

Draft

Environmental Protection Plan
Interim Measures for
Parcel 21 – Solid Waste Management Unit 1,
Parcel 24 – Igloo Block A, and
Abandonment of Wells

Fort Wingate Depot Activity
McKinley County, New Mexico

February 4, 2016

Contract No. W9128F-13-D-0025
Task Order No. DS01, Mod No. 01

Prepared for:



US Army Corps of Engineers
Tulsa District
1645 South 101st East Avenue
Tulsa, OK 74128

Prepared by:



Zapata Incorporated
6302 Fairview Road, Suite 600
Charlotte, North Carolina 28210

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15. SUBJECT TERMS Fort Wingate Depot Activity, Interim Measures for Parcel 21 – SWMU 1, Parcel 24 – Igloo Block A, and Abandonment of Wells.					
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BIA-NR = Bureau of Indian Affairs – Navajo representative
 BIA-Z = Bureau of Indian Affairs – Zuni representative
 BRACD = U. S. Army Base Realignment and Closure Division
 DOI/BLM = Department of Interior Bureau of Land Management
 EPA 6 = U. S. Environmental Protection Agency Region 6
 FWDA ARM = Fort Wingate Depot Activity Administrative Records Manager
 FWDA BEC = Fort Wingate Depot Activity Base Realignment and Closure Environmental Coordinator
 FWDA EIMS = Fort Wingate Depot Activity Environmental Information Management System
 NMED = New Mexico Environment Department
 NN = Navajo Nation
 POZ = Pueblo of Zuni
 USACE SPA = U. S. Army Corps of Engineers – Albuquerque District.*
 USACE SPK = U. S. Army Corps of Engineers – Sacramento District.*
 USACE SWF = U. S. Army Corps of Engineers – Fort Worth District
 USACE SWT = U. S. Army Corps of Engineers – Tulsa District
 USAEC = U. S. Army Environmental Command

***For MEC (Munitions and Explosives of Concern) investigations only.**

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FEBRUARY 2016**

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Mr. Steven W. Smith, P.E.
Fort Wingate Program Manager

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	Acronym	Page
1		
2		
3		
4	ADC	Alternate Daily Cover
5	AMEC	AMEC Environment & Infrastructure, Inc.
6	AOC	Area of Contamination
7	ARM	Administrative Records Manager
8		
9	BEC	BRAC Environmental Coordinator
10	bgs	Below Ground Surface
11	BIA	Bureau of Indian Affairs
12	BMPs	Best Management Practices
13	BRAC	Base Realignment and Closure
14	BRACD	U.S. Army Base Realignment and Closure Division
15		
16	CESWT	USACE Tulsa District
17	CFR	U.S. Code of Federal Regulations
18	COR	Contracting Officer Representative
19	CY	Cubic Yards
20		
21	DMP	Disposal Management Plan
22	DOI	Department of the Interior
23		
24	EPA	U.S. Environmental Protection Agency
25	EPP	Environmental Protection Plan
26	ERM	ERM Program Management Corporation
27		
28	ft	Feet
29	FWDA	Fort Wingate Depot Activity
30		
31	gals.	Gallons
32	GPS	Global Positioning System
33		
34	HE	High Explosive
35	HWB	Hazardous Waste Bureau
36	HWCP	Hazardous Waste Contingency Plan
37		
38	IM	Interim Measures
39	IMWP	Interim Measures Work Plan
40	IOSC	Installation On-Scene Coordinator
41	IS	Incremental Sampling
42		
43	MC	Munitions Constituents
44	MEC	Munitions and Explosives of Concern
45	msl	Mean Sea Level
46		
47	NMAC	New Mexico Administrative Code

48		
49		Acronym Page (Continued)
50		
51	NMDGF	New Mexico Department of Game and Fish
52	NMED	New Mexico Environment Department
53	NN	Navajo Nation
54	NMOSE	New Mexico Office of the State Engineer
55	NOI	Notice of Intent
56	NRCS	Natural Resources Conservation Service
57	NWNMRWSA	Northwest New Mexico Regional Solid Waste Authority
58		
59	OESS	Ordnance & Explosives Safety Specialist
60		
61	PMC	PMC Environmental
62	POZ	Pueblo of Zuni
63	PWS	Performance Work Statement
64		
65	RAR	Release Assessment Report
66	RCRA	Resource Conservation and Recovery Act
67	RDX	Cyclotrimethylenetrinitramine
68	RFI	RCRA Facility Investigation
69	RFP	Request for Proposal
70	RSLs	Regional Screening Levels
71		
72	SCE	Stabilized Construction Entrance
73	SDS	Safety Data Sheets
74	SHPO	State Historic Preservation Office
75	SPCC	Spill Prevention, Control, and Countermeasures
76	SSHO	Site Safety Health Officer
77	SSL	Soil Screening Levels
78	SUXOS	Senior UXO Supervisor
79	SVOCs	Semi-Volatile Organic Compounds
80	SWMU	Solid Waste Management Unit
81	SWPPP	Stormwater Pollution Prevention Plan
82		
83	TAL	Target Analyte List
84	T&E	Threatened and Endangered
85	TCLP	Toxicity Characteristic Leaching Procedure
86	TCPs	Traditional Cultural Properties
87	TO	Task Order
88	TPMC	TerranearPMC, LLC
89	TNT	Trinitrotoluene
90		
91	USACE	U.S. Army Corps of Engineers
92	USACE CESWT	U.S. Army Corps of Engineers – Tulsa District
93	USACE SPA	U.S. Army Corps of Engineers – Albuquerque District
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Acronym Page (Continued)

USACE SPK	U.S. Army Corps of Engineers – Sacramento District
USACE SWF	U.S. Army Corps of Engineers – Fort Worth District
USACE SWT	U.S. Army Corps of Engineers – Tulsa District
USAEC	U.S. Army Environmental Command
USATHAMA	U.S. Army Toxic and Hazardous Materials Agency
USDA	United States Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
USFWS	United States Fish and Wildlife Service
UXO	Unexploded Ordnance
VCP	Vitrified Clay Pipe
WMP	Waste Management Plan
XRF	X-Ray Fluorescence
ZAPATA	Zapata Incorporated

118 **1.0 INTRODUCTION**

119 Zapata Incorporated (ZAPATA) has prepared this Environmental Protection Plan (EPP) for
120 various Interim Measures (IM) at Fort Wingate Depot Activity (FWDA), McKinley County,
121 New Mexico for the United States Army Corps of Engineers (USACE), Tulsa District (CESWT)
122 under Contract No. W9128F-13-D-0025 (see **Figure 1** for installation location). This EPP has
123 been prepared to document environmental protection activities to be implemented as part of
124 remedial actions for three major elements of work under this task order (TO):

- 125 • **Parcel 21 – Solid Waste Management Unit 1 – TNT Leaching Beds:** Remove
126 contaminated soil exceeding Soil Screening Levels (SSLs) or Regional Screening Levels
127 (RSLs) for residential screening criteria (direct contact) and/or cumulative residential risk
128 (to a maximum depth of 10 feet [ft] below ground surface [bgs]), and leaching values
129 developed for groundwater protection for cyclotrimethylenetrinitramine (RDX), 2,4,6
130 Trinitrotoluene (TNT) and nitrate to a maximum depth of 35 ft bgs (**Figure 2**).
- 131 • **Parcel 24 – Igloo Block A:** Remove all igloo drain pipes, plug resulting openings in
132 igloo headwalls, and remove contaminated soil from beneath select igloo drains with
133 metals exceeding **residential** cleanup standards/SSLs (**Figure 3**).
- 134 • **Abandon Wells:** Abandon up to six groundwater monitoring wells (identified on **Figure 4**).
135 Note that four of these wells, FW89, FW90, FW91 and FW26, have already been abandoned
136 prior to issuing Modification No. 01.

137
138 A Final EPP was previously submitted under this task order and approved for this project by
139 USACE in November 2014. However, prior to implementing field activities, the project was
140 modified in December 2015 (under Modification No. 01) to eliminate the groundwater
141 contaminant leaching pathway potential for RDX, TNT, and nitrate under the Parcel 21 – Solid
142 Waste Management Unit (SWMU) 1 TNT leaching beds. In general, Modification No. 01
143 involved three major changes to the original scope of work at Parcel 21:

- 144 1) increase the amount of contaminated soil that will be excavated by 16,000 cubic yards
145 (CY),
- 146 2) increase the maximum depth of excavation (from a previous maximum of 10 ft bgs to a
147 new maximum of 35 ft bgs), and
- 148 3) modification of the screening level criteria to now include leachability values for RDX
149 (3.0 mg/kg), TNT (34.6 mg/kg), and nitrate (496 mg/kg) that are applicable to a
150 maximum depth of 35 ft bgs to be protective of the groundwater leaching pathway.

151
152 Because these changes from the original scope greatly impact how field tasks will be executed,
153 this EPP and other planning documents are being resubmitted to account for any revisions.
154 Because this document has already gone through a formal review process, changes have been
155 minimized to the plan that is not directly impacted under Modification No. 01 (USACE 2015).
156

157 FWDA is an inactive United States Army depot that currently occupies approximately 15,277
158 acres. The FWDA was used to store, ship, and dispose of obsolete or deteriorated explosives and
159 ammunition. The depot is located approximately 7 miles east of Gallup, New Mexico in McKinley
160 County just off of US Route 66 and Interstate 40. FWDA has been undergoing final
161 environmental restoration prior to property transfer/reuse. As part of the planned property transfer
162 to the Department of the Interior (DOI), the installation has been divided into several parcels (see
163 **Figure 1** for parcel designations). This includes Parcel 21 – SWMU 1; which contained pre- and
164 post-1962 TNT leaching beds. At this location, explosives-contaminated soil is planned to be
165 removed from the leaching beds to a maximum depth of 35 ft bgs. ZAPATA will also perform
166 smaller removal actions at Parcel 24 - Igloo Block A where we will remove drain pipes coated
167 with lead-based paint and soil beneath the drains at 84 locations (approximately ¼ cubic yard of
168 soil at each location). Additional tasks include the abandonment of up to six groundwater
169 monitoring wells; four of which (Wingate 89, 90, 91, and FW 26) were already abandoned in June
170 2015 under CLIN 0009. The planned scope of activities is detailed in the Interim Measures
171 Workplan (IMWP), Parcel 21 – SWMU 1 (ZAPATA 2016a) and the Notification of Permittee-
172 Initiated Interim Measures, Parcel 24 – Igloo Block A (ZAPATA 2014b). **Figures 2 and 3** present
173 site layout features for ZAPATA’s project sites at Parcel 21 – SWMU 1 and Parcel 24 – Igloo
174 Block A, respectively.

