remain active (USAF, 2002). The primary contaminants of concern for these sites were thorium and its decay progeny.

Evaluation of Relevant Information

During a 1997 in-depth field investigation at OT-10 sites TS5 – TS8, soil samples were collected and analyzed for total petroleum hydrocarbon (TPH), semi-volatile organic compounds (SVOCs), total metals and mercury. None of the samples showed TPH contamination nor SVOCs above reporting limits. The few metals that were detected above reporting limits were within the range of known background concentrations. Therefore, there is no indication of chemical releases at these sites; they are solely a radionuclear hazard (USAF, 1999).

In October 2000 and January, April and May 2001, radiological characterization surveys of the land areas at the four training sites, a reference land area, the two storage bunkers at TS8, and a reference bunker were conducted to address data gaps (USAF, 2002a). The land area surveys were comprised of scanning surveys, static gamma radiation measurements, and soil sampling and analysis. The bunker surveys were comprised of scanning, static measurements, and sampling. These radiological surveys were used to determine the following.

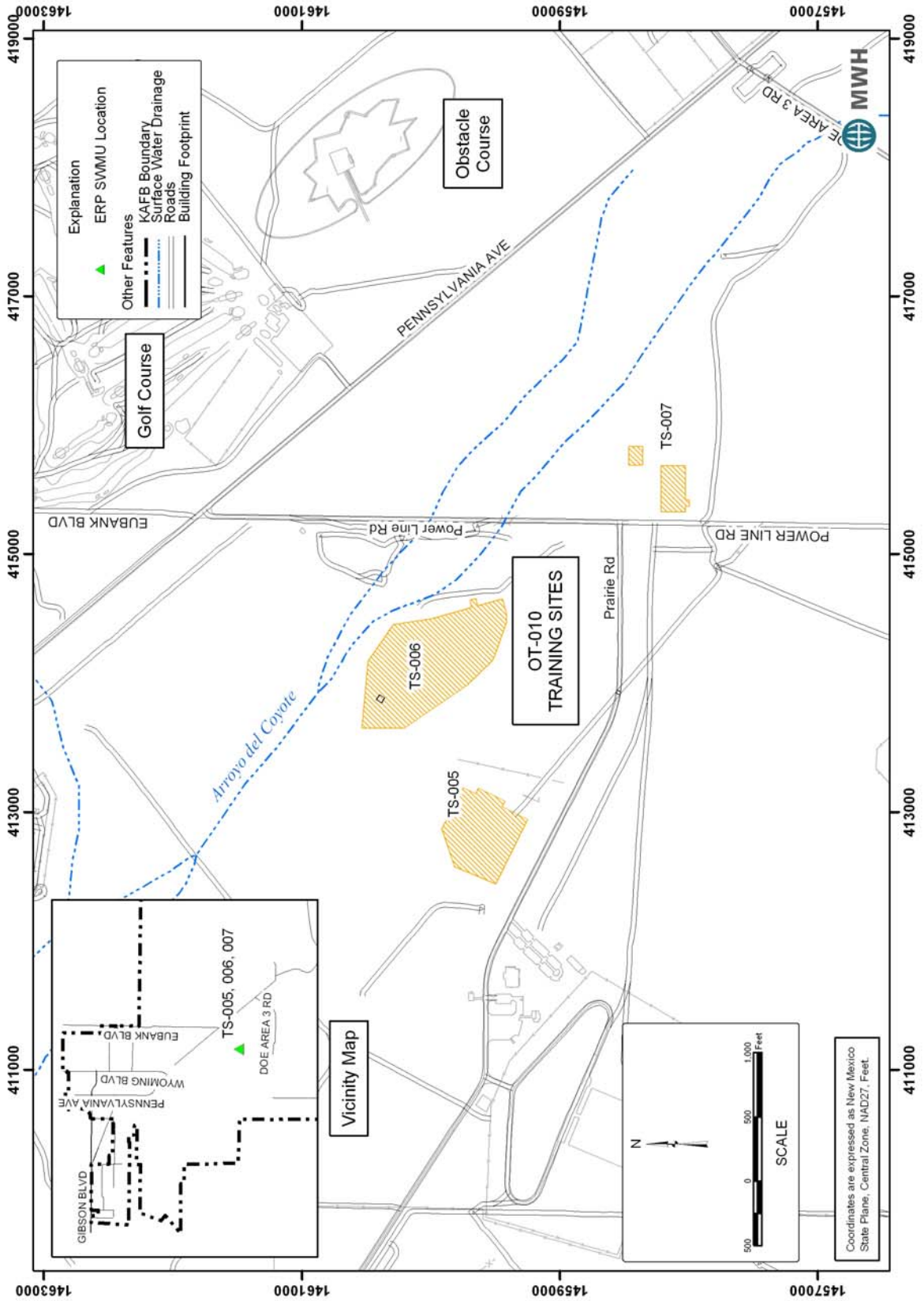

Figure 16. Solid Waste Management Unit OT-10 Radiation Sites, TS5, TS6, and TS7

1. Changes in surface conditions (induced by wind and water erosion) since the last radiological surveys conducted in 1997.

2. The vertical extent of contamination in land areas with low to moderate activity.

3. The nature and extent of contamination on the interior surfaces of the storage bunkers at TS8.

4. The location of contamination in relation to fixed reference points, such as fences.

Site cleanup activities were performed in accordance with a NRC-approved *Decommissioning Plan* (USAF, 2002b). Decommissioning activities include excavating and packaging contaminated vegetation, debris, and soil and transporting the waste by truck and rail to a NRC-licensed disposal facility.

During the decommissioning process, several areas were excavated to depths greater than two (2) ft bgs. Deeper excavation occurred at three areas within TS5 and three areas within TS6. The maximum depth of excavation was approximately 10 ft bgs (USAF, 2004a). Final-status radiation surveys were conducted from September to November 2003 (USAF, 2004b). Gamma radiation scanning survey data was collected over 100 percent of the *Multi-Agency Radiation Survey and Site Investigation Manual* (MARSSIM) Class 1 and Class 2 land areas, using an estimated 3-ft transect spacing. Class 1 areas are affected areas that, prior to remediation, are expected to have concentrations of residual radioactivity that exceed the derived-concentration guideline level (DCGL). Class 2 areas are affected areas that, prior to remediation, are not likely to have concentrations of residual radioactivity that exceed the DCGL. Data were collected using sodium iodide detectors coupled to ratemeter/scaler set in ratemeter mode. Where site terrain permitted, measurements were collected using a pushcart with two detectors fixed to opposite sides of the pushcart, at 18 inches above ground surface. In areas of difficult site access, a health physics technician walked the survey transect holding the detector at 18 inches above ground surface.

During scanning, measurements were automatically collected every two seconds and tagged with location coordinates as the count rates were recorded, using a differential correction global-positioning system (GPS) with sub-meter accuracy. Residual soil samples were collected following remediation activities. As required and approved by the NRC, these samples were analyzed for radionuclides using gamma spectroscopy (EPA 901.1 modified). Site conditions at TS5, TS6, and TS7 meet the radiological criteria for unrestricted use and NRC license termination. During the decommissioning, TS8 was transferred to the Defense Threat Reduction Agency for use as a training facility, and thus, is not being proposed for NFA petition.

Basis for Determination

In a letter dated August 6, 2004, the NMED's Hazardous Waste Bureau (HWB) stated that SWMU OT-10, Radiation Sites TS5, TS6, and TS7, is suitable for a no further action (NFA) petition (NMED, 2004). This NFA proposal is based upon NMED’s NFA Criterion 5: the SWMU has been characterized or remediated in accordance with current applicable state or

federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

References

NMED, 2004. Correspondence from William S. McDonald, KAFB Project Leader, Permits Management Program, Hazardous Waste Bureau, New Mexico Environment Department to Carl Lanz, Chief, Restoration Program, Environmental Management Branch, Kirtland Air Force Base, Re: Response to Request for Supplemental Information for the In-Depth Field Investigation Report (November 1999), Decommissioning Plan Revision 1 (August 2001), and Characterization Survey Report (July 2002) for Installation Restoration Program Site OT-10, Defense Nuclear Weapons School Training Sites TS5-TS8, Kirtland Air Force Base, ID# NMD9570024423, Task # HWB-KAFB-04-004, KAFB-04-025, KAFB-04-026. August 6, 2004.

