

FORT WINGATE DEPOT ACTIVITY
MCKINLEY COUNTY, NEW MEXICO

FINAL
HISTORICAL INFORMATION REPORT
PARCEL 23

April 27, 2009

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This Historical Information Report summarizes available historical information and previous environmental investigation and remediation activities at Solid Waste Management Unit 21 and Area of Concern 73, within Parcel 23. This document has been prepared for submission to the New Mexico Environment Department (NMED) Hazardous Waste Bureau (HWB), as required by Section VII.F.1 of the Resource Conservation and Recovery Act (RCRA) Permit, No. NM 6213820974.

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PREFACE

2 This Historical Information Report summarizes available historical information and previous
3 environmental investigation and remediation activities at Solid Waste Management Unit (SWMU) 21
4 and Area of Concern (AOC) 73, within Parcel 23 at Fort Wingate Depot Activity (FWDA), McKinley
5 County, New Mexico. The report addresses the requirements of the U.S. Army Corps of Engineers
6 (USACE) Statement of Work (SOW) dated July 12, 2008, and revised on August 5, 2008.

7

8 This Historical Information Report was prepared by CH2M HILL in April 2009. Mr. Mark Patterson
9 served as the FWDA Defense Base Realignment and Closure (BRAC) Environmental Director and
10 Mr. Steve Martin served as the USACE Project Manager.



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1 Contents

2	Section	Page
3	Acronyms and Abbreviations.....	xi
4	1.0 Introduction	1
5	1.1 Objectives and Scope.....	1
6	1.2 Site Background.....	1
7	1.3 Summary of Available Historical Information	4
8	2.0 Parcel 23 Historical Information	7
9	2.1 SWMU 21: Central Landfill	7
10	2.2.1 Site Description and Operational History.....	7
11	2.1.2 Previous Investigations.....	9
12	2.2 AOC 73: Former Buildings or Structures along Road C-3	14
13	2.2.1 Site Description and Operational History.....	14
14	2.2.2 Previous Investigations.....	14
15	3.0 References	17
16	Figures	
17	1-1 Site Location Map for Parcel 23.....	2
18	1-2 Parcel and Major Land Use Locations	3
19	1-3 Parcel 23 AOC and SWMU Locations.....	5
20	2-1 SWMU 21 Site Location	8
21	2-2 AOC 73 Site Location	15
22	Appendixes	
23	A Parcel 23 Aerial Imagery	
24	B1 SWMU 21 Historical Reports	
25	B2 SWMU 21 Aerial Imagery	
26	B3 SWMU 21 Historical Photographs	
27	C1 AOC 73 Historical Reports	
28	C2 AOC 73 Aerial Imagery	
29	C3 AOC 73 Maps and Drawings	

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1 Acronyms and Abbreviations

2	AOC	Area of Concern
3	ACM	asbestos-containing material
4	BRAC	Base Realignment and Closure Plan
5	bgs	below ground surface
6	DDD	dichlorodiphenyldichloroethane
7	DDT	dichlorodiphenyltrichloroethane
8	ERI	Environmental Research, Inc.
9	FWDA	Fort Wingate Depot Activity
10	lbs	pounds
11	mg/kg	milligram(s) per kilogram
12	mm	millimeter(s)
13	MS/MSD	matrix spike/matrix spike duplicate
14	NARA	National Archives and Records Administration
15	NMED	New Mexico Environment Department
16	NMED-HWB	New Mexico Environment Department – Hazardous Waste Bureau
17	OB/OD	Open Burn/Open Detonation
18	PCB	polychlorinated biphenyl
19	ppmv	parts per million by volume
20	RCRA	Resource Conservation and Recovery Act
21	RDX	cyclotrimethylenetrinitramine
22	RFI	RCRA Facility Investigation
23	SOW	Scope of Work
24	SSL	Soil Screening Levels
25	SVOC	semi-volatile organic compound
26	SWMU	Solid Waste Management Unit
27	TAL	target analyte list
28	TCL	target compound list
29	TEAD	Tooele Army Depot
30	TNT	2,4,6,-trinitrotoluene
31	TPHs	total petroleum hydrocarbons
32	USACE	U.S. Army Corp of Engineers

- 1 USATHMA U.S. Army Toxic and Hazardous Materials Agency
- 2 UXO unexploded ordnance
- 3 VOC volatile organic compound
- 4 WSMR White Sands Missile Range

1 1.0 Introduction

2 This Historical Information Report presents a summary of previous investigations and historical
3 records available for Solid Waste Management Unit (SWMU) 21 and Area of Concern (AOC) 73
4 located within Parcel 23 at Fort Wingate Depot Activity (FWDA), New Mexico. The location of
5 Parcel 23 within the FWDA boundary is shown on Figures 1-1 and 1-2. The locations of SWMU 21
6 and AOC 73 within Parcel 23 are shown on Figure 1-3. Available historical records for each site are
7 summarized in the report text and relevant historical records are presented in the appendices.

8 1.1 Objectives and Scope

9 This Historical Information Report has been prepared for submission to the New Mexico
10 Environment Department – Hazardous Waste Bureau (NMED-HWB), as required by
11 Section VIII.A.1.a of the Resource Conservation and Recovery Act (RCRA) Permit
12 (NM 6213820974) for FWDA, which became effective December 31, 2005. This document has been
13 prepared to serve as a companion to the RCRA Facility Investigation (RFI) Work Plan for Parcel 23,
14 to document the historical site use and currently understood environmental conditions.