175
176 The intent of this EPP is to prevent environmental pollution or damage during and as a result of
177 remediation activities. This EPP was prepared in accordance with federal and state regulations.
178 This plan includes the elimination or limitation of chemicals, physical or biological elements or
179 agents that adversely affect human health or welfare; unfavorably alter ecological balances of
180 importance to human life; affect other species of importance to man; or degrade the utilities of
181 the environment for aesthetic and recreational purposes. Preservation of land, water, and
182 fish/wildlife resources including Federally and State listed Threatened and Endangered (T&E)
183 species within the project boundaries and outside the limits of permanent work performed will be
184 a priority.

185
186 The following laws and regulations in whole or part are pertinent to this project:






- 187 • Fish and Wildlife Act of 1956
- 188 • Fish and Wildlife Coordination Act of 1958
- 189 • National Historic Preservation Act of 1966
- 190 • Endangered Species Act of 1973
- 191 • Clean Water Act of 1977
- 192 • Clean Air Act
- 193 • Comprehensive Environmental Response, Compensation, and Liability Act
- 194 • Resource Conservation and Recovery Act
- 195 • Toxic Substance Control Act

196

197
198 ZAPATA will establish and maintain environmental protection at the project sites throughout the
199 course of the project. ZAPATA will record and maintain field reports of any problems in
200 complying with laws, regulations, and ordinances. Immediate corrective actions will be taken to
201 correct pollution of or damage to the environment due to accident, natural causes, or failure to
202 follow the procedures set out in this EPP, as described in the following sections.

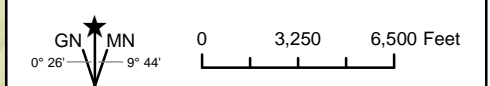
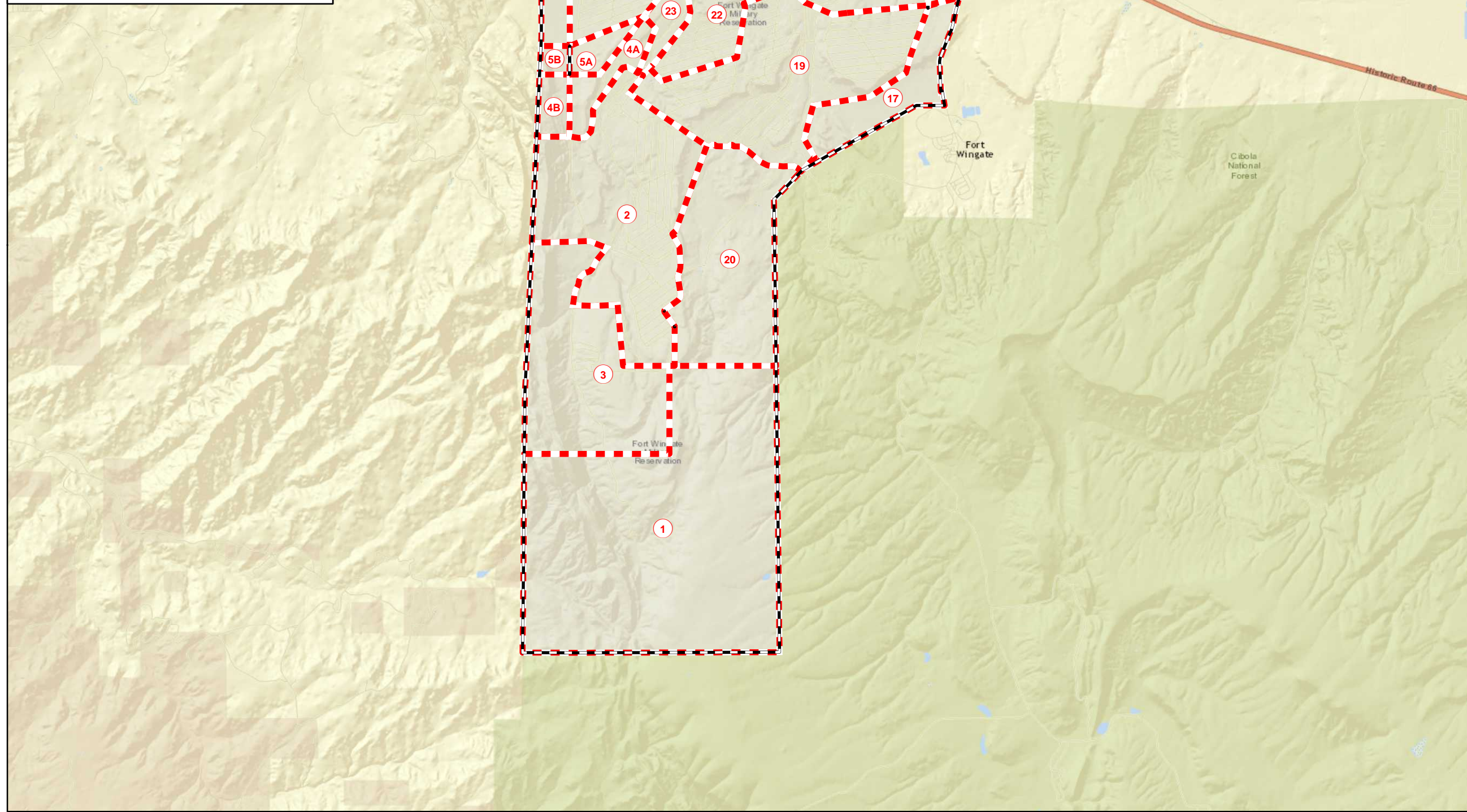
Installation Location Map & Parcel Designations
Parcel 21 & Parcel 24
Fort Wingate, NM

Project Number	Date	Figure
R20179	FEBRUARY 2016	1

- KEY**
-  SWMU 1
 -  Parcel 21
 -  Parcel 24
 -  Parcel Boundary
 -  Installation Boundary



Overview



Source(s)
ZAPATA, USACE, Esri

Projection
NAD 1983 StatePlane New Mexico West FIPS 3003 Feet
Note: Main Data Frame Rotated to True North

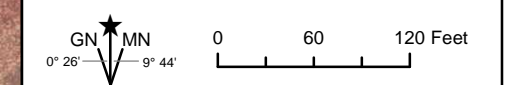
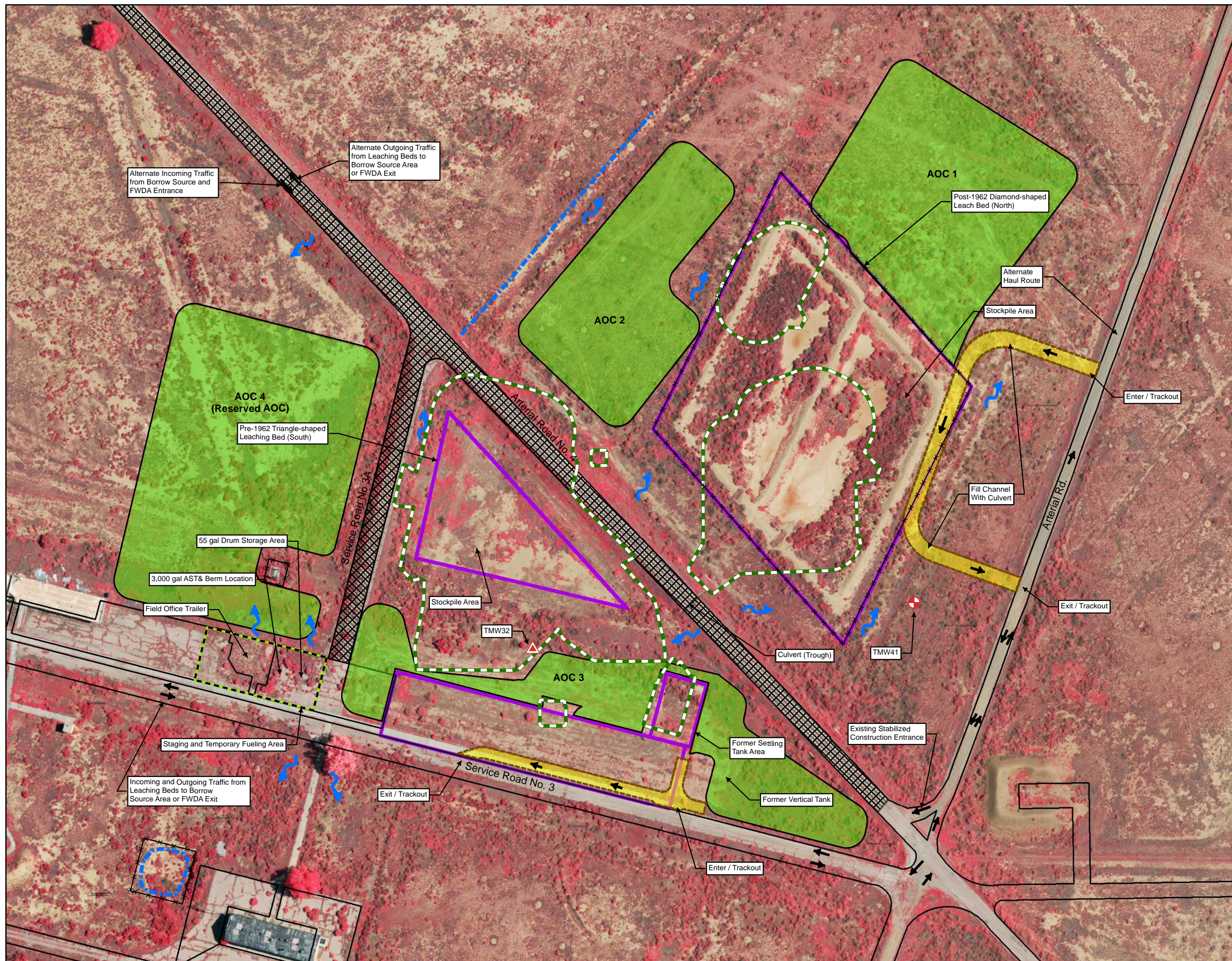
Note(s)
Engineering scale may only be accurate on a map size of 11 x 17

Magnetic Declination Date: 06/16/2014
Magnetic Declination Shifting by 0° 7' W per year

Checked By	Engineering Scale	Drawn By
SEM	1" = 6,500'	GIS



KEY	
	General Flow / Draining Direction
	Alluvial Monitoring Well Proposed for Abandonment
	Bedrock Monitoring Well Proposed for Abandonment
	Fence
	Traffic Flow Direction
	Road
	Stormwater Conveyance or Arroyo
	Estimated Horizontal Extent of Excavation >1 ft. bgs
	Soil Stockpile Area of Contamination (AOC)
	Road Closed to Through Traffic
	Temporary Access Road For Haul Route
	Staging & Temporary Fueling Location
	SWMU 1 Boundary