USAF, 2004a. Response to Request for Supplemental Information from the New Mexico Environment Department, 21 May 2004, for the Installation Restoration Program Site OT-10, Defense Nuclear Weapons School Training Sites TS5 - TS8, U.S. Air Force, Kirtland Air Force Base, New Mexico. June.

USAF, 2004b. *Final Status Survey Report for Installation Restoration Program Site OT-10, Radiation Training Sites*, U.S. Air Force, Kirtland Air Force Base, New Mexico. September.

USAF, 2002a. *Characterization Survey Report for Installation Restoration Program Site OT-10, Radiation Training Sites TS5, TS6, TS7, and TS8*, Kirtland Air Force Base, New Mexico. July 1, 2002.

USAF, 2002b. *Decommissioning Plan for Installation Restoration Program Site OT-10, Radiation Training Sites*, U.S. Air Force, Kirtland Air Force Base, New Mexico. August 1, 2002.

USAF, 1999. *In-Depth Field Investigation Report for IRP Site OT-10, Sites TS5 – TS8*, Kirtland AFB, NM. November 30, 1999.

16. Solid Waste Management Unit 8-13, ST-071: Building 1000/1001 Oil/Water Separator (Formerly ST-221)

Location and Current Land Use

Solid Waste Management Unit (SWMU) 8-13, ST-071 Oil Water Separator (OWS) is located between Hangars 1001 and 1002 on the flightline in the northwest portion of Kirtland Air Force Base (AFB) (Figure 17). The site is completely paved and due to its flightline location, there is restricted access to the site. The current land use is industrial.

Projected Future Land Use

The projected future land use for ST-071 is industrial; however, a residential scenario was used for risk-based screening assessments.

History

Hangars 1001 and 1002 and a wash rack were built in the 1950s, and were used for B-36 and B-52 aircraft research and development for nuclear testing programs. Wash water flowed from the drains in the wash rack to the OWS where sediment was trapped and grease separated from wash water. The OWS discharge was connected to the storm sewer.

Sometime between May 1992 and August 1994, the OWS was emptied and subsequently removed from service. When the OWS was abandoned, all of the associated lines were disconnected. The wash rack drains remained and the drain line was then connected to a valve. When aircraft were being washed, the valve was opened to direct wash water to a new OWS at the northwest corner of Hangar 1002. When washing operations were not being performed, the valve to the OWS is closed and opened to a storm sewer that drains the flightline area storm water.

The old OWS, pit, and sump were all removed in 2001 during the repaving of the flightline (KAFB, 2004). Due to the use of Hangars 1001 and 1002 by aircraft supporting the nuclear testing programs, the wash rack area was considered a potential source of radionuclides. Kirtland AFB does not have any specific documentation to determine whether or not these operations actually took place.

Evaluation of Relevant Information

Several investigations have been conducted at SWMU 8-13 including the Appendix III Wasteline *Resource Conservation and Recovery Act* (RCRA) Facility Investigation (RFI), the Appendix II Stage 2B RFI, the Appendix II Phase 2 RFI, and a Corrective Measures Study (CMS) Report (USAF, 1995a, 1995b, 1997, 1999).

The Appendix III Wasteline RFI, conducted in 1995 (USAF, 1995a), concluded that the volatile organic compound (VOC) methylene chloride was detected in several soil samples in

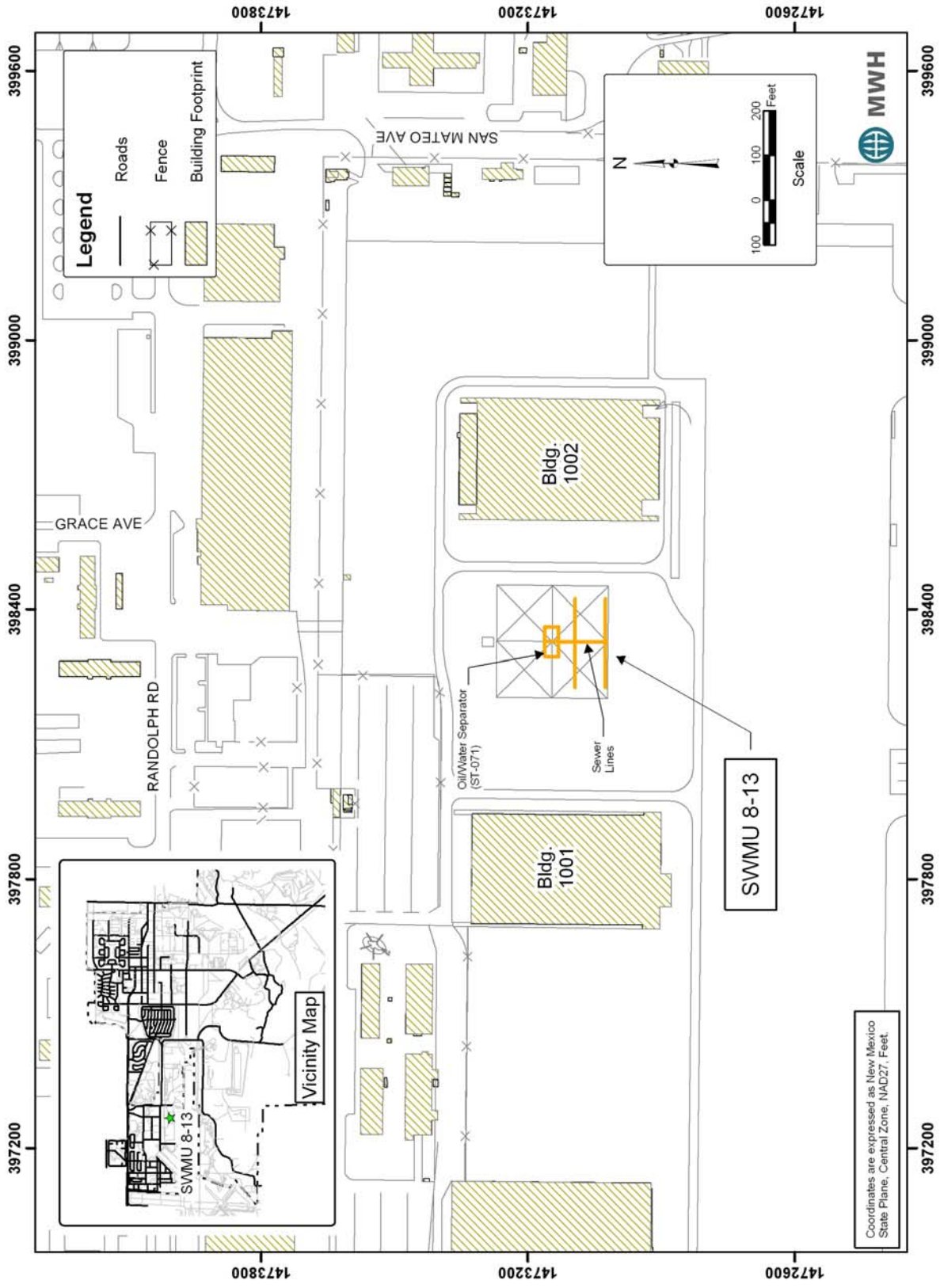

Figure 17. Solid Waste Management Unit ST-071 (8-13), Oil/Water Separator (Formerly ST-221)

concentrations lower than the New Mexico Environment Department (NMED) residential soil screening level (SSL) (NMED, 2004a). The semivolatile organic compound (SVOC) di-n-butylphthalate was also detected in several samples at concentrations well below the 2004 NMED residential SSLs. Metal concentrations in samples were generally consistent with the range of naturally occurring levels that have been documented throughout Kirtland AFB (SNL/NM, 1996). Total petroleum hydrocarbon (TPH) was detected in three of the nine soil samples with concentrations ranging from 16 to 830 milligrams per kilogram (mg/kg). In two samples, the TPH concentration exceeded the NMED action level of 100 mg/kg (NMED, 2003). The Appendix III Wasteline RFI determined that a release had occurred at the site and the primary chemicals of concern at the site were diesel-range organic (DRO) and gasoline-range organic (GRO) hydrocarbon compounds.