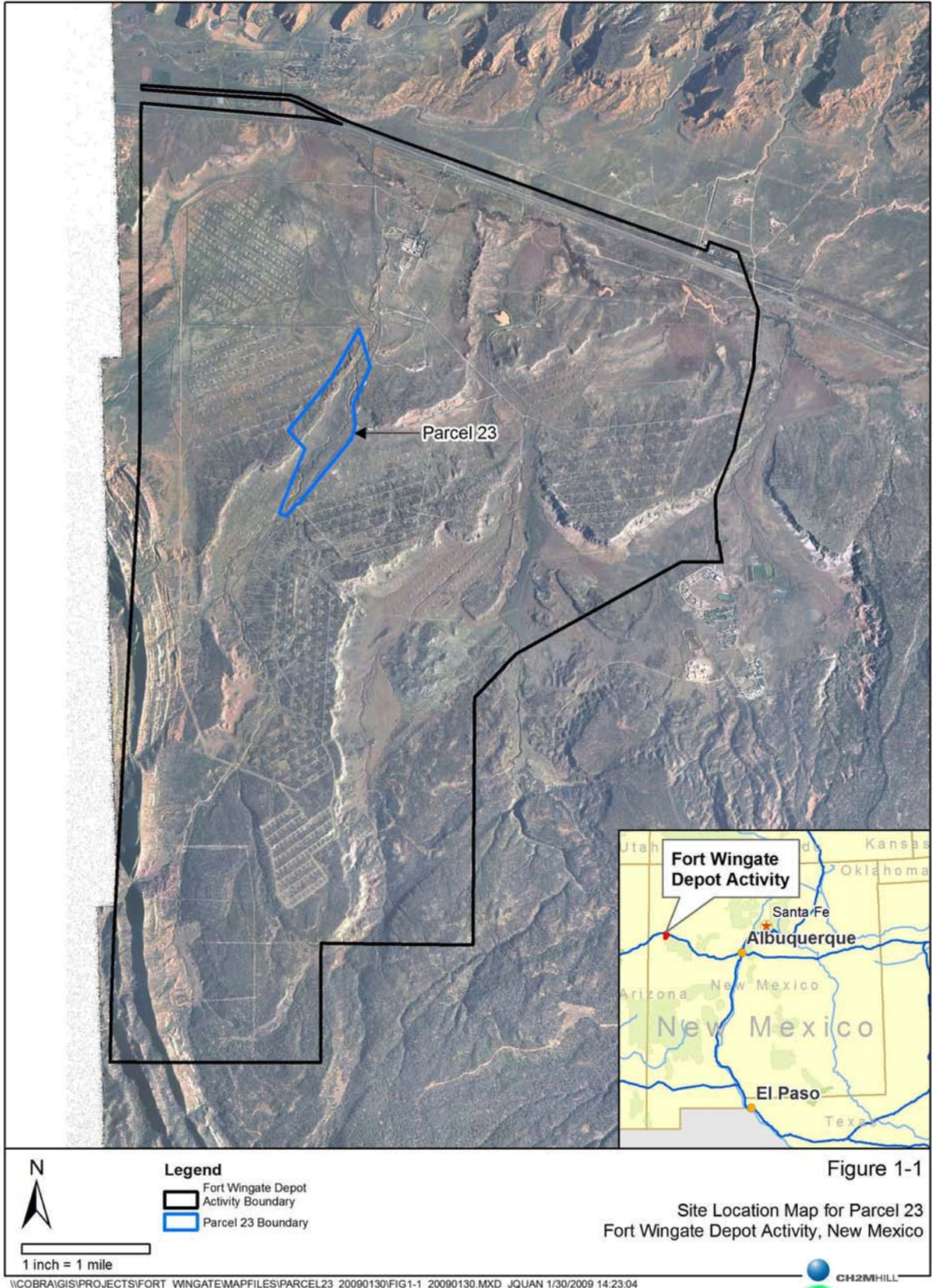
15 This document was prepared by reviewing available documentation for SWMU 21 and AOC 73.
16 This work was completed in partial fulfillment of the requirements of Contract Task Order Number
17 W9126G-08-F-0070 under Contract Number GS-10F-0029M as outlined in the Statement of Work
18 (SOW) dated July 12, 2008, and revised on August 5, 2008. Technical oversight of this work was
19 provided by the U.S. Army Corps of Engineers (USACE), Fort Worth District.

20 1.2 Site Background

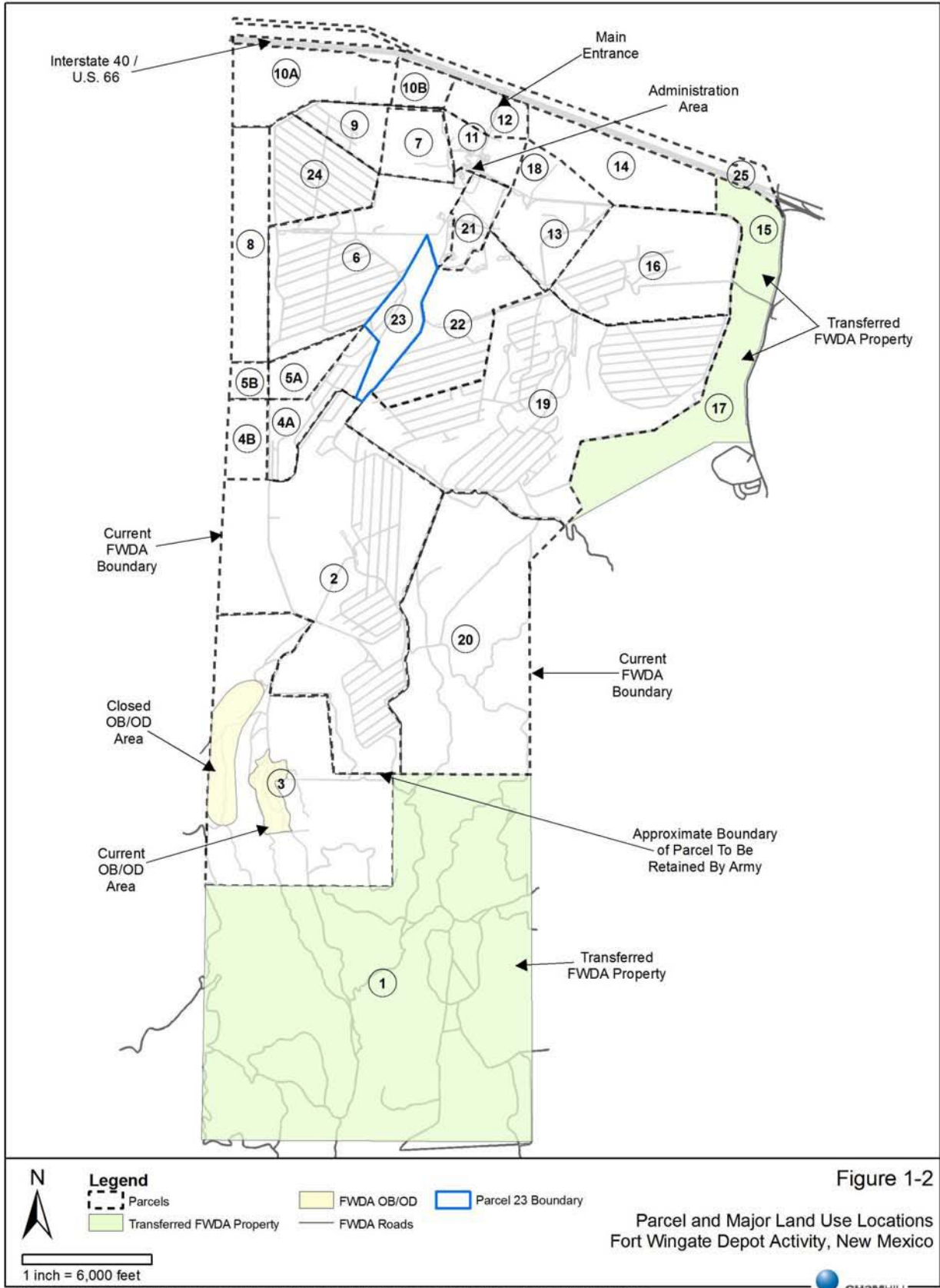
21 The FWDA is located approximately 8 miles east of Gallup, New Mexico, and currently occupies
22 approximately 15,277 acres of land in McKinley County, New Mexico, as shown in Figure 1-1. The
23 installation is divided into sub-areas based on general location and historical land use as shown in
24 Figure 1-2. The major land use areas include the Administration Area, the Workshop Area,
25 10 Munitions Storage Areas (Igloo Blocks A through H, J, and K), the Open Burning/Open
26 Detonation (OB/OD) Areas, and Protection and Buffer Areas.