Source(s)
ZAPATA, USACE, 2009 Color Infrared Aerial Photo

Projection
NAD 1983 StatePlane New Mexico West FIPS 3003 Feet
Note: Main Data Frame Rotated to True North

Note(s)
Engineering scale may only be accurate on a map size of 11 x 17
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Magnetic Declination Shifting by 0° 7' W per year

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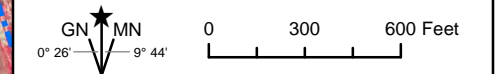
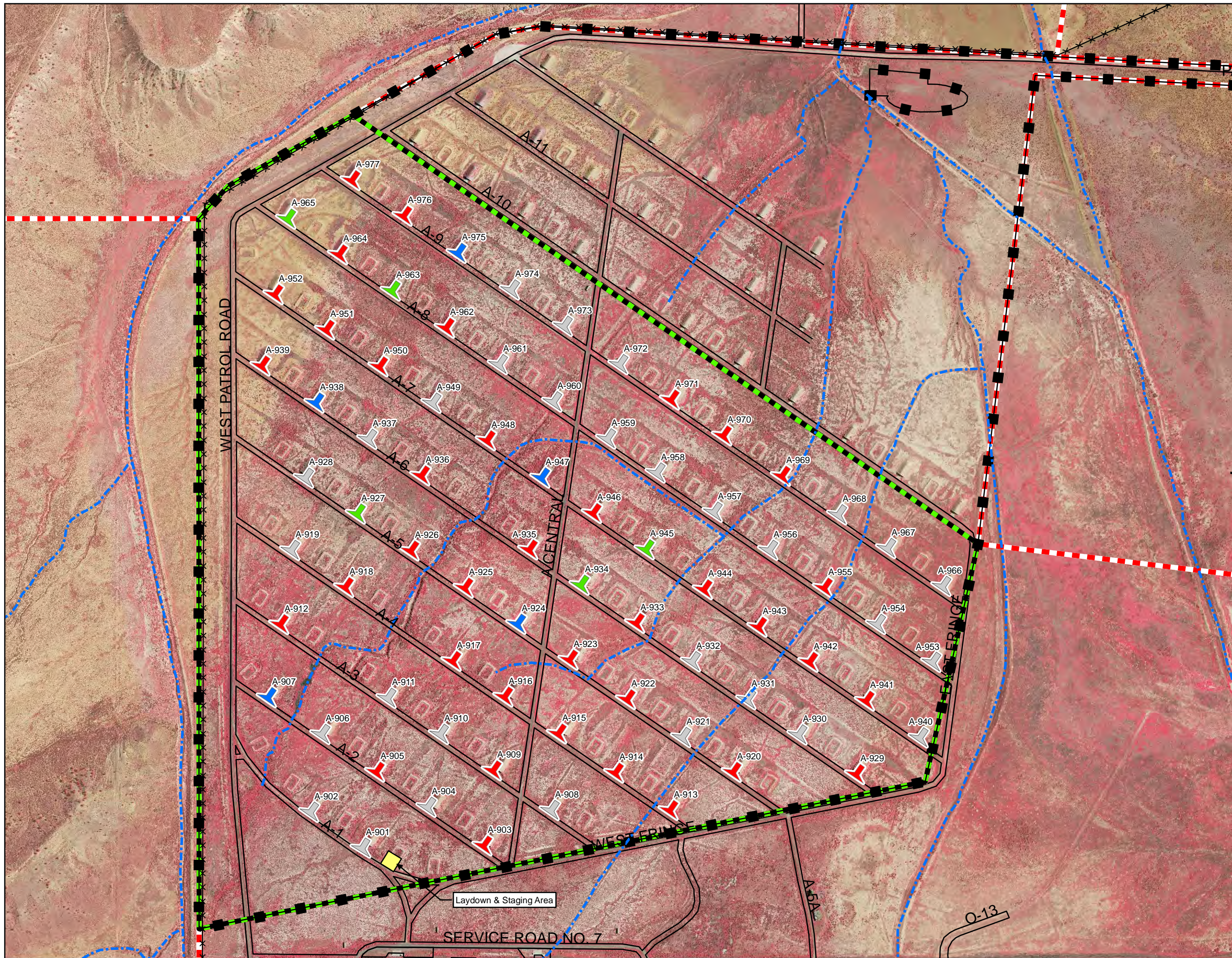


KEY

- Fence
- Arroyo
- Road
- Laydown & Staging Area
- Igloo Block A
- Parcel Boundary
- Parcel 24
- Igloo

Igloos Requiring Soil Excavation Based on SSL Exceedences

- Both Drains
- Left Drain (West Side)
- Right Drain (East Side)



Source(s)
ZAPATA, USACE, 2009 Color Infrared Aerial Photo

Projection
NAD 1983 StatePlane New Mexico West FIPS 3003 Feet
Note: Main Data Frame Rotated to True North

Note(s)
Engineering scale may only be accurate on a map size of 11 x 17

Magnetic Declination Date: 06/16/2014
Magnetic Declination Shifting by 0° 7' W per year

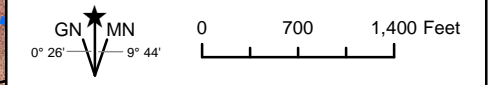
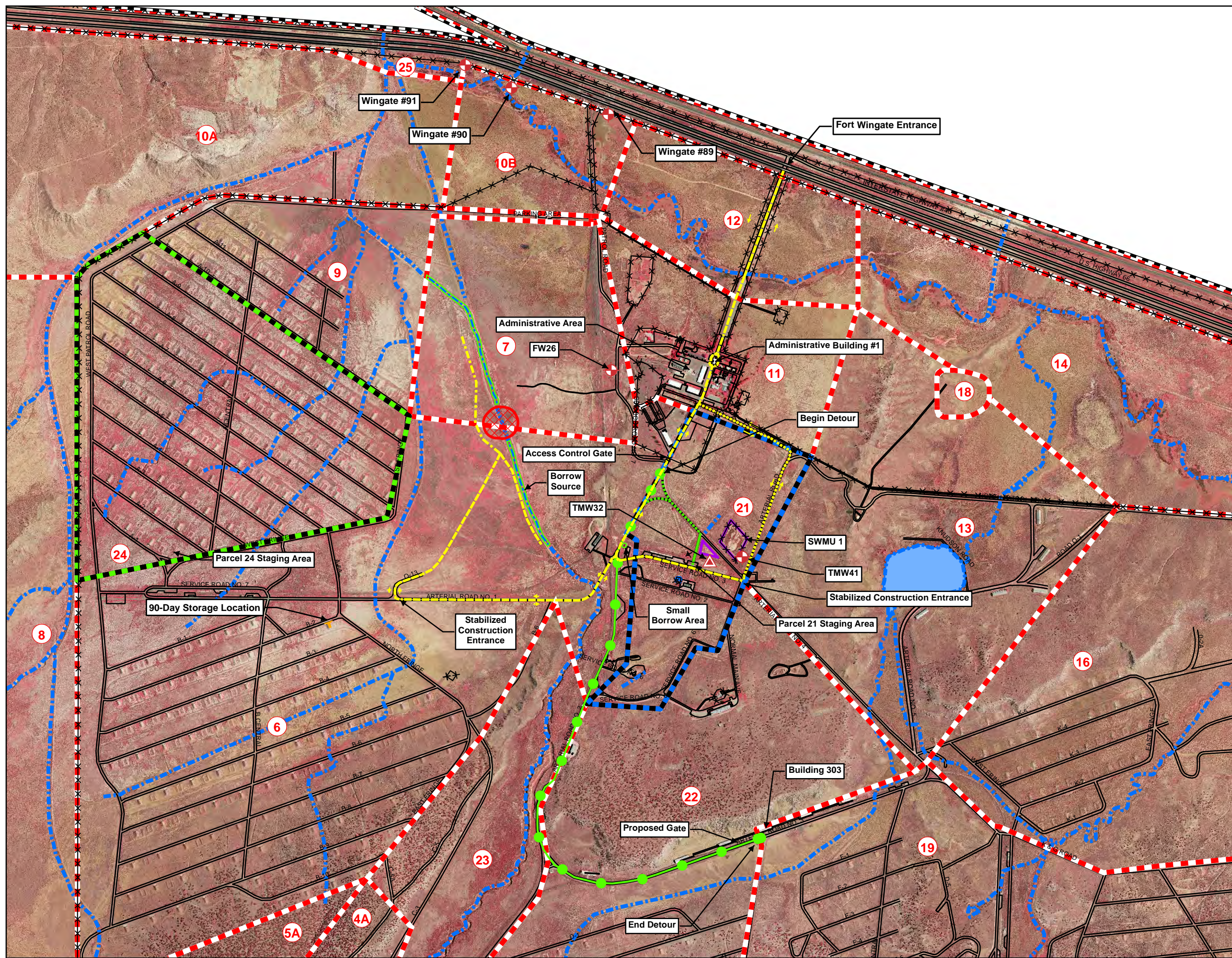
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Proposed Well Abandonment Locations & Access Routes
Parcel 21 & Parcel 24
Fort Wingate, NM

Project Number	Date	Figure
R20179	FEBRUARY 2016	4

- KEY**
- Alluvial Monitoring Well Proposed for Abandonment
 - Bedrock Monitoring Well Proposed for Abandonment
 - Fence
 - Traffic Flow Direction
 - Access (Haul) Route
 - Alternate Access (Haul) Route
 - New Access (Haul) Road North of TCP
 - Proposed Detour for FWDA Traffic
 - Proposed Section of FWDA Roads To Be Temporarily Closed
 - Arroyo
 - Road
 - Borrow Source
 - Parcel 24
 - Parcel 21
 - SWMU 1 TNT Beds
 - 90-Day Storage Location
 - Parcel Boundary
 - Traditional Cultural Property Buffer (200 ft)
 - Water Body
 - Installation Boundary



Source(s)
ZAPATA, USACE, 2009 Color Infrared Aerial Photo

Projection
NAD 1983 StatePlane New Mexico West FIPS 3003 Feet
Note: Main Data Frame Rotated to True North

Note(s)
Engineering scale may only be accurate on a map size of 11 x 17
Magnetic Declination Date: 06/16/2014
Magnetic Declination Shifting by 0° 7' W per year

Checked By	Engineering Scale	Drawn By
SEM	1" = 1,400'	ATD



215 **2.0 SITE HISTORY AND REQUIREMENTS**

216 **2.1 PARCEL 21 – SWMU 1**

217 **2.1.1 Site History**

218 SWMU 1 is the TNT Leaching Beds and Building 503 (TNT Washout Building), located in the
219 northern portion of the installation. TNT demilitarization operations were conducted at SWMU
220 1 between 1949 through 1967. Building 503 was built in 1948 on a concrete dock that was the
221 former location of two bundle ammunition packing buildings. The building was approximately
222 387 ft long by 32 ft wide, with a two-story addition on the east end that was approximately 23 ft
223 long by 32 ft wide. The building and related structures were demolished in 1998.