In October 1992, the Kirtland AFB Bioenvironmental Flight conducted a radiological survey (USAF, 1995b). The results of this survey found no radiological activity above background levels. The survey did not fully delineate the nature and extent of the contamination and recommended that additional soil sampling be conducted around the perimeter of the area drain adjacent to ST-221 and along the line leading from that drain to the OWS.

In June 1994, an Appendix II Stage 2B RFI detected the VOCs acetone, 2-hexanone, methylene chloride, methyl ethyl ketone, and toluene in a number of soil samples (USAF, 1995b). All concentrations of these VOCs were below the NMED residential SSLs (NMED, 2004a). The SVOCs di-n-butylphthalate, 2- methylnaphthalene, naphthalene, and phenol were also detected in several soil samples at concentrations below the 2004 NMED residential SSLs. Metals concentrations detected during this RFI were below the 2004 NMED residential SSLs and generally consistent with the range of naturally occurring levels that have been documented throughout Kirtland AFB (SNL/NM, 1996). Concentrations of DRO hydrocarbons were detected in all 22 soil samples; however, only two samples contained TPH concentrations that exceeded the NMED action level of 100 mg/kg (NMED, 2003).

The Appendix II Stage 2B RFI samples were also analyzed for gross alpha and gross beta activity. The gross alpha or beta activities were similar to background and did not suggest radionuclides were of concern at this site. Based on results of the original screening of the site by the Bioenvironmental Flight in 1992 and screening of the subsurface samples from the Appendix II Stage 2B RFI, further investigation of radionuclides was not conducted.

The RFI determined that the primary contaminants of concern at the site were DRO and GRO. The Appendix II Stage 2B RFI did not fully delineate the nature and extent of contamination at the site. The RFI report recommended additional soil sampling near the junction of the inflow line and the OWS and that the inflow line be checked for leaks.

The Appendix II Phase 2 RFI, conducted in June 1996, detected GRO hydrocarbons in the 5 ft to 7 ft depth interval in two soil samples at concentrations of 1,400 mg/kg and 1,100 mg/kg (USAF, 1997). Both of these detected GRO hydrocarbon concentrations exceed the NMED action level of 100 mg/kg (NMED, 2003). DRO hydrocarbons were also detected in these soil samples at concentrations of 87 mg/kg and 180 mg/kg, respectively. The Appendix II Phase 2 RFI

determined that concentrations of petroleum hydrocarbons exceeding NMED action levels were detected along the inflow lines to the OWS. The suspected source of the contamination was the area drain and associated piping. This RFI report recommended a CMS for the site, including a baseline risk assessment to determine if an ICM is warranted at the site and to evaluate corrective measures to reduce DRO and GRO hydrocarbon concentrations in the soils.

Additional characterization sampling was conducted at the site in August and September 1998 as part of the CMS, which included 15 additional soil borings using a direct-push drill rig with borings advanced to depths of 17 to 27 ft bgs (USAF, 1999). All soil samples were analyzed for TPH (DRO and GRO). The results of this characterization sampling identified TPH contamination at levels exceeding the NMED 100 mg/kg action level in four boring locations with a maximum concentration of 19,000 mg/kg in boring ST71-SB-19 in the 5 to 7 ft bgs interval (NMED, 2003). Three additional borings were installed north and west of ST71-SB-19 to delineate the horizontal extent of the hydrocarbon plume. Analytical result indicated that the installation of the additional borings did not fully delineate the northern extent of hydrocarbons in soil. Elevated concentrations of TPH were identified in the 5 ft to 7 ft bgs interval at two locations: ST71-SB-30 at 3,800 mg/kg and ST71-SB-32 at 1,840 mg/kg. However, samples collected from the Appendix II Stage 2B boring locations ST-221-09 (located 42 ft northeast of ST71-32) and ST-221-01 (located 60 ft northwest of ST71-32) indicated that TPH concentrations at those locations were below the NMED action level of 100 mg/kg. Thus, these locations likely delineate the northern extent of hydrocarbons in the soil.

The results of the CMS, as well as previous investigations, determined that the source of the contamination is the west-central area drain and associated piping. No detectable TPH were found in the 10 ft to 12 ft or 15 ft to 17 ft sampling intervals indicating that the vertical extent of the contamination was 10 ft bgs. CMS sampling verified that TPH above 100 mg/kg was isolated to a small area around boring ST71-SB-19 and was not considered an unacceptable risk to either human health or groundwater. The OWS was removed in 2001, as was much of the soil in the area -- removing much of the TPH source material.

Based on a 2004 evaluation of all SWMU 8-13 organic and inorganic sampling data (including VOCs, SVOCs and metals), KAFB determined:

- The contaminants of potential concern were defined (USAF, 2004),
- The residential human health-based site risk ratio for direct exposure to soil was less than 1 for noncarcinogenic (0.799) and carcinogenic (0.0008) compounds (based on the NMED SSLs --NMED, 2004a), and
- the horizontal and vertical extents of TPH contamination were delineated.

An ecological risk assessment was not conducted due to the lack of effective habitat at the paved flightline location (USAF, 1999).

Basis for Determination

In a letter dated August 6, 2004, the NMED's Hazardous Waste Bureau (HWB) stated that SWMU ST-071, Building 1000/1001 Oil/Water Separator, is suitable for a no further action (NFA) petition (NMED, 2004b). This NFA proposal is based upon NMED's NFA Criterion 5: the SWMU has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

References

KAFB, 2004. Kirtland AFB Environmental Compliance, personal communication with Patrick Montaño, 2004

NMED, 2003. New Mexico Environment Department TPH Screening Guidelines. New Mexico Environment Department, Santa Fe, New Mexico. June 24, 2003.

NMED, 2004a. Technical Background Document for Development of Soil Screening Levels, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program.

NMED, 2004b. Correspondence from William S. McDonald, KAFB Project Leader, Permits Management Program, Hazardous Waste Bureau, New Mexico Environment Department to Carl Lanz, Chief, Restoration Program, Environmental Management Branch, Kirtland Air Force Base, Re: Response to Request for Supplemental Information for the Corrective Measures Study Report for Solid Waste Management Unit (SWMU) 8-13, Building 1001/1002 Oil-Water Separator ST-71 (Former ST-221) and SWMU WP-58, Building 20451, East Laundry, November 1999, Kirtland Air Force Base, ID# NMD9570024423, Task # HWB-KAFB-04-003. August 6, 2004.

Sandia National Laboratories/New Mexico (SNL/NM), 1996. *Background Concentrations of Constituents of Concern to the Sandia National Laboratories/New Mexico Environmental Restoration Project and the Kirtland Air Force Base Installation Restoration Program*, Sandia National Laboratories/New Mexico, Environmental Restoration Department, Albuquerque, New Mexico.

USAF, 1995a. *RCRA Facility Investigation Report, Appendix III Wasteline Sites*, Kirtland Air Force Base, Albuquerque, New Mexico, October 23, 1995.

USAF, 1995b. *RCRA Facility Investigation Report, Appendix II, Stage 2B*, Kirtland Air Force Base, Albuquerque, New Mexico, July 5, 1995.

USAF, 1997. *RCRA Facility Investigation Report, Appendix II, Phase 2*, Kirtland Air Force Base, Albuquerque, New Mexico, July 1, 1997.

USAF, 1999. Corrective Measures Study Report Solid Waste Management Units 8-13, Buildings 1001/1002 OWS (ST-71) (Former ST-221); WP-58, Building 20451, East Laundry (WP-58); and ST-64, Building 20212, Former U.S. Army Corps of Engineers Vehicle Maintenance Yard (ST-64). U.S. Air Force, Kirtland Air Force Base, Albuquerque, New Mexico. November 11, 1999.