27 The FWDA was originally established by the U.S. Army in 1862 at the southern edge of the Navajo
28 territory. In 1918 the mission of the FWDA changed from tribal issues to World War I-related
29 activities. Beginning in 1940, FWDA's mission was primarily to receive, store, maintain, and ship
30 explosives and military munitions, as well as to disassemble and dispose of unserviceable or obsolete
31 explosives and military munitions. In 1975, the installation came under the administrative command
32 of Tooele Army Depot (TEAD), located near Salt Lake City, Utah.

33 In January 1993, the active mission of the FWDA ceased and the installation closed as a result of the
34 Defense Base Realignment and Closure (BRAC) Act of 1988. Beginning in 2002, the U.S. Army
35 reassigned many FWDA functions to the BRAC Division, including caretaker duties, property
36 transfer, and performance of environmental compliance and restoration activities. TEAD retained
37 command and control responsibilities until January 31, 2008, when these responsibilities were
38 transferred to White Sands Missile Range (WSMR).



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1 The FWDA is currently undergoing final environmental characterization and restoration activities
2 prior to final property transfer and reuse. The installation has been divided into reuse parcels as part
3 of the planned property transfer to the U.S. Department of the Interior (DOI). This Historical
4 Information Report only includes information related to the SWMUs and AOCs located within
5 Parcel 23. The RCRA Permit lists a total of one SWMU and one AOC located completely within the
6 boundary of Parcel 23 (Figure 1-3), as follows:

- 7 • SWMU 21: Central Landfill
- 8 • AOC 73: Former buildings or structures along road C-3

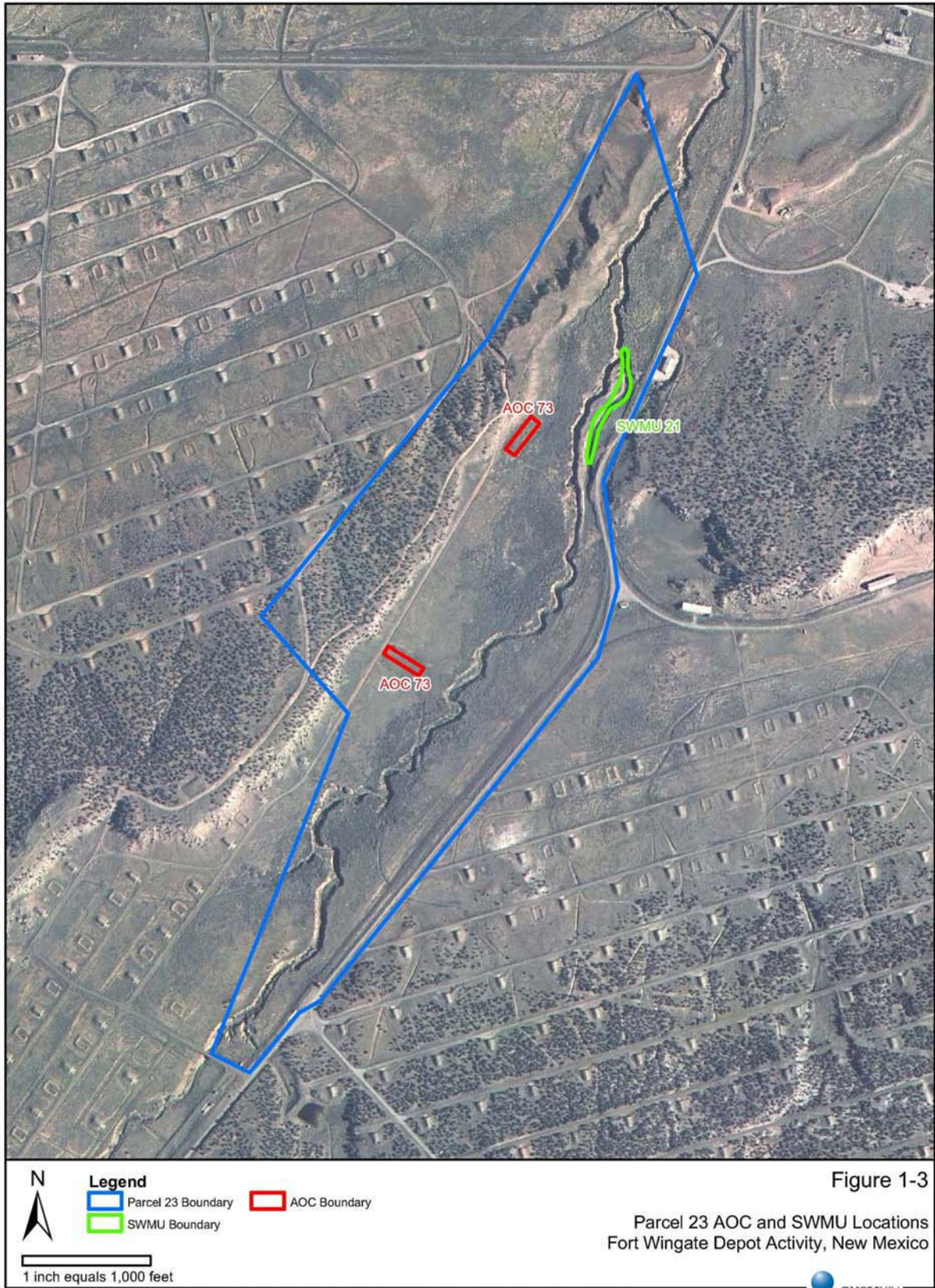
9 AOC 29 is listed as Igloo Block C, which is partially located within Parcel 23. However, AOC 29
10 will be addressed as part of Parcel 4 and is therefore not discussed further in this report. The RCRA
11 Permit description of Parcel 23 also includes electrical transformer sites, listed as AOC 75. However,
12 a site reconnaissance completed on November 19, 2008, concluded that there are no electrical
13 transformers located within Parcel 23.