224

225 Ordnance was received in Building 503 where the munitions were washed out with hot water to
226 remove the munitions constituents (MC). The steam for this process was supplied by the Boiler
227 House (Building 501, SWMU 19) via aboveground insulated piping. The water that contains the
228 MC was called “pink water”. The pink water was then pumped to a storage and drying tank
229 located on the second floor of the building. The dried flakes of explosives were then recovered
230 and shipped to various Army ammunition plants for reuse. Any remaining pink water from the
231 washout process was drained, via a metal gutter (inside Building 503) and concrete trough
232 (outside Building 503), into one of three exterior settling tanks that were located on the north and
233 eastern sides of the building.

234

235 Prior to 1962, overflow from the settling basins drained into a leaching bed on the northwestern
236 side of Building 503. This Pre-1962 Leaching Bed was triangular shaped, approximately 100
237 feet by 150 feet. In 1962, two rectangular shaped leaching beds, each approximately 250 ft by
238 250 ft in size and 3 ft deep, were constructed across Arterial Road No. 4 (Acoma Drive), north of
239 Building 503. These Post-1962 Leaching Beds were connected to the settling basins by a metal
240 trough through which the overflow was transported. These beds were used until 1967, when
241 washout operations were discontinued (USATHAMA, 1980, page 32).

242

243 There are no detailed records of the exact number and types of munitions processed in Building
244 503 during the approximately 20 years it operated. A review of historical engineering drawings
245 did not find design capacity data for the various process units. According to historical
246 documents, approximately 2,400 gallons of overflow per day were discharged into the leaching
247 beds (USATHAMA, 1980, page 32). Based on historical SOPs, munitions washed out in
248 Building 503 contained HE fillers including TNT, Composition B [a TNT and RDX mixture],
249 and Amatol (ammonium nitrate and TNT). The soils from the bottom of the leaching beds were
250 occasionally removed and burned in the OB/OD Area located in Parcel 3. When operations were
251 completed in 1967, the bottom soil from the leaching beds was removed and burned in the
252 OB/OD Area (USATHAMA, 1980, page 32). The depth or volume of soil removed was not
253 documented.

254 Based on review of historical drawings (included in the 2008 Resource Conservation and
255 Recovery Act (RCRA) Facility Investigation (RFI) Work Plan for Parcel 21 by TerranearPMC,
256 LLC (TPMC)), several utilities were present at Building 503. Fire suppression water and water
257 for building operations was provided via concrete pipe on the south side of Building 503, while
258 potable water was provided via a 2-inch galvanized pipe from the north side. Electric was
259 provided via underground lines, while telephone was connected via aerial lines on the north side
260 of Building 503. Sanitary sewer was connected via a vitrified clay pipe (VCP) to a manhole near
261 northwest corner of Building 503. Historical drawings indicated only the restroom and shower
262 room were connected to sanitary sewer. Floor drains in the washout room and flaking/packing
263 rooms drained to metal gutters (inside Building 503) and concrete trough (outside Building 503),
264 and then into the two concrete settling basins located on the north side of Building 503, and
265 ultimately to the leaching beds. No other general utilities were observed on the historical
266 drawings of Building 503 (TPMC 2008).

267
268 Currently the site is unused and has restricted access. All utilities were terminated in CY 2010
269 and all buildings have been demolished.

270 **2.1.2 Proposed Interim Measures**

271 Pre-mobilization activities consist of finalization of planning documents, filing of storm water
272 Notice of Intent (NOI), and coordination with FWDA, NMED, and the solid waste disposal
273 facility. Personnel, equipment and materials required to execute fieldwork will be mobilized
274 following IMWP approval and the Pre-Mobilization meeting held at FWDA.

275
276 Pre-excavation activities will initially be conducted; which includes a utility clearance, laydown
277 area establishment, haul road and alternate haul road determination, potential traffic detour
278 routes, and initial baseline site topographic surveying. In addition, the site will be assessed for
279 sediment and erosion controls already in place and additional Best Management Practices
280 (BMPs) established in the Storm Water Pollution Prevention Plan (SWPPP) will be
281 implemented.

282
283 During the course of this project, two general types (categories) of analysis (suite of samples)
284 will be collected, as follows:

- 285
286 1) “Confirmation Samples” will be collected and analyzed to confirm attainment of risk/hazard
287 levels below the project’s screening levels, baseline and closure soil sampling for stockpile Area
288 of Contamination (AOC) footprints, and/or verifying soil proposed for backfilling as “clean”
289 using the following suites of analyses:
- 290 • Explosives – Environmental Protection Agency (EPA) Method 8330 (8330B analytes list);
 - 291 • Perchlorates – EPA Method 6850;
 - 292 • Target Analyte List (TAL) Metals – EPA Methods 6020A/7471B (SWMU 1) (only lead,
293 arsenic, and mercury will be analyzed for Parcel 24 confirmation samples);

- 294 • Semi-Volatile Organic Compounds (SVOCs) – EPA Method 8270D; and
295 • Nitrate/nitrite – (EPA Method 300.0).
296
- 297 2) “Waste Characterization Samples” will be collected and analyzed to establish/confirm waste
298 profiles for excavated soil and material acceptance at the approved disposal facility using the
299 following suites of analyses:
- 300 • Ignitability, corrosivity, and reactivity - EPA Method in 40 CFR 261;
 - 301 • Toxicity Characteristic Leaching Procedure (TCLP) RCRA 8 Metals – EPA Methods
302 1311/6020A/7471B;
 - 303 • TCLP SVOCs – EPA Method 1311/8270D;
 - 304 • Explosives – EPA Method 8330B list; and
 - 305 • Paint filter liquids as defined by EPA Method 9095 (only if visible moisture is present in
306 the soil)

307

308 In general, samples under this plan referenced as “confirmation” and “waste characterization”
309 samples will be referring to the above suite of analytical methods, respectively.

310

311 Waste profiles for site soils have already been generated for Parcel 21 – SWMU 1 and Parcel 24
312 and provided to the disposal facility using analytical data collected during prior investigations.
313 Using these waste profiles the disposal facility, the Northwest New Mexico Regional Solid
314 Waste Authority (NWNMRSWA) Red Rocks Regional Landfill in Thoreau, New Mexico,
315 developed a Disposal Management Plan (DMP). The DMP requested approval from NMED-
316 SWB concerning the anticipated soil (solid waste) to be generated at Parcels 21 – SWMU 1 and
317 Parcel 24 to be used as Alternate Daily Cover (ADC) Special Waste in accordance with NMED-
318 SWB’s ADC requirements (2015 NMED). The DMP was accepted by NMED in January 2016
319 (see Appendix D for Disposal Management Plan and Landfill Acceptance Letters). No material
320 will be removed from the site until USACE approves the submitted information. See Section 2.0
321 of the Waste Management Plan (WMP)/Hazardous Waste Contingency Plan (HWCP) for more
322 details concerning waste classification.

323

324 Once the pre-excavation activities are complete, baseline sampling will be conducted from the
325 proposed footprints of the temporary soil stockpile locations (AOCs). This will consist of
326 surface soil confirmation samples to establish soil conditions prior to interim measures (see
327 Section 2.5 of the WMP/HWCP for details concerning baseline and closure sampling for soil
328 stockpile areas at AOCs).

329

330 Before completing the main excavation, the soil berms from the larger northern diamond-shaped
331 leaching beds (post-1962 leaching beds) will be removed along with the top one foot of the
332 leaching beds including areas totaling about 5 CY of soil expected to contain explosives
333 concentrations above 10%. The estimated five CY of explosives-containing soils will then be

334 mixed (homogenized) mechanically with the berm soil and surrounding leaching bed soils from
335 the top one foot of the leaching beds in a designated corner of the northern leaching bed. Similar
336 to above, mixing and excavation of the top 1 foot of soils from the footprint of the south leaching
337 bed (pre-1962 leaching bed) will also be conducted. A UXO Technician II and III will be
338 present on site during this operation to provide UXO construction support. After thorough
339 mixing, ZAPATA will collect samples of the mixed soil using Incremental Sampling (IS)
340 techniques for explosives using EPA Method 8330B. Samples will be collected by randomly
341 obtaining at least 30 aliquots of soil throughout the stock-pile, and combining the aliquots for the
342 sample(s) that will be sent to the laboratory. If the results of the analyses are equal to or above
343 10% explosives content, additional mixing with berm soil and/or top 1 ft. of soil from the
344 leaching beds will be completed for that stockpile followed by additional IS sampling until
345 explosives concentrations are below 10% concentration. Once the explosive concentrations are
346 below 10%, the soils will be characterized for waste disposal as described and transported off-
347 site to the project landfill. Excavation will then commence on the remainder of the leaching bed
348 material using a variety of screening criteria/standards and sequence of events.

349 Prior to Modification No. 01, only the NMED SSL/EPA RSL (residential risk direct contact
350 screening levels) or exceeding residential risks through sample-specific cumulative risk
351 calculations were proposed to guide the excavation extent at the TNT Leaching Beds to no more
352 than 10 ft bgs (the maximum depth for residential exposures). Modification 01 was developed
353 for the protection of groundwater by adding leachability screening levels for groundwater
354 protection for RDX, TNT and nitrate, and increases the maximum excavation depth to 35 ft bgs
355 based on these leachability criteria. Implementing these additional steps will remove the
356 source(s) of contaminants that may migrate through leaching to the groundwater that underlies
357 the leaching beds. USACE used numerical fate and transport modeling software to calculate the
358 following groundwater protection SSLs for key constituents (the fate and transport modeling
359 report is provided as an appendix to the IMWP; ZAPATA 2016a), as follows:

- 360 • Cyclotrimethylenetrinitramine (RDX) = 3.0 mg/Kg
- 361 • Trinitrotoluene (TNT) = 34.6 mg/Kg
- 362 • Nitrate = 496 mg/Kg

363
364 Both the Residential Risk (direct contact) SSLs and Residential Risk Cumulative Values were
365 previously defined in detail in the IMWP (see IMWP for details on SSLs; ZAPATA 2016a).
366 These screening criteria remain applicable for all leaching bed soils from the surface to 10 ft of
367 depth (if not removed as part of the deeper excavations now required for the leachability
368 screening values).