USAF, 2004. Response to the April 5, 2004 NMED Request for Supplemental Information for the November 11, 1999 CMS Report. July 1, 2004.

17. Solid Waste Management Unit WP-058, East Laundry Building 20451

Location and Current Land Use

Solid Waste Management Unit (SWMU) WP-058, Building 20451, East Laundry is located at 2251 Wyoming Boulevard SE in the northwest portion of Kirtland Air Force Base (AFB) and functioned as the Sandia Army Base laundry facility (Figure 18). The building is a single-story, approximately 17,500 square foot slab-on-grade structure (Kirtland AFB, Real Property Building File 20451) and was renovated for office use in 1983. The facility is currently being used as office space.

Projected Future Land Use

The projected future land use for SWMU WP-058 is urban/industrial; however, a residential scenario was used for risk-based screening assessments.

History

During operation as the laundry, washers, dryers, steam presses, starch cookers, and a water-softening unit were used. Effluent was discharged from the washers to a central concrete drainage trench that drained to a below grade sump on the east side of the building. The trench drains were 18 inches wide and varied in depth from 14 inches to 26 inches. The 500-gallon concrete sump was located outside the building and was 4 feet (ft) x 4 ft x 4.5 ft deep and discharged to the Kirtland sanitary sewer via a 6-inch discharge line (KAFB). This sump and all associated lines had been removed prior to the onsite investigative work in the late 1990s. A second, smaller sump was located inside the building next to the former water-softening units. This sump discharged to the Kirtland sanitary sewer via a 4-inch line on the east side of the building and is reportedly abandoned in place although the current status cannot be verified. If abandoned in place, this smaller sump would now be severed from any original drain lines. The actual SWMU measures approximately 80 ft long x 15 ft wide and is immediately adjacent to the building.

The SWMU is bounded on the east by a heavily used parking area. The north and south sides of the SWMU are bounded by the building parking lots and access roads. The west side of the SWMU is bounded by Building 20451. The area is graveled with xeric landscaping.

Evaluation of Relevant Information

A SWMU assessment investigation was conducted to determine if hazardous constituents were released from the sumps. Sample analysis results found semivolatile organic compounds (SVOCs) in subsurface soils on the east side of the building (USAF, 1994): benzidine, ranging from 0.2 to 49 mg/kg, and benzo(a)pyrene at 4.7 mg/kg were detected at concentrations exceeding 2004 New Mexico Environment Department (NMED) residential soil screening levels (SSLs) of 0.0211 and 0.621 mg/kg, respectively (NMED, 2004a). Additionally, one sample had an arsenic concentration of 9.6 mg/kg, which exceeds the NMED residential SSL of 3.9 mg/kg.

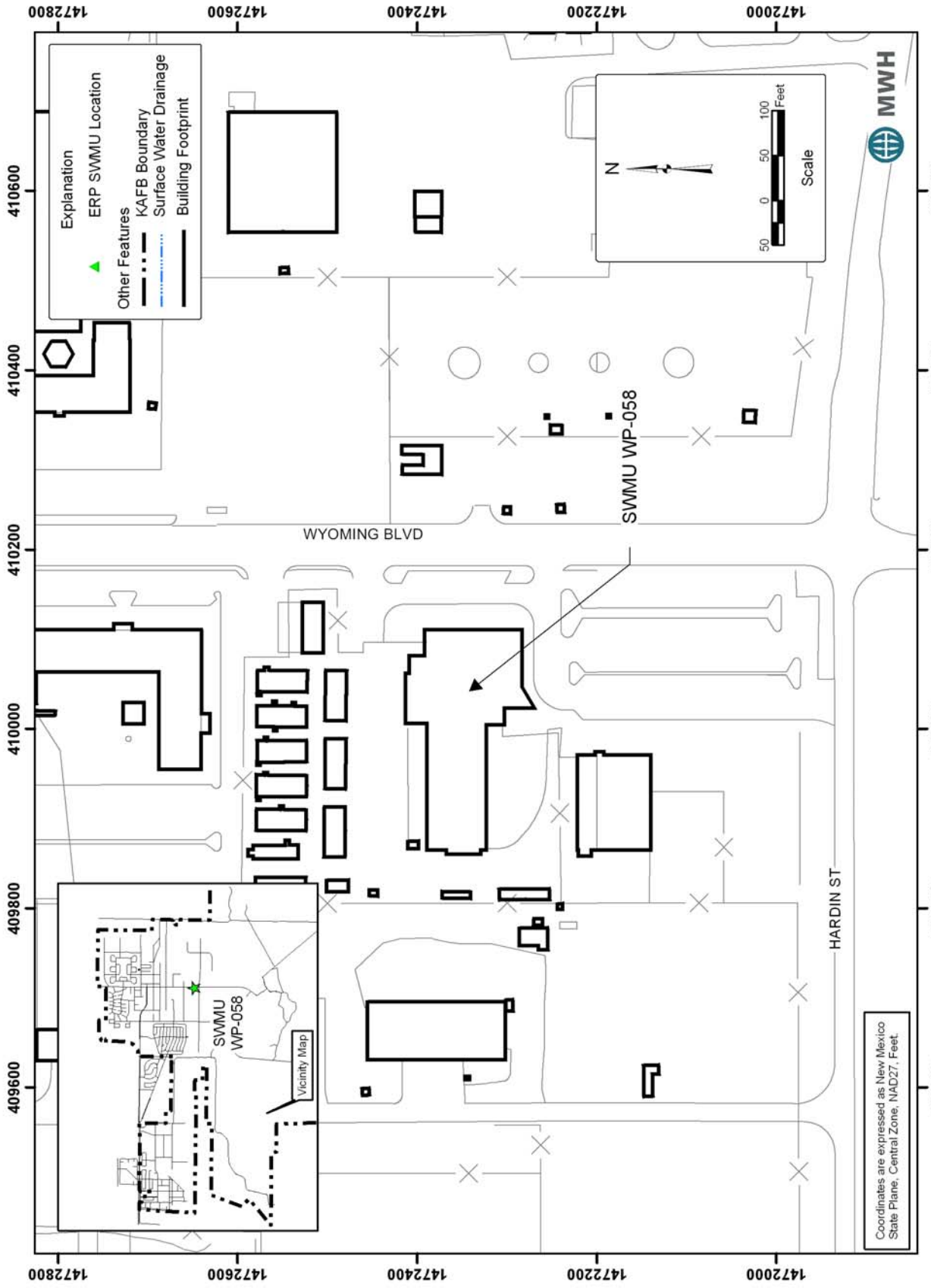

Figure 18. Solid Waste Management Unit WP-058, East Laundry Building 20451

However, this arsenic concentration is within the range of naturally occurring concentrations that have been documented throughout Kirtland AFB (Sandia National Laboratories/New Mexico [SNL/NM], 1996).

The Appendix V *Resource Conservation and Recovery Act* (RCRA) Facility Investigation (RFI) identified 17 SVOCs in surface and subsurface soils at the site (USAF, 1996). One SVOC, benzo(a)pyrene, was detected in five soil samples at concentrations ranging from 0.78 to 2.6 mg/kg, exceeding the NMED residential SSL of 0.621 mg/kg..

The Phase 2 RFI, comprising nine direct-push soil borings, was conducted in July 1997 to delineate the horizontal and vertical extent of subsurface soil contamination, and to determine whether contamination existed under the building foundation (USAF, 1998). One occurrence of acetone and two occurrences of bis(2-ethylhexyl)phthalate were detected, although none of the concentrations exceeded 2004 NMED residential SSLs. The maximum reported concentration for arsenic was 10.1 mg/kg, which exceeded the 2004 NMED residential SSL of 3.9 mg/kg and the approved background values (SNL/NM, 1996).