14 1.3 Summary of Available Historical Information

15 A number of document reviews and searches have been completed for the FWDA since the
16 environmental restoration program began in 1980. Available records pertaining to historical
17 operations and previous investigations within the Parcel 23 boundaries were compiled into an
18 administrative record by the USACE from the following sources:

- 19 • Historical maps, drawings, and records located at the FWDA
- 20 • Interviews with former FWDA personnel familiar with historical FWDA operations
- 21 • Historical records and documents obtained from the U.S. Army Field Support Command/Joint
22 Munitions Command History Office's archives and document collection
- 23 • Historical records and documents obtained from the National Archives and Records
24 Administration (NARA), stored in multiple locations
- 25 • A historical aerial photograph collection and analysis completed for the FWDA (ERI, 2006)

26 Documents made available to the review team for completion of this Historical Information Report
27 were provided by the USACE based on the information available within the administrative record
28 described above. Relevant pages from available documents relating to Parcel 23 are attached to this
29 document as a series of appendices for each individual SWMU or AOC. Additionally, aerial
30 photograph figures were prepared for Parcel 23 as a whole, and for each individual SWMU and AOC,
31 for each year that data were available. These figures are presented as a series of individual
32 appendices for each site.



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2.0 Parcel 23 Historical Information

This section summarizes relevant historical information contained in available FWDA documents. The following subsections provide a site description and operational history for SWMU 21 and AOC 73, as well as a summary of relevant environmental information contained in the available reports. During the operational history of FWDA there have been vast numbers of documents prepared that may include general information relating to activities within Parcel 23. However, this document only presents and summarizes relevant historical information relating to the operational history and environmental conditions for SWMU 21 and AOC 73.

Results and conclusions from the historical reports summarized below have not been re-evaluated or interpreted as part of the preparation of this document. The information contained in this report is based solely on the information available in the respective reports and the results and conclusions drawn in the respective reports.

Appendix A presents aerial photograph figures for Parcel 23 as a whole for the years that aerial photographs are available.

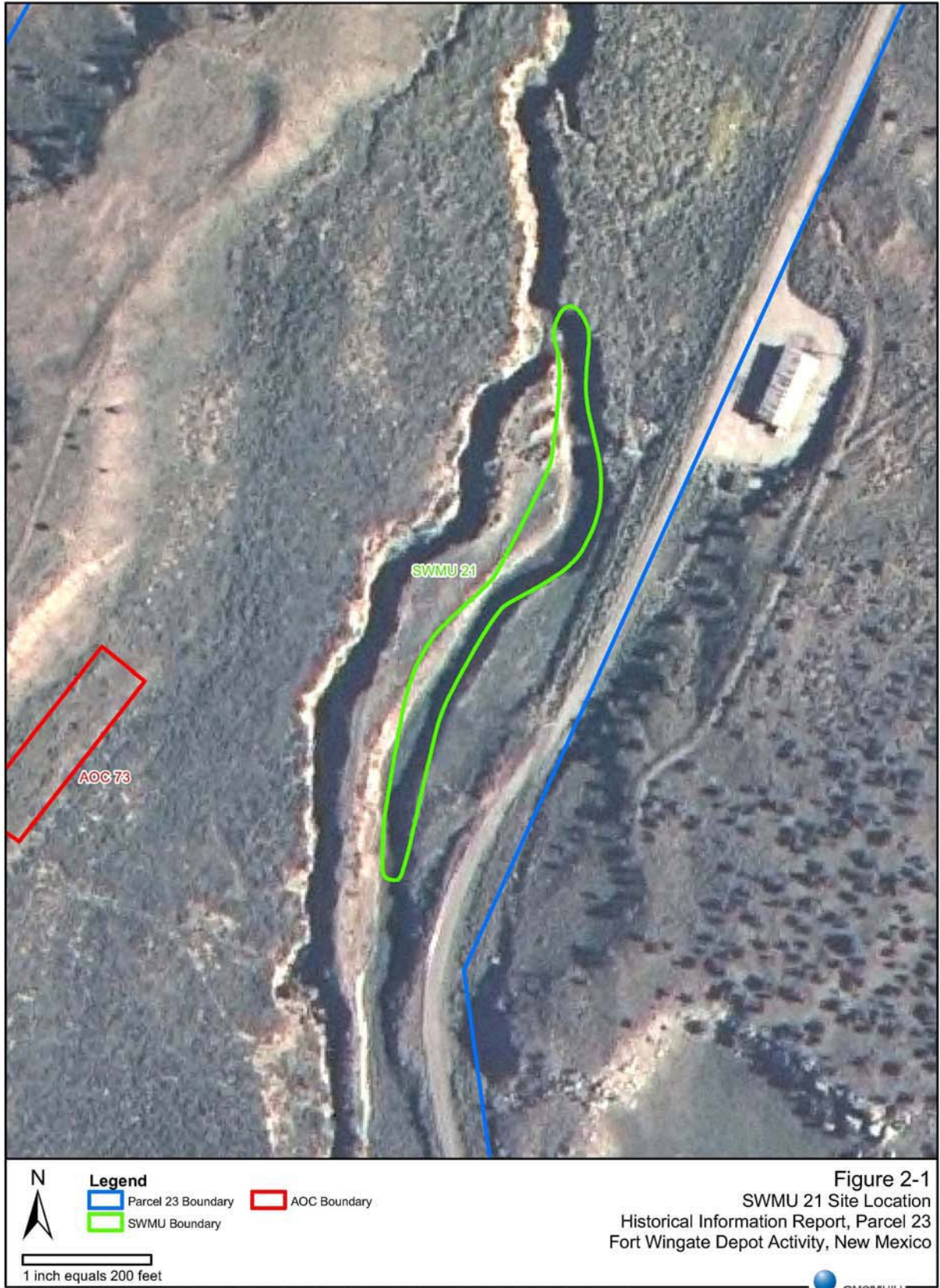
2.1 SWMU 21: Central Landfill

A summary of information contained in available historical documents relating to SWMU 21, the former Central Landfill, is presented in the following sections.

2.1.1 Site Description and Operational History

The former Central Landfill was a burial site located approximately 1 mile south of the Administration Area, on the western side of Arterial Road No. 2, as shown in Figure 2-1. The former landfill was located in an abandoned portion of a former arroyo channel that was cut off from the main arroyo some time between 1952 and 1958. A bedrock structure, which likely controlled the configuration of the active arroyo channel outcrops to the east of the former Central landfill and to the west within the active arroyo channel. The former landfill site was approximately 1,100 feet long and 50 feet wide. The landfill was confined by vertical walls that likely represent the walls of the former arroyo channel and the total depth of the landfill was 3 to 18 feet deep. Prior to removal of the landfill contents in 1999, there was silty to clayey sand cover of approximately 1 to 3 feet.

Based on available historical information, the former Central Landfill received waste materials from 1969 to 1993. This site was also historically called the Current Landfill and the Sanitary Landfill. The landfill historically received construction and demolition rubble, land debris, paper wastes, pesticide containers, paint cans, land-dried sewage sludge, and suspected asbestos-containing materials (USATHMA, 1980).