369
370 The following scenarios and excavation levels will determine which standard/screening criteria
371 will be followed to determine excavation extent. The following bullets contain more detailed
372 information on when to compare specific criteria; below the bullets is a summary table using
373 more general terms:

- 374 • The PWS from the USACE calls for the top 5 ft of the south (pre-1962) leaching bed to be
375 excavated, regardless of explosive constituent concentrations. For remaining soils in the pre-
376 1962 leaching bed from 5 to 10 ft bgs, the Groundwater Protection SSLs for RDX, TNT and
377 nitrate will likely be the driving criteria during the excavation since these values are lower
378 (more stringent) than the Residential Risk (direct contact) individual SSLs. However, there
379 may be cases where the concentrations of RDX and TNT are below groundwater leaching
380 criteria, but when included in the calculated Residential Risk Cumulative Value; exceedance
381 of cumulative risk thresholds may be observed. In this case, soil will be excavated to the
382 most stringent requirement, the Residential Risk Cumulative Value or the Groundwater
383 Protection SSLs. (Note: It is expected that all soils to a depth of 10 ft bgs will require
384 excavation and disposal at the pre-1962 leaching bed in order to complete excavation of soils
385 to meet the leachability values. Therefore, consideration of direct-contact SSLs/RSLs and/or
386 cumulative risk should not be a concern at this leaching bed).
387
- 388 • In the north (post-1962) leaching beds, the soil will be excavated from the surface to 10 ft
389 bgs to the Groundwater Protection SSL for RDX, TNT, and nitrate, or the calculated
390 Residential Risk Cumulative Value for all confirmation sample analytes, whichever is more
391 stringent. All confirmation sample analytes, including RDX and TNT, will be utilized to
392 calculate the residential cumulative risk. For RDX and TNT, direct comparison to the SSLs
393 will not apply in the upper 10 ft since the SSLs are higher than the groundwater leaching
394 values. However, RDX and TNT will be included in the list of analytes used to complete
395 cumulative Residential Risk (direct contact) calculations (in case groundwater leaching
396 values are not exceeded, but cumulative risk is exceeded).
397
- 398 • In all leaching beds (pre- and post-1962), they will be excavated to the Groundwater
399 Protection SSLs for TNT, RDX and nitrate, only, from 10 to 35 ft bgs. Residential risk
400 (direct contact) SSLs or cumulative risk does not apply deeper than 10 ft below existing
401 grade. ZAPATA will also cease excavating vertically if groundwater is encountered.
402

403

- 404 • The following table summarizes the above criteria.

Summary of Standards Driving Excavation Limits for the TNT Leaching Beds		
Excavation Depth	Applicable Standards	Notes
Top 1 foot of leaching bed soil and any berm material for North and South TNT Leaching Beds	The estimated 5 CY of TNT-containing soils above a concentration of 10% will be homogenized mechanically with the berm soil and surrounding leaching bed soils from the top one foot of the leaching beds. After thorough mixing, samples will be collected for explosives using IS.	If the results of the analyses are equal or above 10 % explosives content, additional mixing with berm soil and/or top 1 ft. of leaching beds will be conducted, followed by resampling. This will continue until concentrations are below 10 %; allowing the soils to be characterized for waste disposal.
0 to 5 ft bgs for South TNT Leaching Bed	Not Applicable	The top five ft of the south TNT Leaching Bed will be excavated regardless of constituent concentrations
Up to 10 ft bgs for North and South TNT Leaching Beds	<ul style="list-style-type: none"> • For RDX, TNT, and Nitrate: <ul style="list-style-type: none"> a. Groundwater Protection SSLs (RDX - 3 mg/ Kg, TNT - 34.6 mg/Kg, and Nitrate - 496 mg/Kg) b. RDX and TNT concentrations when included in calculated Residential Risk Cumulative Values. • For all confirmation sample analyses the more stringent of: <ul style="list-style-type: none"> a. Residential Risk SSLs/RSLs b. Calculated Residential Risk Cumulative Values 	The Residential Risk (direct contact) individual SSLs are already higher than the Groundwater Protection SSLs for RDX, TNT and Nitrate; therefore, they do not apply in the upper 10 ft for direct comparison of sampling results. However, cumulative risk may apply in the upper 10 ft. Numerical fate and transport modeling was used to estimate the Groundwater Protection SSLs (ZAPATA 2016a).
10 to 35 ft bgs for North and South TNT Leaching Beds	Groundwater Protection SSLs (RDX - 3 mg/Kg, TNT - 34.6 mg/Kg, and Nitrate - 496 mg/Kg)	Residential Risk (direct contact) SSLs or Residential Risk Cumulative Values do not apply deeper than 10 ft bgs.

405

- 406 • Criteria in the above table will be followed for excavation of soils from the leaching beds,
 407 areas near the former settling tanks, and select areas located along former conveyances to
 408 depths where confirmation samples indicate contaminant concentrations are below SSLs for
 409 Residential Risk (direct contact)/calculated Residential Risk Cumulative Values to depths of
 410 10 ft, while also addressing Groundwater Protection SSLs to a maximum of 35 ft of depth.

411

- 412 • In general, excavating will begin in the larger areas using 100 ft by 100 ft grids on five foot
 413 depth intervals. Areas slated for further excavation will again be delineated and staked. This
 414 approach will allow the team to maintain an accurate and timely estimate of soil CY removed
 415 from the ground, and to provide the USACE with timely notices of the need to exercise the

416 soil excavation options/SubCLINs during excavation. The USACE Contracting Officer
417 Representative (COR) will be notified in a timely manner if additional excavation options are
418 foreseen as necessary.

419 • Confirmation samples will be collected from the floor of the excavations as discrete samples
420 every 50 ft as per past protocol at FWDA (i.e., Parcel 18 landfill). The excavation sidewalls
421 will also be sampled according to past protocol (i.e., composite samples collected along
422 sidewall segments no greater than 100 ft. in length) Sampling will be conducted using the
423 backhoe bucket or directly by the sample technician in those areas designated with proper
424 setbacks (see Excavation Plan in IMWP). Confirmation samples will be analyzed on a 5-day
425 turnaround for explosives, perchlorate, TAL metals (plus mercury), SVOCs, and
426 nitrite/nitrate.

427 • Once analytical data have been received for the initial confirmation samples, screening level
428 comparisons based on residential risk/groundwater protection and sample-specific
429 cumulative risk calculations, as appropriate, will be made by the risk assessor.

430 • If any excavation floor samples exhibit SSL exceedances or cumulative risks above
431 residential thresholds (to a maximum depth of 10 ft), or Groundwater Protection SSLs are
432 exceeded, then another 2.5 ft will be excavated from the subject area(s) (about a 50 ft by 50 ft
433 area) and resampled as described above. This process will continue until all excavation floor
434 samples exhibit levels below applicable standards or the maximum depth scenario of 35 ft
435 has been reached.

436 • Using the same evaluation process as the floor samples, SSL exceedances in the sidewalls
437 will trigger additional excavation in those segments for a lateral distance of 5ft. This will be
438 followed by additional confirmation sampling in that sidewall segment until levels below
439 SSLs, cumulative residential risk thresholds, or Groundwater Protection SSLs are reached.

440 • If it is determined that the extent of the excavations will impact nearby monitoring wells
441 TMW41 and/or TMW32, the team will mobilize the New Mexico licensed well driller to
442 initiate monitoring well plugging and abandonment (detailed in Section 2.3). At this time it is
443 anticipated that only TMW32 will require abandonment.
444

445 • Due to the new depth requirements, USACE will allow excavated soil to be temporary staged
446 for later removal and/or backfill. Soils identified as contaminated will require temporary
447 staging outside of the SWMU 1 boundary at a designated location; identified as “Areas of
448 Contamination” (AOC). The AOC(s) will be designated and approved by NMED in
449 advance of the field effort. The soils will be staged/managed at the AOC(s) in 1,000 CY
450 stockpiles. As required by the approved disposal facility’s DMP, waste characterization
451 samples will be collected as discrete samples from four different locations for each 1,000 CY

452 stockpile (i.e., stockpiles will be quartered for discrete samples every 250 CY). Upon
453 analytical results acceptance, contaminated soils will be loaded in haul trucks and transported
454 to Red Rocks Regional Landfill in Thoreau, New Mexico for disposal. No material will be
455 removed from the site until USACE approves the submitted waste profile information. See
456 Section 2.5 of the WMP/HWCP for sampling and AOC requirements.

457 • Soils removed outside of the SWMU 1 boundary due to sloping/setback requirements will be
458 assumed to potentially be “clean” soils that may be used as backfill, but will be segregated
459 from contaminated soil stockpiles within the AOCs and staged in approximately 1,000 CY
460 sections. To confirm the soil is “clean”, a 10-Point composite confirmation sample will be
461 collected per each 1,000 CY section/stockpile. Soils meeting cleanup screening levels
462 (SSLs/RSLs) will be designated “clean”, and potentially used for future backfilling of the
463 excavation. If analytical confirmation samples indicate exceedances of screening levels
464 (SSLs/RSLs) for these stockpiles, the soil will be identified as contaminated and will follow
465 the above waste characterization sampling requirements for contaminated soils for future
466 transportation and disposal at the designated disposal facility. See Section 2.5 of the
467 WMP/HWCP for sampling details.

468 • Both baseline and closure (after the stockpile is removed) sampling for AOC(s) will be
469 conducted by dividing each of the stockpile areas into six roughly equal sized zones. Each of
470 these six zones will consist of one composite “confirmation” sample using the same suite of
471 analysis identified for confirmation samples of the excavation areas. If any contaminants of
472 potential concern are above screening levels (SSLs/RSLs) due to stockpile operations,
473 ZAPATA will remove any contaminated soil from the natural ground IAW the requirements
474 of the contract. Refer to the IMWP for details concerning AOC and Section 2.5 of the
475 WMP/HWCP.

476 • The removal/disposal and clean backfill (from within SWMU 1) volumes will be determined
477 by several surveys of SWMU 1. The initial survey will be prior to any excavation. This will
478 be followed by interim surveys to confirm removed soil volumes. One of the interim surveys
479 will be conducted after “clean” soil originating from within SWMU 1 ONLY is backfilled
480 and compacted. A final survey will be completed after all excavation and backfill operations
481 are complete. The volume difference between the empty hole and the final survey performed
482 after the backfill (multiplied by 1.04 as an adjustment to the in-situ soil volume) will be used
483 to evaluate removal and backfill volumes.