Based on the RFI results, an interim corrective measures (ICM) study was conducted at this site in 1998. The ICM consisted of excavation, soil characterization, and disposal of contaminated soil from WP-058 (USAF, 1999). Representative soil samples were collected from the bottom and sides of the excavated areas to verify contaminant removal. Upon discovery of additional SVOC concentrations above the SSLs, additional soil was excavated. Most contaminated soil was removed by excavating to a depth of 10 ft. bgs. Due to the limited nature of the ICM activities, a small amount of SVOC-contaminated soil was left in place. However, as described below, enough contaminated soil was removed to reduce the site risk to an acceptable level.

Approximately 210 cubic yards of contaminated soil were removed from the site. Confirmation sample results showed Benzo(a)pyrene in two samples from the base of the excavation at concentrations of 1.7 milligrams per kilogram (mg/kg) and 2.6 mg/kg (USAF, 1999). These concentrations are above the 2004 NMED residential SSL of 0.621 mg/kg. Benzo(a)pyrene and dibenz(a,h)anthracene were detected in one sidewall sample, at a depth of approximately 5 ft, at concentrations of 4.2 mg/kg and 0.81 mg/kg (USAF, 1999). These concentrations are above the 2004 NMED residential SSLs of 0.621 mg/kg and 0.621 mg/kg, respectively. The human health risk assessment residential cancer risk was $4x10^{-5}$ and the noncancer Hazard Index was below 1.0 at 0.7 – thus, the remaining chemicals at the site are below concentrations that represent an unacceptable level of risk to human health. The results of the 1998 ICM indicate that the COPCs and horizontal and vertical extent of suspected contamination were adequately identified.

Basis for Determination

In a letter dated August 6, 2004, the NMED's Hazardous Waste Bureau (HWB) stated that SWMU WP-58, East Laundry Building 20451, is suitable for a no further action (NFA) petition (NMED, 2004b). This NFA proposal is based upon NMED’s NFA Criterion 5: the SWMU has been characterized or remediated in accordance with current applicable state or federal

regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

References

KAFB. Kirtland AFB, Architectural Drawing, Reference No. SP-451/6, no date visible.

NMED, 2004a. Technical Background Document for Development of Soil Screening Levels, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program.

NMED, 2004b. Correspondence from William S. McDonald, KAFB Project Leader, Permits Management Program, Hazardous Waste Bureau, New Mexico Environment Department to Carl Lanz, Chief, Restoration Program, Environmental Management Branch, Kirtland Air Force Base, Re: Response to Request for Supplemental Information for the Corrective Measures Study Report for Solid Waste Management Unit (SWMU) 8-13, Building 1001/1002 Oil-Water Separator ST-71 (Former ST-221) and SWMU WP-58, Building 20451, East Laundry, November 1999, Kirtland Air Force Base, ID# NMD9570024423, Task # HWB-KAFB-04-003. August 6, 2004.

Sandia National Laboratories/New Mexico (SNL/NM), 1996. *Background Concentrations of Constituents of Concern to the Sandia National Laboratories/New Mexico Environmental Restoration Project and the Kirtland Air Force Base Installation Restoration Program*, Sandia National Laboratories/New Mexico, Environmental Restoration Department, Albuquerque, New Mexico.

USAF, 1994. *SWMU Assessment Report for WP-58, Building 20451, East Laundry*. Kirtland AFB, Albuquerque, New Mexico, 1994.

UASF, 1996. *RFI Report, Appendix V Solid Waste Management Units*, Kirtland Air Force Base. Albuquerque, New Mexico, Final Draft, February 29, 1996.

USAF, 1998. *Phase 2, RCRA Facility Investigation Report, Solid Waste Management Unit 6-30 and Solid Waste Management Unit WP-58*, Kirtland AFB, Albuquerque, New Mexico, March 17, 1998.

USAF, 1999. Corrective Measures Study Report Solid Waste Management Units 8-13, Buildings 1001/1002 OWS (ST-71) (Former ST-221); WP-58, Building 20451, East Laundry (WP-58); and ST-64, Building 20212, Former U.S. Army Corps of Engineers Vehicle Maintenance Yard (ST-64). U.S. Air Force, Kirtland Air Force Base, Albuquerque, New Mexico. November 11, 1999.

18. Solid Waste Management Unit SS-069, Drum Storage Area

Location and Current Land Use

Solid Waste Management Unit (SWMU) SS-069, drum storage area, is located in one of eight radiation training sites (TS) that were established in November 1961 at Kirtland Air Force Base (AFB), New Mexico (Figure 19). The current land use is urban.

Projected Future Land Use

The projected future land use for SWMU SS-069 is urban/industrial; however, a residential scenario was used for risk-based screening assessments.

History

SWMU SS-069 is located in TS6, a radiation training site used from 1961 to 1990 to train radiological response personnel. Even though it is part of TS6, SS-069 is considered a separate regulated unit under Kirtland AFB's *Resource Conservation and Recovery Act* (RCRA) Part B Permit because the site also contained non-radiological wastes. The OT-10 sites, including SWMU SS-069, are owned by the U.S. Government and regulated by the Nuclear Regulatory Commission (NRC) under the USAF Master Materials License No. 42-23539-01AF (USAF, 2000). SS-069 is a 50-foot (ft) by 50 ft fenced area that was previously used to store drums of thorium oxide sludge, contaminated soil, and waste fuels. Other unknown entities also used SS-069 to dispose of unwanted drums containing mixed waste.

Evaluation of Relevant Information

Three previous investigations have been conducted at SS-069. These investigations included drum characterization and disposal, a RCRA facility investigation (RFI), and an interim corrective measures (ICM) study.

At least 90 drums were counted at the SS-069 site when it was first cataloged (USAF, 1992). Approximately 35 of these drums contained solid materials (such as cardboard, plastic, and soil) and liquids. The remaining 55 drums were empty. The contents of 16 drums were analyzed: 4 drums were found to contain radioactive waste, 4 drums contained RCRA characteristic waste, and 8 drums contained waste diesel fuel and oil sludge with gasoline and/or solvents (USAF, 1992). The drums were subsequently removed and disposed of properly. Several of the drums had deteriorated and released wastes. Staining of the soil was evident at the site and documented by Kirtland AFB Environmental Management (USAF, 1996).

In May and June of 1997, an RFI (USAF, 1997) was conducted to determine the nature and extent of the waste release at SS-069. The investigation included drilling eight boreholes using a direct-push rig to 17 ft below ground surface (bgs), and collecting eight surface soil samples. All soil samples were analyzed for target analyte list (TAL) metals, gamma-emitting radionuclides,