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1 In 1997, nine trenches were excavated to determine the contents of the landfill. The waste
2 encountered generally consisted of solid waste of the sort typically generated during warehousing and
3 packaging of munitions, construction debris, and household waste (ERM Program Management
4 Company, 1997). In 1999, all landfill waste and visibly impacted soil below the former landfill was
5 removed and disposed of at an offsite disposal facility (SCIENTECH, Inc., 1999). However,
6 additional soil sampling completed in 2000 indicated that arsenic, as well as several semi-volatile
7 organic compounds (SVOCs), pesticides, and explosives were present at concentrations above their
8 respective NMED Residential Soil Screening Levels (SSL) in soil below the former landfill
9 (TetraTech NUS, 2000).

10 2.1.2 Previous Investigations

11 A summary of information contained in available documents is presented in the following
12 subsections. Appendix B1 presents relevant pages from the following summarized historical reports.
13 Appendix B2 presents the available aerial photograph figures. Appendix B3 presents available
14 historical photographs.

15 *Final Report Installation Assessment of Fort Wingate Depot Activity, USATHMA, 1980*

16 This report includes a description of solid waste treatment at the FWDA. The Central Landfill at this
17 time was referred to as the Sanitary Landfill. At the time of this report, garbage was collected by the
18 City of Gallup and hauled to a city-owned landfill for disposal. Trash from other activities on the
19 installation was buried within the Central Landfill. Waste material was covered with soil once a
20 month. No burial sites for contaminated waste were reported at the FWDA at the time of this report.

21 *Final Report Environmental Survey of Fort Wingate Depot Activity, ESE, 1981*

22 This report includes the general description of historical operations at the Central Landfill presented
23 in *Final Report Installation of Fort Wingate Depot Activity* (USATHMA, 1980), and presents results
24 from soil sampling conducted at the Central Landfill. Soil sample FW01 was collected down-
25 gradient (north) of the Central Landfill at a depth of 2 feet below ground surface (bgs) to evaluate
26 potential contamination from the landfill. The sample was analyzed for explosives, volatile organic
27 compounds (VOCs), SVOCs, polychlorinated biphenols (PCBs), pesticides, herbicides, nitrate,
28 nitrite, phosphorous, and sulfate. Dichloro-diphenyl-trichloroethane (DDD) was detected at
29 0.007 milligrams per kilogram (mg/kg), dieldrin at 0.002 mg/kg, endosulfan sulfate at 0.004 mg/kg,
30 endrin at 0.002 mg/kg, Aroclor 1016 at 0.02 mg/kg, and total phosphorous at 308 mg/kg.

31 *Master Environmental Plan, ANL, 1990*

32 This report includes the general description of historical operations at the Central Landfill presented
33 in *Final Report Installation of Fort Wingate Depot Activity* (USATHMA, 1980), and describes the
34 results of the soil sample collected in 1981. It was also reported that the landfill had been in
35 operation since 1969 and covered approximately 6 acres. The waste was anticipated to be as much as
36 20 feet deep.

37 The report indicates that pesticide containers and sludge from the drying beds at the sewage treatment
38 plant were identified among other waste material historically disposed of in the landfill. The 1981
39 soil samples confirmed that pesticides and PCBs were positively detected north of the landfill.
40 Additionally, an inspection in 1989 revealed paint cans and asbestos-containing materials (ACMs)
41 were present in the active portion of the landfill. In 1990, the landfill was supposed to receive mostly
42 construction and demolition rubble, land debris, paper wastes, and other similar waste.

1 *Final Technical Plan for the Environmental Investigation at FWDA*; Metcalf & Eddy, Inc., 1992

2 This report describes environmental investigation activities to be completed at the Central Landfill.
3 Soil gas samples would be analyzed for methane and hydrogen sulfide at 10 locations on the landfill
4 at 25-foot centers. Additionally, 30 soil gas samples would be collected directly north of the landfill
5 on 50-foot centers in a 250-foot-by-300-foot grid. To assess the potential for leachate migration east
6 and north of the landfill, six soil borings were to be drilled around the perimeter of the landfill. Each
7 soil boring would be advanced to a total depth of 20 feet with samples collected at depth intervals of
8 0.5 to 2.5 feet bgs, 8 to 10 feet bgs, and 18 to 20 feet bgs. Samples were to be analyzed for target
9 compound list (TCL) organics, target analyte list (TAL) inorganics, pesticides, and PCBs.

10 *Debris Piles and Burial Sites Investigation Report (Group C and Central Landfills)*, DRAFT;
11 Environmental Resources Management, Inc., 1997a

12 This report was unable to be reviewed.

13 *Final Remedial Investigation/Feasibility Study & RCRA Corrective Action Program Document*;
14 ERM Program Management Company, 1997b

15 This report provides further description of the site location and dimensions and includes a summary
16 of previously completed investigation activities. Nine trenches were excavated throughout the length
17 of the Central Landfill, generally from east to west through the width of the landfill. The trenches
18 varied in length from 35 to 195 feet with maximum depths from 11 to 22 feet bgs. Waste was
19 encountered in eight of the nine trenches. The depth of the waste varied across the site, but was
20 generally encountered in an interval between 1 foot and 18 feet bgs. All trenches penetrated the full
21 thickness of the wastes in both the horizontal and vertical planes.

22 A geophysical survey was completed on a 50-foot-by-50-foot grid. The electromagnetic conductivity
23 data were generally consistent with the expected boundary of the landfill. Magnetic data were
24 characterized as randomly spaced high and low anomalies that were inconsistent with topography and
25 the location of landfill ferrous materials. Ground-penetrating radar data were not able to identify the
26 base of the landfill.

27 Twelve samples of soil from within the waste and 12 samples from the native soil below the waste
28 intervals were collected for laboratory analysis. In addition, two samples each of the cover soil and
29 the soil beneath the waste were collected for geotechnical analysis to aid in the evaluation of potential
30 restoration or closure options. Groundwater was not encountered during the investigation effort.

31 The types of waste encountered at the Central Landfill generally consisted of solid waste typically
32 generated during warehousing and packaging of munitions, construction debris, and household
33 wastes. Unusual material identified in the landfill included: two drums, one containing what
34 appeared to be unused oil and the other contained a tar-like substance; a single demilitarized
35 155-millimeter (mm) shell was recovered in the northern portion of the landfill; several crushed
36 5-gallon containers which appeared to be empty; and a layer of treated lumber. Concentrations of
37 SVOCs, pesticides, and metals exceeding background levels were detected in samples collected
38 within the waste materials throughout the landfill. SVOCs were detected at concentrations exceeding
39 the NMED Residential SSL in selected waste samples at the time of the report, although they are not
40 above the current NMED Residential SSL. Metals were not detected above background values in
41 native soils. SVOCs were detected in one native soil sample above the NMED Residential SSL at the
42 time of the report, although not above the current NMED Residential SSL.