484 • Additional backfill material required will be obtained at the FWDA on-site borrow source
485 and loaded into end-dump haul trucks for transportation to Parcel 21 (see **Figure 4** for on-site
486 borrow source locations and haul routes). Water will be added as necessary during backfill
487 excavation/loading operations to reduce dust generation and to achieve optimum moisture

- 488 content. Following completion of borrow source excavation, the borrow area will be graded
489 to promote proper drainage, minimize erosion, and prevent ponding of surface water.
- 490 • Backfill will be compacted by placing 12-inch loose lifts and wheel rolling the soils with the
491 Loader (bucket full of soil); in deeper excavations backfill may be compacted with a sheeps-
492 foot roller.
 - 493 • It is anticipated that a section of Arterial Road No. 4 and/or Service Road No. 3A will be
494 removed during the excavation of the south leaching bed. ZAPATA will reconstruct those
495 sections of the road to its present width and elevation following specifications outlined in the
496 IMWP (ZAPATA 2016a). Excavated abandoned utilities will be disposed of IAW all local,
497 state and federal regulations (WMP/HWCP-ZAPATA 2016b).
 - 498 • Due to the anticipated road removal, ZAPATA will establish a detour using a 24' double gate
499 (two vehicle width) along the current fence crossing Arterial No. 3 near Building 303 (see
500 **Figure 4** for location and Section 8 for more details). ZAPATA will maintain and provide
501 signage along the detour route and include repairing and patching any holes and damage in
502 the detour route created during the detour period. ZAPATA will remove and dispose all
503 fencing and pylons and patch holes in the gate area.
 - 504 • Once all waste soil has been removed and final backfilling is completed, road
505 reconstruction/repairs, and grading is complete, the project team will begin site cleanup
506 operations. The erosion control berm and perimeter fencing will be removed. Prior to
507 demobilization and after grading has been approved, the entire disturbed area will be
508 reseeded with native grass and plant seed mix from a local nursery. The seed will be watered
509 if necessary up to two times a month apart.

510 Detailed excavation plans and figures are included in the IMWP (ZAPATA 2016a).

511 **2.2 PARCEL 24 - IGLOO BLOCK A**

512 **2.2.1 Site History**

513 Igloo Block A is one of several igloo blocks located on FWDA that was previously used as a
514 munitions storage area. Parcel 24 includes most of Igloo Block A, located near the northwestern
515 corner of the installation directly west of the Administration Area extending from north to south
516 along the western boundary (ERM, 1994). It is bounded to the south and east by Parcel 6, which
517 contains Igloo Block B. It is bounded to the north by Parcel 9, which contains the northern small
518 portion of Igloo Block A; and Parcel 10A, which is a partition of Parcel 10 that is undeveloped
519 buffer land, that contains a small triangular section of AOC 44 (Former Administration and
520 Utilities Area) and the former WWI Storage Site 35F-259. Parcel 10A is currently pending
521 transfer from the Army. Parcel 24 is bounded to the west by Parcel 8, which constitutes

522 undeveloped land. Under this TO, we are only completing interim measures at Parcel 24 that is
523 within Igloo Block A.

524
525 The igloos were previously used to store propellant charges for 8-inch and 155mm shells, cluster
526 bombs, 2.75-inch rocket motors, and 155 high explosive (HE) projectiles (FWDA 1980).
527 FWDA utilized Igloo Block A from the end of 1941 through base closure in 1993. It consisted
528 of 100 igloo structures and 81 revetments (an earthen embankment structure used for open
529 storage). One of the revetments has been noted as being destroyed by an arroyo which brings the
530 total number to 80. Each of the igloos in AOC 18 was constructed in 1941 with approximately
531 2,072 square ft of floor space each. The building dimensions for the igloos are 31 ft. 2 in. x 82
532 ft. 4 in. each with a ceiling height of 12 ft. 9 in. and also have a dock that is 9 ft. 3 in. x 11 ft. 2
533 in. The walls and floors of the igloos were constructed from reinforced concrete with a six-inch
534 reinforced concrete roof (USACE, 2014c). No evidence was available to indicate environmental
535 impact; however, 40 years of munitions storage provided the potential for dust from stored
536 explosives to accumulate in the interiors and around floor drains (PMC, 1997).

537
538 In early 2014, USACE completed a Release Assessment Report (RAR) at Parcel 24 (USACE
539 2014c). The RAR concluded that based on data collected from x-ray fluorescence (XRF) and
540 analytical data from 2008 and 2010; lead, arsenic, and mercury exceeded New Mexico
541 Environment Department (NMED) SSLs (or the site-specific background concentration protocol
542 established for arsenic) in soils below certain igloo drain outfalls. The RAR recommended
543 impacted soil removal from beneath 84 drain pipes from 46 igloos within Parcel 24 only.

544 **2.2.2 Proposed Interim Measures**

545 Based on the RAR conclusions, ZAPATA will remove all igloo drain pipes in the Parcel 24
546 portion of Igloo Block A and approximately 1/4 cubic yard (CY) of soil from beneath both igloo
547 drain pipes of the following igloos: A-903, A-905, A-909, A-912, A-913, A-914, A-915, A-916,
548 A-917, A-918, A-920, A-922, A-923, A-925, A-926, A-929, A-933, A-935, A-936, A-939, A-
549 941, A-942, A-943, A-944, A-946, A-948, A-950, A-951, A-952, A-955, A-962, A-964, A-969,
550 A-970, A-971, A-976, and A-977. Soil will be removed from below only the left side igloo drain
551 pipes of the following igloos: A-927, A-934, A-945, A-963, and A-965; and from below only the
552 right side igloo drain pipes of igloos: A-907, A-924, A-938, A-947, and A-975. The remaining
553 igloos did not have detected SSL exceedances; thus only the igloo drain pipes will be removed
554 from those igloos. **Figure 3** indicates the location of each igloo requiring drain removal, and
555 identifies which igloo drain locations require soil excavation and sampling.

556
557 Drain pipes will be removed from each of the igloos (right and/or left drains) using a flush
558 cutting power saw (i.e., band saw or reciprocating saw). Measures will be implemented to
559 ensure lead paint particles will not endanger workers cutting the drain pipes. Cuttings from the
560 drain pipes will be collected by a sheet of polyethylene plastic placed under the drain pipe during
561 the cutting process to ensure lead particles are not spread onto surrounding uncontaminated soil.

562 Once the igloo drain pipes have been removed, the pipes and plastic sheeting will be packaged
563 and labeled as lead-containing materials. The cutoff pipes will then be transported to a local
564 scrap metal recycler (All City Recycling and Towing) in Gallup, New Mexico for recycling of
565 the metal pipes. After igloo drain pipe removal, all resulting exposed holes in the igloos will be
566 filled with concrete mix to a depth of six inches into the igloo walls.

567
568 ZAPATA will utilize hand powered tools to complete soil excavation of approximately ¼ CY
569 yard of soil from beneath the specific igloo drain pipe outfalls listed previously. After
570 excavation, a discrete confirmation soil sample will be collected from the bottom of each
571 excavation and will be analyzed for the metals that exceeded NMED SSLs for lead and/or
572 mercury, or the background protocol for arsenic, to ensure remaining analyte concentrations are
573 below the established cleanup standards. If concentrations of analytes of concern from initial
574 confirmation samples are found to exceed cleanup standards, additional soil will be removed and
575 follow-up confirmation sampling will be completed until the cleanup standards are met.

576
577 All soil that is excavated from beneath the igloo drains (expected to total approximately 21 CY)
578 will be combined in a roll-off container and sampled for ignitability, corrosivity, reactivity as
579 listed by the EPA Method in 40 CFR 261, TCLP RCRA 8 Metals as listed by EPA Methods
580 1311/6020A/7471B, TCLP SVOCs as listed by EPA Method 1311/8270D, Explosives as listed
581 by EPA Method 8330B and paint filter liquids as defined by EPA Method 9095 (only if visible
582 moisture is present in the soil). Material will then be transported and disposed as solid waste at
583 the NWNMRSWA Red Rocks Regional Landfill in Thoreau, New Mexico, following waste
584 profile acceptance. If hazardous waste is identified during the initial waste profile sampling, the
585 proposed approach for remediation will be re-evaluated and the contract will be modified
586 accordingly. Following the completion of the interim measures, a brief letter report documenting
587 the findings of the field effort will be submitted for approval. See Section 2.0 of the
588 WMP/HWCP for more details concerning waste classification (ZAPATA 2016d).

589 **2.3 ABANDONMENT OF GROUNDWATER WELLS**

590 Prior to issuing Modification 01, four groundwater monitoring wells were abandoned under an
591 approved Well Abandonment and Plugging Plan (ZAPATA 2014a). These monitoring wells
592 were abandoned in June 2015 under CLIN 0009 and included Wingate 89, 90, and 91 on Parcel
593 10B and FW26 on Parcel 11. Final Abandonment/Plugging Reports were submitted for these
594 wells in July 2015 (ZAPATA 2015), with the New Mexico Office of the State Engineer
595 (NMOSE) approval in August 2015.

596
597 In addition to the four groundwater monitoring wells previously abandoned, two additional
598 groundwater monitoring wells (TMW32 and TMW42) may require abandonment. These wells
599 will be abandoned, as necessary, during the course of interim measures at the SWMU1 TNT
600 Leaching Beds if it is determined that excavation limits will encroach and/or impact the integrity
601 on the well(s). In anticipation that these wells will require abandonment, a Well Abandonment

602 and Plugging Plan was previously submitted to and approved by the NMOSE concurrently with
603 the four wells abandoned under CLIN 0009 (ZAPATA 2014a). At this time, it is anticipated that
604 only well TMW32 will require abandonment.

605
606 ZAPATA and its New Mexico licensed well driller will abandon any remaining wells according
607 to all pertinent New Mexico Administrative Code (NMAC) specifications and requirements. All
608 well locations will be surveyed by a NM licensed surveyor. Bollards, steel protective casings,
609 and concrete well pads will be removed prior to abandonment and discarded at an off-site
610 landfill. After abandonment, any well that had a steel protective casing will have a permanent
611 concrete monument with the well identification and date of abandonment placed at the location
612 of the well.

613
614 As completed with wells abandoned under CLIN 009, a well abandonment report will be
615 produced to document the abandonment of the additional wells. The report will be submitted to
616 the USACE COR and subsequently to the NMOSE for approval. **Figure 4** includes well
617 locations. The planned scope of activities for well abandonments is detailed in the Interim
618 Measures Workplan, Parcel 21 – SWMU 1 (ZAPATA 2016a).