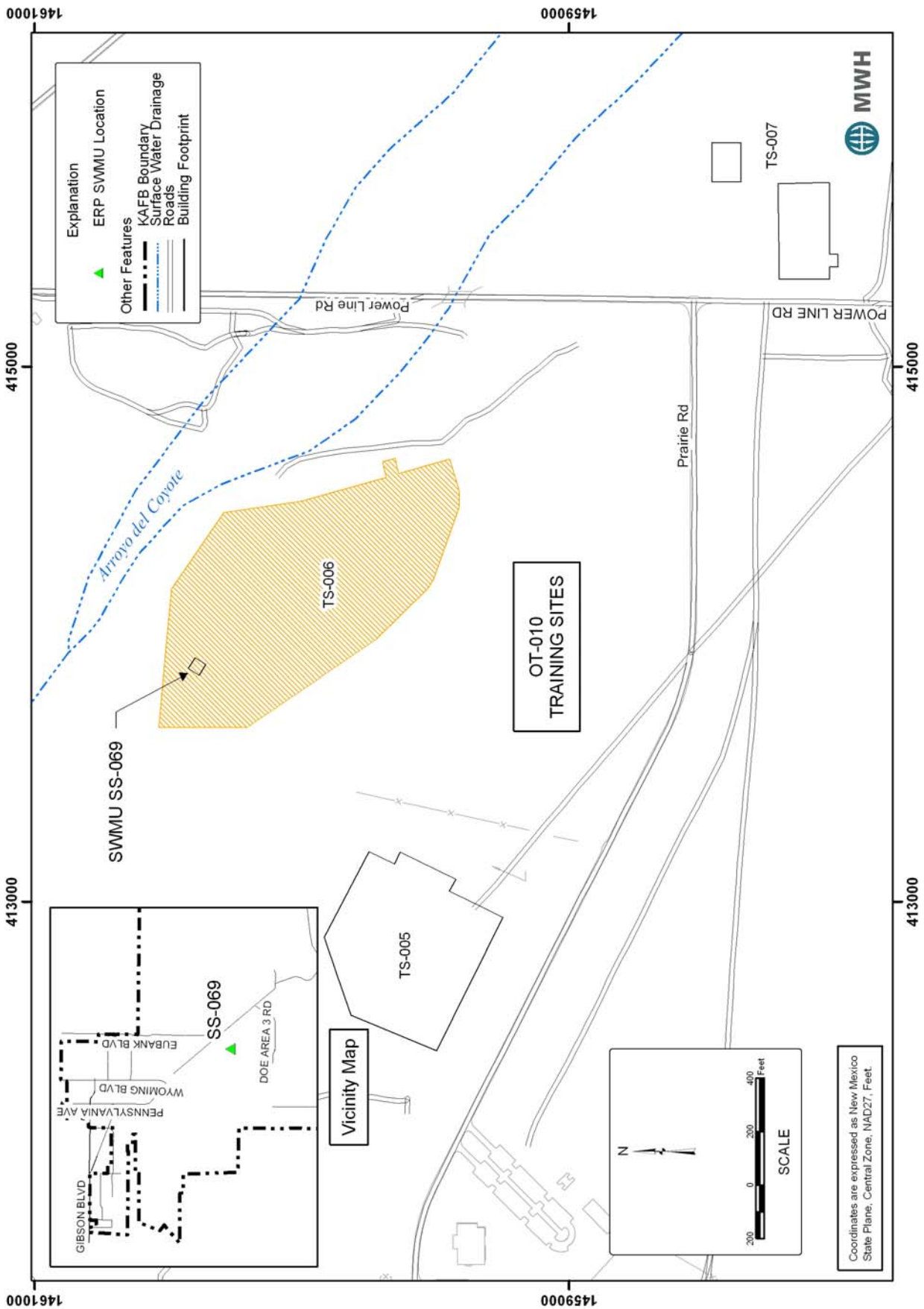

Figure 19. Solid Waste Management Unit SS-069, Drum Storage Area

volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and gasoline-range organic (GRO) and diesel-range organic (DRO) hydrocarbons. Soil samples were collected at locations exhibiting the highest beta/gamma readings during the site radiological survey.

Two VOCs, acetone at 0.2 mg/kg and methylene chloride at 0.01 mg/kg (both common laboratory contaminants), were detected as a result of the RFI; however, the detection concentrations were below 2004 New Mexico Environment Department (NMED) residential soil screening levels (SSLs) of 70,400 mg/kg and 165 mg/kg, respectively (NMED, 2004a). Two SVOCs, bis (2-ethylhexyl) phthalate at 10 mg/kg and phenol at 2.5 mg/kg, were also detected at concentrations below NMED residential SSLs of 347 mg/kg and 18,000 mg/kg, respectively. Thirteen metals were detected in samples collected from the site. Arsenic at 6.9 mg/kg was the only metal detected in samples at concentrations exceeding the 2004 NMED residential SSL of 3.9 mg/kg. However, this concentration is within the approved background concentrations (SNL/NMED, 1996). DRO hydrocarbons were detected in three samples at concentrations ranging from 11 to 850 milligrams per kilogram (mg/kg). None of the sample concentrations exceeded the NMED total petroleum hydrocarbon (TPH) residential screening level of 2,500 mg/kg (NMED, 2003).

Gamma spectroscopy analyses detected eight radioisotopes at concentrations exceeding the levels detected in the background sample. Actinium-228, bismuth-212, bismuth-214, lead-212, lead-214, radium-226, thorium-232, and thallium-208 were detected at elevated concentrations in surface and subsurface soil samples. These radioisotopes result from the decay of thorium and uranium, and are associated with the thorium oxide sludge formerly stored at the site. Residual Radiation (RESRAD) computer model calculations indicated that risks related to radiation exposure at SS-069 exceeded both the U.S. Department of Energy's radiation guidelines and the U.S. Environmental Protection Agency's range of acceptable excess cancer risk (USAF, 1997).

An ICM was performed at SS-069 to remove petroleum hydrocarbon-contaminated soil and mitigate the immediate risk to human health and the environment posed by radiologically contaminated soil and debris. The ICM field activities were conducted from March 2 to April 24, 1998; final disposition of the waste was completed on January 27, 1999 (USAF, 1999). The affected area measured approximately 60 ft by 50 ft, and extended southeast beyond the drum storage area fenced boundary. Excavated soil was placed into radioactive waste shipping containers. The post-excavation survey results indicate the beta/gamma radiation concentrations to be an order of magnitude less than that of the pre-excavation concentrations. The results of the confirmation sampling indicated that the only non-radiological concentrations detected were petroleum hydrocarbons. TPH concentrations detected for the waste oil fraction ranged from 2,500 to 5,400 mg/kg, exceeding the NMED TPH residential screening level of 2,500 mg/kg (NMED, 2003). These samples indicated that further excavation was necessary to completely remove TPH contaminated soil from SS-069. On April 23, 1998, SS-069 was further excavated until all visually stained soil was removed. Post-excavation sample analysis did not detect TPH.

Confirmation samples were collected from the base of the excavation, and were analyzed for TPH, VOCs, SVOCs, gamma-emitting radionuclides (by gamma spectroscopy), and isotopic

thorium (by alpha spectroscopy). No NMED residential SSLs were exceeded by results of laboratory analyes of these confirmation samples. A post-excavation human health risk assessment produced a residential Hazard Index of 0.2 (below 1.0) and a cancer risk of $1x10^{-5}$.

Based on the results of the RFI (USAF, 1997) and ICM (USAF, 1999), RCRA hazardous waste constituents and petroleum hydrocarbon wastes are no longer present at SS-069. Additionally, the radiological components remaining in the soil were removed in conjunction with the OT-10 remediation effort under the NRC Decommissioning Plan. Pursuant to this remediation effort, OT-10 site TS6 has been proposed for NFA status.

Basis for Determination

In a letter dated August 13, 2004, the NMED's Hazardous Waste Bureau (HWB) stated that SWMU SS-069, Drum Storage Area, is suitable for a no further action (NFA) petition (NMED, 2004b). This NFA proposal is based upon NMED's NFA Criterion 5: the SWMU has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

References

NMED, 2003. New Mexico Environment Department TPH Screening Guidelines. New Mexico Environment Department, Santa Fe, New Mexico. June 24.

NMED, 2004a. Technical Background Document for Development of Soil Screening Levels, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program.

NMED, 2004b. Correspondence from William S. McDonald, KAFB Project Leader, Permits Management Program, Hazardous Waste Bureau, New Mexico Environment Department to Carl Lanz, Chief, Restoration Program, Environmental Management Branch, Kirtland Air Force Base, Re: Response to Request for Supplemental Information for Corrective Measures Study Report for Corrective Action Unit (CAU) SS-069, Drum Storage Area, May 2002, Kirtland Air Force Base, ID# NMD9570024423, Task # HWB-KAFB-04-023. August 13, 2004.

Sandia National Laboratories/New Mexico (SNL/NM), 1996. Background Concentrations of Constituents of Concern to the Sandia National Laboratories/New Mexico Environmental Restoration Project and the Kirtland Air Force Base Installation Restoration Program, Sandia National Laboratories/New Mexico, Environmental Restoration Department, Albuquerque, New Mexico.

USAF, 1992. Letter to Walter Darr, Chief, Compliance Branch, Kirtland Air Force Base, from H+GCL, Albuquerque, New Mexico, regarding results of DSWS drum site sampling. February 6, 1992.