43 A total of 27 soil gas samples were collected on the 50-foot-by-50-foot grid established for the
44 geophysical survey. Methane concentrations ranged from below the detection limit to 7 parts per
45 million by volume (ppmv). Hydrogen sulfide was not detected in any of the 27 soil gas sampling

1 locations. The relatively low methane concentrations and absence of hydrogen sulfide suggest that
2 landfill gas was not being generated at significant concentrations.

3 *Corrected Final Design Analysis, Landfill Closure: Removal & Disposal Central Landfill Area,*
4 *FWDA (TetraTech NUS, 1998)*

5 This report was unable to be reviewed.

6 *Sampling and Analysis Plan for the Landfill Closure: Removal and Disposal of Group C and*
7 *Central Landfills, Fort Wingate, New Mexico (SCIENTECH, Inc., 1998a)*

8 This report was unable to be reviewed.

9 *Waste Management Plan for the Landfill Closure: Removal and Disposal of Group C and Central*
10 *Landfills, Fort Wingate, New Mexico (SCIENTECH, Inc., 1998b)*

11 This report was unable to be reviewed.

12 *Quality Assurance Project Plan or the Landfill Closure: Removal and Disposal of Group C and*
13 *Central Landfills, Fort Wingate, New Mexico (SCIENTECH, Inc., 1998c)*

14 This report was unable to be reviewed.

15 *Evaluation and Prioritization of Potential Surface Water Concerns; PMC 1998*

16 This report discusses best management practices for surface water concerns. Staked straw bales were
17 installed at the stormwater outfall and at the toe of the landfill where it intersects the active arroyo.

18 *Operation Plan for the Landfill: Removal and Disposal of Group C and Central Landfills;*
19 *SCIENTECH, Inc., 1999a*

20 This report includes a description of the plan to be followed during removal and disposal activities at
21 the Central Landfill. The report includes procedures for storm water pollution prevention control,
22 excavation, soil sampling, unexploded ordnance (UXO) screening, storage of excavated materials,
23 grading, and re-vegetation procedures.

24 *Chemical Quality Control Summary Report for the Landfill Closure: Removal and Disposal of*
25 *Group "C" and Central Landfills, Fort Wingate, New Mexico; SCIENTECH, Inc., 1999b*

26 This report includes a summary of the removal and disposal action completed at the Central Landfill.
27 Excavation, transportation, and offsite disposal of landfill material were completed in 1999. There
28 was a potential for UXO to be present; therefore, UXO Safety Specialists were present at all times to
29 inspect all materials as they were removed from the landfill. All soil was screened through a ½-inch
30 grid screen to locate any UXO items. The soil was then disposed of offsite after meeting testing
31 requirements for chemical constituents. Materials other than soil were transported offsite for disposal
32 after being certified as free of explosion hazards. NMED personnel provided regulatory guidance
33 during the landfill removal project and made onsite inspections during various phases of the project.

34 After removal of landfill materials, confirmation soil samples were collected and analyzed for metals,
35 VOCs, SVOCs, pesticides, herbicides, PCBs, and total petroleum hydrocarbons (TPH) to verify that
36 there was no contamination remaining in the native soil below the landfill. It was reported that all
37 compounds were detected below applicable federal, state, or local guidelines. However, further
38 review of the data from this report indicates that several compounds detected in the native soil below
39 the landfill exceed current NMED Residential SSL. The SVOCs benzo(a)pyrene, dibenzofuran, and
40 ideno(1,2,3-cd)pyrene were detected above their respective NMED Residential SSL in either landfill

1 section A, D, G, I, J, L, M, or P. Additionally, the reporting limit for arsenic from these samples was
2 above the current NMED Residential SSL. The excavation was backfilled with clean soil, graded,
3 and re-seeded with native vegetation. The depth of the backfill was not reported.

4 *Chemical Quality Control Summary Report for Confirmation Soil Sampling in Support of the*
5 *Landfill Closure: Removal and Disposal of Group "C" and Central Landfills, Fort Wingate, New*
6 *Mexico; SCIENTECH, Inc., 1999c*

7 This report includes a summary of confirmation sampling completed following the removal and
8 disposal activities completed at the Central Landfill. During excavation of the Central Landfill, an
9 additional landfill cell was discovered immediately to the south. The cell measured 40 feet by
10 450 feet. A total of 18 soil samples were collected from this area at a frequency of one sample every
11 25 feet at a depth of 1 foot bgs, or approximately 20 feet below the original landfill grade. The
12 samples were analyzed for VOCs, SVOCs, TPH, pesticides, herbicides, PCBs, RCRA metals, and
13 explosives. Sample results indicated elevated concentrations of SVOCs, TPHs, metals, and
14 explosives. It was reported that none of the compounds were detected above applicable federal, state,
15 or local guidelines. However, arsenic and the SVOCs benzo(a)anthracene, benzo(a)pyrene,
16 benzo(b)fluoranthene, and dibenzo(a,h)anthracene were detected at concentrations above their current
17 applicable NMED Residential SSL.

18 *Surface Water Site Assessments Volume 1; PMC, 2000*

19 This report only presents historical site information provided in previous reports.

20 *Release Assessment Report; TetraTech NUS, 2000*

21 As part of the release assessment, 25 soil boring locations were placed in the main cell of the Central
22 Landfill at 40- to 50-foot intervals along the centerline of the former excavation. One sample was
23 collected from each boring. Borings CMAIN-1, -4, -7, -10, -13, -16, -19, -22, and -25 were drilled to
24 a depth of 1 foot bgs. Borings CMAIN-2, -5, -8, -11, -14, -17, -20, and -23 were drilled to a depth of
25 3 feet bgs. Borings CMAIN-3, -6, -9, -12, -15, -18, -21, and -24 were drilled to a depth of 5 feet bgs.

26 Eighteen soil boring locations were placed in the new cell of the Central Landfill at 25-foot intervals
27 along the centerline of the former excavation. One sample was collected from each boring. Borings
28 CNEW-1, -4, -7, -10, -13, and -16 were drilled to a depth of 1 foot bgs. Borings CNEW-2, -5, -8, -11,
29 -14, and -17 were drilled to a depth of 3 feet bgs. Borings CNEW-3, -6, -9, -12, -15, and -18 were
30 drilled to a depth of 5 feet bgs. Additionally, five quality assurance/quality control (QA/QC)
31 samples, two matrix spike/matrix spike duplicate (MS/MSD) samples, and one equipment rinsate
32 sample were collected.