619 **2.4 SUMMARY OF PROJECT PHASES**

620 A proposed sequence of events for the project identifying the key phases is provided as follows:

- 621 • Site preparation of erosion and sediment control measures.
- 622 • Potentially explosive soil (>10% TNT) homogenization within the Parcel 21 - SWMU 1
623 Leaching beds using heavy equipment.
- 624 • Explosives-contaminated soil excavation, stockpiling, and disposal from the SWMU 1
625 Leaching beds using heavy equipment.
- 626 • Removal of an approximately 200 foot section of Arterial Road No. 4.
- 627 • Drain pipes coated with lead-based paint removal, handling, and disposal, and soil
628 removal and disposal using hand tools at Parcel 24 within Igloo Block A.
- 629 • Abandonment of up to two additional monitoring wells (TMW32 and TMW41) using
630 power well abandonment equipment (trucks, grout mixers, pumps, etc.).
- 631 • Site restoration and road reconstruction.
- 632 • Removal of any erosion and sediment control measures.
- 633 • Demobilization.

634
635 **Figures 2 and 3** present site layout features for ZAPATA’s project sites at Parcel 21 – SWMU 1
636 and Parcel 24 – Igloo Block A, respectively.

637

638 **3.0 POTENTIAL BIOLOGICAL AND SITE RESOURCES**

639 Although a Biological Survey was not completed under this TO, a “pre-project Biological
640 Survey” was recently completed by AMEC Environment & Infrastructure, Inc. (AMEC) for
641 remediation activities at nearby Parcel 18; only 2,000 feet east of SWMU 1. AMEC’s survey
642 was completed on June 26, 2013, which was reported in AMEC’s Final Environmental
643 Protection Plan, Parcel 18, Eastern Landfill in Appendix A (AMEC 2013). This document was
644 thoroughly reviewed by our team with information relative to the ZAPATA sites summarized in
645 this document. Overall, AMEC’s survey indicated that no T&E species or their habitat,
646 wetlands, or other natural resources were anticipated to be affected (summarized below). The
647 ZAPATA team’s site reconnaissance on June 5, 2014 and follow-up site visit on September 10,
648 2014 agreed with AMEC’s survey; noting similar habitats and natural resources existed on
649 Parcel 18, 21 and 24. Additional historical information regarding environmental and cultural
650 resources is also provided below.

651 **3.1 LAND RESOURCES**

652 The installation is surrounded by federally owned or administered lands for both national forest
653 and tribal lands. Lands to the North and West of the depot are allotted to the Navajo tribal trust.
654 Lands to the East of the depot are administered by the Bureau of Indian Affairs (BIA). The
655 original Fort Wingate headquarters site is located immediately East of the FWDA and it is
656 currently the location of the town of Fort Wingate which is currently located on BIA
657 administered land. Land to the south and southeast is undeveloped, and is part of the Cibola
658 National Forest.

659
660 Topographically, FWDA may be divided into three areas: (1) the rugged north-to-south trending
661 Hogback along the western and the southwestern boundaries; (2) the northern hill slopes of the
662 Zuni Mountain Range in the southern portion; and (3) the alluvial plains marked by bedrock
663 remnants in the northern portion of the installation. The Hogback area is formed by interbedded
664 Mesozoic sedimentary rocks dipping sharply to the west and is dissected by northeastern-trending
665 intermittent streams. During rainfall and snowmelt events, streams transport sediment to low-
666 lying areas in the northern part of the installation, creating an extensive alluvial deposit among
667 remnants of bedrock. The streams eventually discharge to the South Fork of the Puerco River
668 near the northern boundary of FWDA. The elevation at FWDA ranges from 6,500 ft above Mean
669 Sea Level (msl) to 8,250 ft above msl. **Figure 5** is a topographic map of the project area.

670 **3.2 THREATENED AND ENDANGERED SPECIES**

671 According to the United States Fish and Wildlife Service’s (USFWS) online database, nine
672 federally-listed T&E species have the potential to occur in McKinley County. No critical habitat
673 occurs in the project site vicinity; however, critical habitat for Mexican spotted owl does exist
674 approximately 10 miles southeast of the project site in the Zuni Mountains. The New Mexico
675 Department of Game and Fish’s (NMDGF) Biota Information System also identified five state

676 threatened species as occurring in McKinley County, which are not otherwise protected under
677 the federal Endangered Species Act. Federal and state T&E species for McKinley County are
678 described in **Table 1**.

679
680 AMEC’s biological survey conducted last year at nearby Parcel 18 indicated that the black-
681 footed ferrets are the only listed species with suitable habitat occurring within FWDA. Black-
682 footed ferrets once occupied most habitats in the western North America associated with prairie
683 dogs (USFWS 2016b). Two reintroductions have taken place in north-central New Mexico, and
684 the USFWS estimates that two breeding pairs currently exist in the state (USFWS 2016c).
685 Because of their low numbers in the region, it is unlikely that any black-footed ferrets are located
686 in the project area vicinity. Additionally, black-footed ferrets that may inhabit the project area
687 vicinity are considered an “experimental” population under section 10j of the Endangered
688 Species Act and do not warrant full protection under the Endangered Species Act (AMEC 2013).

689
690 The AMEC biological survey also indicated that suitable habitat for gray vireo occurs in areas
691 throughout FWDA (AMEC 2013). Gray vireos occupy breeding sites in northern New Mexico
692 from May through July, and tend to breed in juniper savannahs (DeLong and Williams 2006).
693 During the June 5, 2014 pre-award site visit, the ZAPATA team noted that juniper savanna
694 habitats do exist on land surrounding the project sites, particularly SWMU 1. However, these
695 plants were not identified within the SWMU 1 excavation boundaries; therefore it is unlikely that
696 breeding gray vireos will reside within the project site boundaries. However, individuals may
697 pass through the project site temporarily for foraging or migration.

698
699 Additionally, burrowing owls have the potential to occupy the project sites. Burrowing owls are
700 considered a species of concern by the USFWS and are also protected under the Migratory Bird
701 Treaty Act. Burrowing owls are known to inhabit the Great Basin Desert scrub and are often
702 associated with prairie dog communities (NMDGF 2007). During our pre-award site visit, no
703 individual burrowing owls or signs of burrowing owls were noted in Parcel 21 – SWMU 1 or
704 Parcel 24 – Igloo Block A.

705 **3.3 VEGETATION**

706 FWDA is within the Great Basin Desert scrub biotic community with vegetation ranging from
707 grasslands and sagebrush scrublands to pinyon-juniper and ponderosa pine woodlands. This is
708 the only Desert scrub community in North America associated with cold-temperate rather than
709 subtropical progenitors (Brown 1994). Desert scrub is most commonly found at lower elevations
710 where temperature fluctuations and extremes are great and sandy soil is present. Woodlands are
711 found at mid-elevations where soil moisture is higher and the minimum temperature is lower.

712
713 Parcels 21 and 24 were in heavy use until the late 1960s and were therefore disturbed on a
714 regular basis. After closure of the sites, vegetation began to re-establish. Today, current
715 vegetation consists primarily of native grasses, sage brush, and other shrubs.

716

717 **TABLE 1 FEDERAL AND STATE T&E SPECIES FOR MCKINLEY COUNTY, NEW MEXICO**

Common Name	Requirements for Habitat	NM Listing	Federal Listing	Exclusion Justification
Artic Perigrine Falcon (<i>Falco peregrines tundrius</i>)	Open areas with suitable cliffs for nesting.	Threatened	N/A	No suitable habitat in the project areas.
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Forests or riparian areas within close proximity to open water suitable for foraging.	Threatened	N/A	No suitable habitat in the project areas.
Black-footed ferret (<i>Mustela nigripes</i>)	Open habitat, the same habitat used by prairie dogs: grasslands, steppe, and shrub steppe.	N/A	Endangered	Unlikely to reside in the project areas.
Costa’s Hummingbird (<i>Calypte costae</i>)	Desert, semi-desert, brushy foothills and chaparral. Nests in canyons and washes.	Threatened	N/A	No suitable habitat in the project areas.
Gray vireo (<i>Vireo vicinior</i>)	Rocky hills covered with sparse bushes and scrub, in juniper, hackberry, and oak (in NM)	Threatened	N/A	No suitable habitat in the project areas.
Mexican spotted owl (<i>Strix occidentalis lucida</i>)	Old growth mixed conifer forests.	N/A	Threatened	No suitable habitat in the project areas.
Perigrine Falcon (<i>Falco peregrines anatum</i>)	Open areas with suitable cliffs for nesting.	Threatened	N/A	No suitable habitat in the project areas.
Southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	Thickets, scrublands, swamps, and open woodlands. Usually limited to areas near open water.	Endangered	Endangered	No suitable habitat in the project areas.
Whooping crane (<i>Grus americana</i>)	Marshes, shallow lakes, lagoons, salt flats, grain and stubble fields, and barrier islands.	N/A	Endangered (Experimental, Non-essential Population)	No suitable habitat in the project areas.
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	Areas of open woodlands containing deciduous trees. Nests in Cottonwoods or other riparian trees.	N/A	Candidate	No suitable habitat in the project areas.
Zuni bluehead sucker (<i>Catostomus discobolus yarrow</i>)	Shady, cobbled streams with frequent runs and pools.	Endangered	Candidate	No suitable habitat in the project areas.
Zuni fleabane (<i>Erigeron rhizomatus</i>)	Pinyon-juniper woodlands at elevations from 7,300-8,000 ft.	N/A	Threatened	No suitable habitat in the project areas.

718

Source: USFWS 2016a, NMDGF 2016, NatureServe 2016

N/A – Not Applicable

719 **3.4 WATER RESOURCES**

720 **3.4.1 Wetlands**

721 Wetlands are a sensitive and unique habitat type that can provide valuable cover and water for
722 wildlife. During the pre-award site visit, our team completed a limited site reconnaissance of
723 Parcels 21 and 24, which included identifying wetlands and/or hydrophobic vegetation. No
724 wetland areas were identified within the project sites.

725 **3.4.2 Surface Water**

726 Main drainages, following the topography, flow from south to north and eventually discharge to
727 the South Fork of the Puerco River. Two major drainage systems are located within FWDA:
728 Milk Ranch Canyon and Fenced-Up Horse Canyon. Bread Springs Wash is a minor drainage
729 system. The southeastern corner of the installation is drained to the east by several small parallel
730 washes feeding into Milk Ranch Canyon. The surface drainage from the remaining eastern
731 portion of the installation flows to the northeast and also drains into Milk Ranch Canyon. The
732 western portion of the installation is drained by a network of washes into Fenced-Up Horse
733 Canyon, which flows north into the South Fork of the Puerto River. Bread Springs Wash drains
734 the extreme southwestern corner of FWDA. All flow from Bread Springs Wash is diverted to
735 the west side of the Hogback and eventually empties into the South Fork Rio Puerco west of
736 Gallup (U.S. Army 1995).