USAF, 1996. Letter to Mr. Benito Garcia, Chief, New Mexico Environment Department, Hazardous and Radioactive Materials Bureau; from Mr. Christopher Dewitt, Chief, Restoration Branch, Kirtland Air Force Base, Albuquerque, New Mexico. May 28, 1996.

USAF, 1997. *RCRA Facility Investigation Report Solid Waste Management Units RW-68 and SS-069*. Kirtland Air Force Base, Albuquerque, New Mexico. November 18, 1997.

USAF, 1999. *Interim Corrective Measures Report for Soil Removal and Characterization at Solid Waste Management Unit SS-069, Drum Storage Area (SS-069)*. Kirtland Air Force Base, Albuquerque, New Mexico. May 1, 1999.

USAF, 2002. Corrective Measures Study for Corrective Action Unit SS-069, Drum Storage Area (SS-069), Kirtland Air Force Base, New Mexico. U.S. Air Force, Kirtland Air Force Base, Albuquerque, New Mexico. May.

19. Solid Waste Management Unit ST-353 (10-21-S), Building 48057 Septic Tank

Location and Current Land Use

Solid Waste Management Unit (SWMU) ST-353, Building 48057 Septic Tank, is associated with the Kirtland Air Force Base (AFB) riding stables, located in a flat area just north of the intersection of Pennsylvania Street and the U.S. Department of Energy Area III/V Road, approximately 1 mile southeast of Tijeras Arroyo (Figure 20). The current land use is urban/industrial.

Projected Future Land Use

The projected future land use for SWMU ST-353 is urban/industrial; however, a residential scenario was used for risk-based screening assessments.

History

SWMU ST-353 is a 500-gallon septic tank and leachfield associated with Building 48057. Historic use of Building 48057 and the date of system installation are unknown. The building contains a drain and eight ports on a concrete pad that extends west of the building. The concrete pad was used for activities related to rinsing horses. The drain and drain ports are open and connected to the septic tank, which is located off the northeastern edge of the concrete pad. A single leachfield line, made of perforated 4-inch galvanized pipe, drains the septic tank to the west (USAF, 2000).

Evaluation of Relevant Information

A site inspection verifying the location and existence of SWMU ST-353 was performed on January 19, 2000 (USAF, 2000). Determining the location of the riding stables septic system at ST-353 began by scraping 6-inch lifts of soil until the drain line originating at the concrete pad was exposed. Two direct-push samples were then collected from depth intervals of 6-8 and 8-10 feet (ft) in one soil boring located adjacent to the leachfield lines, in order to characterize the leachfield effluent at SWMU ST-353. These samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), total petroleum hydrocarbon (TPH), herbicides, and pesticides.

Arsenic was detected at 6.5 mg/kg in the sample collected from the interval of 6-8 ft below ground surface (bgs) (USAF, 2000). This value exceeds the New Mexico Environment Department (NMED) approved background level of 4.4 milligrams per kilogram (mg/kg) (SNL/NM, 1996). Thallium was detected at 1.4 mg/kg in the 8-10 ft bgs sample. This value exceeds the NMED approved background value of 1.1 mg/kg. However, both of these metals are within the range of slightly elevated background concentrations.

The samples were also surveyed in the field for beta/gamma and alpha activity, and for organic vapors using a photoionization detector (PID). Organic vapors were measured at a maximum

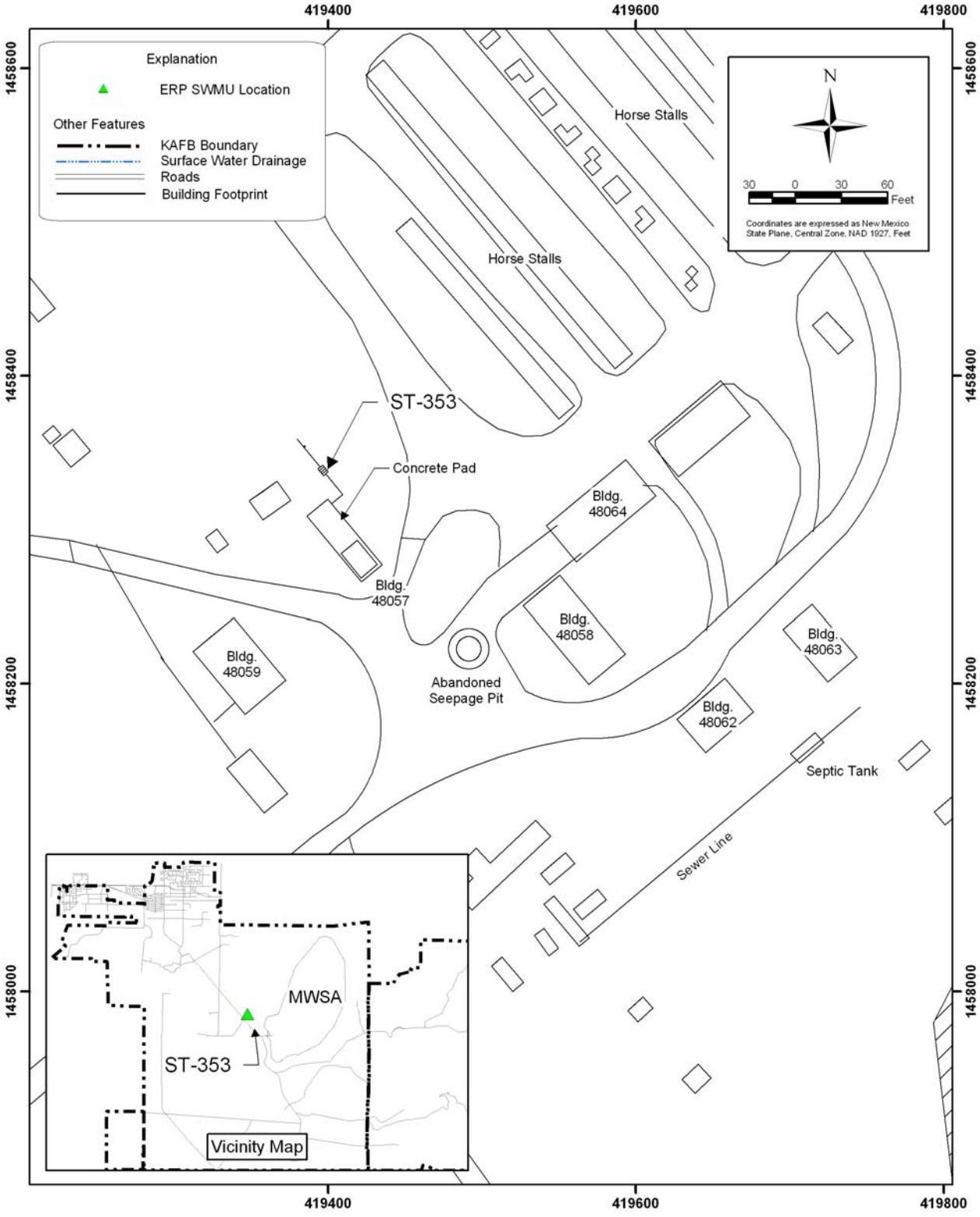

Figure 20. Solid Waste Management Unit ST-353, Building 48057 Septic Tank

concentration of 3.2 ppm (USAF, 2000). Following excavation of the septic tank, the tank cover was removed and standing liquid was found in the tank. A sample from the liquid and sludge in the bottom of the tank were collected. All results were well below the toxicity characteristic leachate procedure (TCLP) limits for classification as a hazardous waste (USAF, 2000).

Basis for Determination

In a letter dated July 29, 2004, the NMED's Hazardous Waste Bureau (HWB) stated that SWMU ST-353, Building 48057 Septic Tank, is suitable for a no further action (NFA) petition (NMED, 2004b). This NFA proposal is based upon NMED's NFA Criterion 2: the SWMU has never been used for the management (i.e., generation, treatment, storage, and/or disposal) of RCRA solid waste or hazardous wastes and/or constituents or other *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) hazardous substances.