33 Several compounds were detected in the CMAIN soil borings at concentrations above their respective
34 NMED Residential SSL. These included: arsenic; the SVOCs benzo(a)pyrene, benzo(b)fluoranthene,
35 chrysene, dibenzo(a,h)anthracene, dibenzofuran, fluoranthene, fluorine, ideno(1,2,3-cd)pyrene,
36 naphthalene, phenanthrene, and pyrene; the pesticides DDD, DDT, dieldrin, and chlordane; and the
37 explosive compounds cyclotrimethylenetrinitramine (RDX) and 2,4,6-trinitrotoluene (TNT).

38 *Summary Report for Removal and Disposal of the Group C & Central Landfills; USACE, 2005*

39 This draft report provides a summary of the Central Landfill removal and disposal activities presented
40 in the SCIENTEC, Inc., reports from 1999.

1 *Base Realignment and Closure (BRAC) Plan*; Terranear PMC, 2006

2 This BRAC Plan briefly summarizes the 1999 landfill removal activities at the Group C and Central
3 Landfills. The report states that 24,140 tons of waste, debris, and soil were excavated from the two
4 landfills and disposed of offsite.

5 *Aerial Photograph Site Analysis Report*; Environmental Research, Inc. (ERI), 2006

6 An aerial photography analysis was completed in 2006 using aerial imagery obtained during a search
7 of government and commercial records (ERI, 2006). The photographs were analyzed utilizing a
8 stereoscope to locate potential sources of contamination and to record any findings inside the
9 boundaries of the known AOCs and SWMUs. Aerial images dated from 1935 to 1997 were analyzed
10 as part of this report.

11 Activities at the Central Landfill are first observed in the 1973 aerial photograph when multi-toned
12 materials were present in the landfill area. However, activities in the general area are first observed in
13 the 1958 photograph when a diversion ditch had been installed to the west of the native arroyo. This
14 ditch by-passed the portion of the arroyo that ultimately became the Central Landfill. It is unknown
15 why this ditch was originally installed. The 1978 photograph shows a fill area with probable debris.
16 The 1985 photograph shows an access road which leads to an area of rubble and debris in the
17 southern portion of the site. Rubble and debris also remain at an area to the south of the Central
18 Landfill. The 1991 photograph shows a fill area with debris present. More rubble and debris are also
19 visible in the ditch south of the site. The 1993 photograph shows light-toned material near the center
20 of the site. The 1997 photograph shows three areas of mounded material in the northern portion of
21 the site.

22 Additionally, a 2005 aerial photograph was evaluated by CH2M HILL and is included in
23 Appendix B2. While this figure is not part of the ERI, 2006 report it is presented here as it pertains to
24 the discussion of the aerial photograph interpretation. The 2005 photograph shows that the site had
25 been excavated.

26 *Letter Archival Report*; SAIC, 2007

27 This archival report is a reference to documents on file with the USACE Fort Worth District as of
28 July 2006. It cites the following relevant reports on file for the Central Landfill:

- 29 • *Debris Piles and Burial Sites Investigation Report (Group C and Central Landfills), DRAFT*
30 (Environmental Resources Management, Inc., 1997)
- 31 • *Corrected Final Design Analysis, Landfill Closure: Removal & Disposal Central Landfill Area,*
32 *FWDA (TetraTech NUS, 1998)*
- 33 • *Sampling and Analysis Plan for the Landfill Closure: Removal and Disposal of Group C and*
34 *Central Landfills, Fort Wingate, New Mexico (SCIENTECH, Inc., 1998)*
- 35 • *Waste Management Plan for the Landfill Closure: Removal and Disposal of Group C and*
36 *Central Landfills, Fort Wingate, New Mexico (SCIENTECH, Inc., 1998)*
- 37 • *Quality Assurance Project Plan or the Landfill Closure: Removal and Disposal of Group C and*
38 *Central Landfills, Fort Wingate, New Mexico (SCIENTECH, Inc., 1998)*
- 39 • *Chemical Quality Control Summary Report for the Landfill Closure: Removal and Disposal of*
40 *Group C and Central Landfills, Ft. Wingate Depot Activity (SCIENTECH, Inc., 1999)*
- 41 • *Chemical Data Summary Report for Confirmation Soil Sampling of Central Landfill*
42 (SCIENTECH, Inc., 1999)

43 No other reports are directly listed for the Central Landfill or SWMU 21.

1 2.2 AOC 73: Former Buildings or Structures along Road C-3

2 A summary of information contained in available historical documents relating to AOC 73 – former
3 buildings or structures along Road C-3 – is presented in the following sections.

4 2.2.1 Site Description and Operational History

5 AOC 73 is described in the RCRA Permit as former buildings or structures along Road C-3. AOC 73
6 is shown on Figure 2-2. Based on available photographs and maps, AOC 73 consists of two general
7 site locations. One site is located in the north-central portion of Parcel 23 and the other in the south-
8 central portion of the parcel, both located along Road C-3. Each site is approximately 100 feet by
9 300 feet in size.

10 The 1995 and 2007 Archive Search Reports do not list any available information for AOC 73.
11 However, the two AOC 73 sites are present on historical FWDA maps, and AOC 73 was included in
12 the aerial photographic analysis by Environmental Research, Inc. (ERI, 2006). Applicable historical
13 maps and drawings are included in Appendix C3.

14 Map A-14-3, dated September 1, 1945, lists the two AOC 73 sites as an “X-Site - Temporary
15 Standard Above Ground Magazine 4,000 Tons Gross Class X Amm.” The northern building is listed
16 as X-21 and the southern building as X-22. An as-built drawing of a Standard Ammunition Magazine
17 dated May 17, 1941, is provided in Appendix C3. Map A-14-1, dated March 1950, lists the two
18 AOC 73 sites as a “Shed Covered Class Y Storage Site.” The northern building is listed as both
19 T-332 and X-21, and the southern site is listed as both T-333 and X-22. Map A-14-4, dated
20 January 4, 1967, lists the two AOC 73 sites as an “Open Storage Site.” The northern site is listed as
21 Z-332 and the southern site is listed as Z-333. On this map, each site is noted along with several
22 other Open Storage Sites across FWDA as a working site being full to capacity with leakers awaiting
23 disposition. The northern site is noted to have 500,000 pounds (lbs) of storage and the southern site
24 1,000,000 lbs of storage. The two AOC 73 sites have had various site identifiers based on the
25 historical operations described above, but are currently referred to as T-332 and T-333, respectively.

26 Based on review of available historical maps and aerial photographs the operational history is
27 approximately as follows. It is expected that activities first began at AOC 73 sometime between 1940
28 and 1941 when a temporary standard aboveground magazine was built at each of the two locations. It
29 is believed that these covered structures were used for the temporary storage of munitions until
30 sometime between 1962 and 1966 when the structures were demolished. Following the removal of
31 the buildings, AOC 73 was used for temporary open storage of munitions that were awaiting
32 disposition. The open storage of munitions at these sites was continued until sometime between 1967
33 and 1973. By 1973, the aerial photographs indicate that the site had begun to re-vegetate. No
34 additional information is available relating to the operational history of AOC 73.