References

NMED, 2004b. Correspondence from William S. McDonald, KAFB Project Leader, Permits Management Program, Hazardous Waste Bureau, New Mexico Environment Department to Carl Lanz, Chief, Restoration Program, Environmental Management Branch, Kirtland Air Force Base, Re: Request for Supplemental Information: Release Assessment Report for ST-353, ST-354, ST-355, ST-347, ST-356, ST-348, ST-349, ST-350, ST-351, ST-352, and SS-102, December 12, 2000, Kirtland Air Force Base, ID# NMD9570024423, Task # HWB-KAFB-04-007. July 29, 2004.

Sandia National Laboratories/New Mexico (SNL/NM), 1996. Background Concentrations of Constituents of Concern to the Sandia National Laboratories/New Mexico Environmental Restoration Project and the Kirtland Air Force Base Installation Restoration Program, Sandia National Laboratories/New Mexico, Environmental Restoration Department, Albuquerque, New Mexico.

USAF, 2000. *Final Release Assessment Report ST-353, ST-354, ST-355, ST-347, ST-356, ST-348, ST-349, ST-350, ST-351, ST-352, and SS-102*, U.S. Air Force, Kirtland Air Force Base, New Mexico. December 12, 2000.

20. Solid Waste Management Unit ST-354 (10-21-S), Sheep Grooming Septic Tank

Location and Current Land Use

Solid Waste Management Unit (SWMU) ST-354, Sheep Grooming Septic Tank, is associated with the Kirtland Air Force Base (AFB) riding stables, located in a flat area just north of the intersection of Pennsylvania Street and the U.S. Department of Energy Area III/V Road, approximately 1 mile southeast of Tijeras Arroyo (Figure 21). The current land use is urban/industrial.

Projected Future Land Use

The projected future land use for SWMU ST-354 is urban/industrial; however, a residential scenario was used for risk-based screening assessments.

History

SWMU ST-354 is defined as an inactive seepage pit, and is located southeast of Building 48057. The area now contains an unnumbered wooden storage structure and a concrete pad that was used for sheep grooming, shearing, and wash-down activities (USAF, 2000).; the seepage pit is located southeast of the concrete pad. Although the SWMU title labels the site a "septic tank", this is a misnomer because SWMU ST-354 is an inactive seepage pit, not a septic tank.

Evaluation of Relevant Information

A site inspection was performed on January 19, 2000 (USAF, 2000); however, the seepage pit designated as ST-354 could not be located. The exploration for the ST-354 seepage pit involved trenching in its estimated vicinity, digging perpendicular sets of trenches 6 feet (ft) deep and 6 – 8 ft long. The first set of trenches was dug where existing maps indicated the seepage pit existed. Perpendicular trenches were also dug east and north of the first trench, but only undisturbed native soils were found. As the seepage pit could not be located, no soil samples were collected (USAF, 2000).

Basis for Determination

In a letter dated July 29, 2004, the New Mexico Environment Department (NMED) Hazardous Waste Bureau stated that SWMU ST-354, Sheep Grooming Septic Tank, is suitable for a no further action (NFA) petition (NMED, 2004). This NFA proposal is based upon NMED's NFA Criterion 1: the SWMU cannot be located, does not exist, or is a duplicate SWMU.

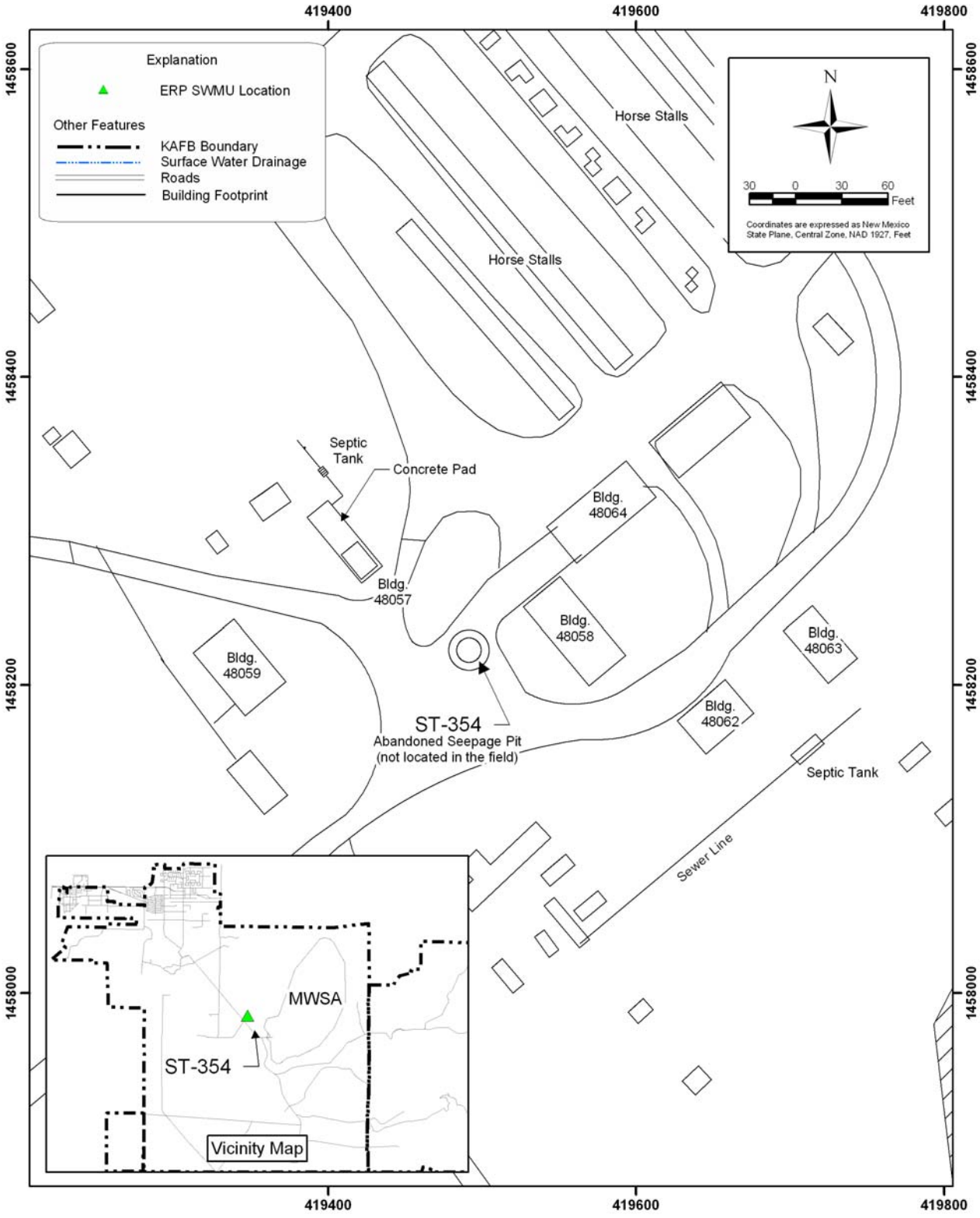

Figure 21. Solid Waste Management Unit ST-354, Sheep Grooming Septic Tank

References

NMED, 2004. Correspondence from William S. McDonald, KAFB Project Leader, Permits Management Program, Hazardous Waste Bureau, New Mexico Environment Department to Carl Lanz, Chief, Restoration Program, Environmental Management Branch, Kirtland Air Force Base, Re: Request for Supplemental Information: Release Assessment Report for ST-353, ST-354, ST-355, ST-347, ST-356, ST-348, ST-349, ST-350, ST-351, ST-352, and SS-102, December 12, 2000, Kirtland Air Force Base, ID# NMD9570024423, Task # HWB-KAFB-04-007. July 29, 2004.

USAF, 2000. Final Release Assessment Report ST-353, ST-354, ST-355, ST-347, ST-356, ST-348, ST-349, ST-350, ST-351, ST-352, and SS-102, U.S. Air Force, Kirtland Air Force Base, New Mexico. December 12, 2000.