35 2.2.2 Previous Investigations

36 A summary of information contained in available documents is presented in the following
37 subsections. Appendix C1 presents relevant pages from the following summarized historical reports.
38 Appendix C2 presents the available aerial photograph figures. Appendix C3 presents available
39 historical photographs, relevant maps, and as-built drawings.



Figure 2-2
AOC 73 Site Location
Historical Information Report, Parcel 23
Fort Wingate Depot Activity, New Mexico

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DEN \\COBRA\GIS\PROJECTS\FORT_WINGATE\MAPFILES\PARCEL23_20081125\FIG2-2_20081125.MXD 11/25/2008 10:21:33

1 *Aerial Report*; Environmental Research, Inc., 2006

2 An aerial photography analysis was completed in 2006 based on aerial imagery obtained during a
3 search of government and commercial records (ERI, 2006). The photographs were analyzed utilizing
4 a stereoscope to locate potential sources of contamination and to record any findings inside the
5 boundaries of the known AOCs and SWMUs. Aerial images dated from 1935 to 1997 were analyzed.

6 Activities at AOC 73 are first observed in the 1948 photograph when buildings are present at the site.
7 It was noted that light-toned material and disturbed ground are located east of Z-332 (currently
8 T-332) and an access road leads to a ground scarred area southeast of Z-332 in this photo. The report
9 indicates that the 1962 photograph shows a ground scar and probable debris present to the east of
10 Z-332. The 1966 photograph shows that Z-332 and Z-333 (currently T-333) have been removed and
11 these areas appear to have been graded. Open storage activities are not observed in any of the
12 subsequent photographs and the areas appear to begin re-vegetating by the 1973 photograph.

13 *Report of Investigation for Potential Environmental Areas of Concern*; USACE, 2007

14 This report documents an investigation completed at AOCs located outside of the boundaries of
15 current SWMUs and AOCs. Investigation activities were not completed within AOC 73. However,
16 the report includes background information relevant to areas at the FWDA that were previously used
17 to temporarily store inert items and ordnance, such as AOC 73. The report indicates that buildings
18 designated with an X- identifier were wood-framed structures with a roof but no walls. These
19 buildings had earth or gravel floors and were present at FWDA from approximately 1945 to 1980.
20 Areas with a Z- identifier were either buildings such as those with the X- identifier or were flat open
21 storage areas with no associated building that were present at the FWDA from approximately 1945 to
22 1980.

23 Parcel 23 also once contained a World War I (WWI) wooden magazine in the southeast portion of the
24 parcel. This site is not part of AOC 73, but will be discussed here since it is not associated with a
25 specific SWMU or AOC and it was discussed in this report. This site was demolished prior to
26 construction of the current infrastructure at FWDA. The Army Corps of Engineers previously
27 consulted with the NMED and performed multi-incremental sampling on those sites not within a
28 SWMU or AOC.

29 In this report the Army describes the magazines as wood buildings with a metal roof approximately
30 20 feet by 50 feet in size with bulk explosives stored in boxes. The report details the minimal
31 historical information, investigative methods, and sampling results and includes a figure showing
32 sample locations. The Parcel 23 site was identified as 35B-229. Each of the sites was tested for
33 explosives by analyzing a multi-incremental sample from 30 sub-sample location, collected at depths
34 of 0 to 6 inches below the surface. Also, each site was visually inspected by Mr. David Holladay, a
35 Tech 3 Army Ordnance and Explosives Safety Specialist, who also surveyed each site with a
36 Schoenstedt metal detector. The only explosive found on any of these sites was at site 35K-306. This
37 site contained an estimated quantity (J flag – estimated value) of 0.19 mg/kg of 4-nitritoluene. This
38 concentration is well below the NMED Residential SSL of 146 mg/kg. No munitions were detected.

39 *Release Assessment*; USACE, 2008

40 A formal report has not been prepared for this work; however, soil sampling was conducted at
41 AOC 73 on September 9, 2008. Four multi-incremental surface soil samples were collected from
42 each of the two individual AOC 73 locations, T-332 and T-333. These samples were analyzed for
43 explosives by EPA Method 8330B. No explosive compounds were detected in any of the collected
44 soil samples.

1 3.0 References

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3 Document No. 90-10. December 1990.
- 4 ERI, 2006. *Aerial Photographic Site Analysis Fort Wingate Depot Activity: Fort Wingate, NM.*
5 Environmental Research, Inc. September 2006.
- 6 ERM Program Management Company, 1997b. *Fort Wingate Depot Activity, Gallup, NM: Final*
7 *Remedial Investigation/Feasibility Study & RCRA Corrective Act.* Document No. 97-5.
8 November 1997.
- 9 ESE, 1981. *Final Report Environmental Survey of Ft. Wingate Depot Activity, Gallup, New Mexico.*
10 Document No. 80-3. September 1981.
- 11 Metcalf & Eddy, Inc., 1992. *Final Technical Plan for the Environmental Investigation (EI) at Fort*
12 *Wingate Ordinance Depot (FWDA), Gallup, New Mexico.* Document No. 92-4. November
13 1992.
- 14 PMC Environmental, 1998. *Fort Wingate Depot Activity: Evaluation and Prioritization of Potential*
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- 16 PMC Environmental, 2000. *Fort Wingate Depot Activity, Gallup, NM: Surface Water Site*
17 *Assessments, Volume 1.*
- 18 SAIC, 2007. Archival Search for Fort Wingate Depot Activity Information. March 2007.
- 19 SCIENTECH, Inc., 1999a. *Operation Plan for the Central Landfill.* March 16, 1999.
- 20 SCIENTECH, Inc., 1999b. *Chemical Quality Control Summary Report for the Landfill Closure:*
21 *Removal and Disposal of Group "C" and Central Landfills, Fort Wingate, New Mexico.*
22 August 1999.
- 23 SCIENTECH, Inc., 1999c. *Chemical Quality Control Summary Report for Confirmation Soil*
24 *Sampling of Central Landfill in Support of Landfill Closure: Removal and Disposal of Group*
25 *"C" and Central Landfills, Fort Wingate, New Mexico.* December 1999.
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- 28 TetraTech NUS, 2000. *Final Release Assessments Report.* December 2000.
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- 31 USACE, 2007. *Report of Investigation for Potential Environmental Areas of Concern.* October 2007.
- 32 USATHMA, 1980. *Final Report Installation Assessment of Fort Wingate Army Depot Activity,*
33 *Gallup, NM: Report No. 136.* January 1980.

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