737
738 Because of the nature of precipitation in this semi-arid region, the surface drainage is relatively
739 shallow near headwaters. All drainages in this area are intermittent with flow occurring only
740 during, and after, heavy rainfall events or during snowmelt. Downward erosion intensifies as the
741 stream moves downstream, resulting in a system of well-developed steep-walled arroyos.
742 Arroyos form because of the erodibility of localized areas of silt- and clay-rich bedrock.

743
744 Surface runoff during rainfall /snowmelt events generally pools locally in roadside ditches and
745 infiltrates or evaporates. There are a few road culverts, but based on the topography, it is
746 unlikely that significant runoff leaves Parcels 21 or 24. Parcel 24 is located within an alluvial
747 valley drained by the South Fork of the Puerco River. This area is relatively flat and slopes
748 gently to the north towards the river. Although some arroyos have developed in Parcel 24, no
749 surface water bodies exist within Parcel 21 or 24.

750 **3.4.3 Hydrogeology**

751 The following description of the hydrogeologic model for the northern portion of the FWDA is
752 taken from the Parcel 11 RFI Report, dated May 2014 (USACE, 2014b).

753
754 The hydrogeologic conceptual model for the northern portion of FWDA was developed from
755 previous investigations of SWMU 1 and the Administration Area as described in detail in TPMC
756 (2006), and 3 years of groundwater monitoring (USACE, 2008, 2009 and 2010a). This
757 conceptual model is based on data collected during various investigations performed over a 25-

758 year period. Generally, the previous investigations were attempting to characterize the impacts
759 to groundwater associated primarily with discharges at the TNT leaching beds within SWMU 1,
760 and also with releases from various locations within the Administration Area (approximately
761 2,000 feet north of SWMU 1).

762
763 Because the current corrective action approach (i.e., proceeding parcel by parcel, SWMU by
764 SWMU) had not been developed, the conceptual model uses broader terminology to describe
765 locations to which the model applies. Thus the conceptual model is expressed in terms of
766 geologic and geographic features and characteristics affecting groundwater flow and potential
767 contamination across the areas of current interest. Parcel 21 is included within the broader area
768 called “TNT Leaching Beds and the Administration Area” in this section. A summary of the
769 model is presented below.

770
771 The unconsolidated materials comprising the alluvium consist of undifferentiated silt, clay, and
772 sand sediments, overlying the claystone bedrock of the Petrified Forest formation (TPMC, 2009).
773 These sediments form a wedge that increases in thickness from south to north through the TNT
774 Leaching Beds and Administration Area study area. The thickness of the sediments ranges from
775 near zero feet to almost 100 feet with the thickest sediments found near the Puerco River
776 (TPMC, 2009).

777 A water bearing zone is present in the alluvium throughout the northern portion of the post that
778 includes Parcel 21. Groundwater is typically encountered at depths of 10 to 60 feet below
779 ground surface (bgs). The dominant and variable nature of the clay content in the alluvium
780 creates additional hydrogeologic features that are beyond the classic model of an unconsolidated
781 aquifer. These observed features include perched saturated zones and unsaturated zones below
782 the water table. The clay content also influences the hydrologic parameters within the saturated
783 zone, such as hydraulic conductivity.

784 In arid and semi-arid climates, such as found at FWDA, precipitation falling on much of the land
785 surface is returned to the atmosphere through evaporation and transpiration. Groundwater in the
786 unconsolidated sediments is potentially derived from the infiltration and percolation of
787 precipitation that moves downward through the unsaturated sediments until it reaches the water
788 table or the low permeability claystone bedrock. However, in most areas surface infiltration is
789 relatively shallow and is offset by high evapotranspiration. Therefore, surface infiltration over a
790 broad area is unlikely to be a significant source of groundwater recharge. This results in
791 “focused recharge” where groundwater recharge occurs only in select areas such as arroyos and
792 other impoundments (Anderholm and others, 1994; Walvoord and others, 2002).

793 Where there is shallow bedrock (defined as less than 15 feet bgs), such as south of the TNT
794 leaching beds, near the former building 528, ground water accumulates on the claystone surface
795 and moves along the erosional surface of the claystone, generally to the north and northwest.
796 According to data presented in the groundwater monitoring reports prepared by USACE between

797 April 2008 and April 2010 (USACE, 2008, 2009 and 2010a,b), the hydraulic gradient in the
798 alluvial aquifer underlying the TNT leaching beds and Administration Area study area is
799 generally to the northwest. These data also indicate that the regional groundwater in the Puerco
800 River valley north of the facility has a southwesterly flow, inhibiting ground water movement
801 from the TNT leaching beds and Administration Area to the north. This regional ground water
802 flow appears to deflect the north-northwestern flow of ground water from FWDA to the west
803 northwest, eventually causing the FWDA-derived ground water to merge into the westerly flow
804 of the Puerco River basin alluvial ground water.

805 Based upon pre-existing and emerging data, the unconsolidated sediments found within the
806 Administration and TNT leaching beds Areas appear bounded both to the south and the east by
807 bedrock outcrops of low permeability claystone. Additionally, a south to north trending
808 subsurface bedrock ridge appears to provide a subsurface control, partially separating the
809 shallow groundwater underlying the TNT leaching beds and the Administration Area from the
810 topographic basin to the west.

811
812 ZAPATA does not anticipate contact with or disturbance of groundwater during soil removal
813 activities at Parcel 21 or Parcel 24. Groundwater data are being collected and evaluated as part
814 of an installation-wide monitoring program. Groundwater data from 2008 to date have been and
815 will continue to be presented in periodic monitoring reports prepared by USACE. Because this
816 effort is ongoing and reported separately, characterization of groundwater releases from our
817 investigative areas will not be repeated in this investigation.

818 **3.5 GEOLOGY**

819 In 1997, geologic mapping of portions of FWDA and a fracture trace analysis were conducted by
820 the U.S. Geological Survey (USGS) located in Flagstaff, Arizona. Geologic units exposed at the
821 ground surface throughout much of FWDA were identified. Results of this identification,
822 combined with information from geologic literature, are summarized in the following
823 subsections to provide a detailed description of the geologic and stratigraphic setting of the
824 portion of FWDA in which Parcel 21 and 24 are located. See **Figure 6** for a FWDA Geologic
825 Map in the vicinity of Parcels 21 and 24.

826 **3.5.1 Stratigraphy**

827 Recent alluvial sediments cover much of the land area in the investigative areas. These
828 sediments consist predominately of silts and clays, with discontinuous bodies of sand and
829 occasionally gravel. To the north of the developed portion of the Administration Area, the near
830 surface sediments are dominated by the substantially more sandy riverine deposits associated
831 with the Rio Puerco.

832
833 Generally, the soils are loamy or loam/clay mixtures, and contain varying amounts of silt, sand,
834 gravel, and rock fragments. All of these soils are fragile and are relatively thin, especially areas

835 near outcrops. Wind and water cause extensive soil erosion, especially where vegetative cover is
836 absent.

837
838 United States Department of Agriculture’s (USDA) Natural Resources Conservation Service
839 (NRCS) soils mapping for Parcel 21 is shown in **Figure 7**. As presented in **Figure 7**, the
840 primary soil type present at Parcel 21, and particularly SWMU 1, is the Aquima-Hawaikuh Silt
841 Loam (1 to 5% slopes). Details on the NRCS soil descriptions are included in Appendix B of the
842 IMWP (ZAPATA 2016a).

843
844 A simplified geologic map is presented as **Figure 6**. The alluvial/riverine deposits of the area of
845 investigation are underlain by the Triassic Petrified Forest Formation. The Petrified Forest
846 Formation consists primarily of mudstone, claystone, and minor amounts of muddy sandstone.
847 The Painted Desert Member is the upper member of the Petrified Forest Formation. This
848 member consists of mudstone, siltstone, sandy-mudstone, and lenticular sandstone layers.
849 Sandstone lenses within the Painted Desert Member are thin (generally less than 20 feet thick),
850 laterally discontinuous, and contain high quantities of very fine, muddy matrix. As a result, the
851 apparent permeability of these lenses, and the Painted Desert Member as a whole, is very low.
852 The Painted Desert Member is exposed at the ground surface on the areas of higher ground
853 surface elevations located east, south, and southwest of the TNT leaching beds Areas (USACE
854 2014b).

855
856 The Sonsela Sandstone Member (middle member of the Petrified Forest Formation) is of
857 variable thickness (20 to 80 feet thick) and is laterally continuous. This unit is a clean, well-
858 sorted, quartzose sandstone that contains very small amounts of matrix and therefore has a high
859 apparent permeability. Below the Sonsela Sandstone Member is the lower member of the
860 Petrified Forest Formation, the Blue Mesa Member. The lithology and apparent permeability of
861 the Blue Mesa Member is similar to that of the Painted Desert Member (USACE 2014b).

862
863 The Moenkopi Formation, the San Andres Limestone, and the Glorieta Sandstone underlie the
864 Blue Mesa Member. The lower Petrified Forest Formation and the Moenkopi Formation consist
865 of 250 to 300 feet of mudstones and sandstones with a relatively low apparent permeability.
866 Below this is approximately 100 feet of the San Andres Limestone underlain by approximately
867 120 feet of the Glorieta Sandstone (USACE 2014b).

868
869 Younger Jurassic and Cretaceous sandstone and claystone layers have been eroded in the TNT
870 Leaching Beds Area. These units are exposed from the Hogback to the western FWDA
871 boundary. The Jurassic Entrada Sandstone, Zuni Sandstone, and Morrison Formation account
872 for approximately 1,200 feet of section and consist of massive, cross-bedded sandstones with a
873 high apparent permeability. Above these units is a series of Cretaceous claystones and
874 sandstones including the Dakota Sandstone (approximately 200 feet thick), the Mancos

875 Claystone (approximately 600 feet thick), and the Gallup Sandstone (approximately 200 feet
876 thick) (TPMC 2008).

877 **3.5.2 Structural Geology**

878 FWDA is underlain primarily by Triassic mudstone and sandstone layers that are tilted gently to
879 the northwest at an angle of approximately 5 degrees. The structural orientation of the bedrock
880 has a substantial effect upon the movement of groundwater. Area-wide groundwater flow
881 generally follows the structural dip (i.e., to the north-northwest). However, in the western and
882 southern portions of the installation, Jurassic and Cretaceous sandstone and claystone layers are
883 exposed along the Nutria Monocline (the Hogback), which is a steeply west dipping, north
884 trending monoclinical fold.

885 **3.6 AIR QUALITY**

886 As indicated above, FWDA is located in McKinley County, New Mexico. Our team reviewed
887 data from the U.S. Environmental Protection Agency (USEPA) Air Quality Criteria for Green
888 Book Nonattainment Areas which lists which counties in the United States are Nonattainment
889 Areas (USEPA 2012). A nonattainment area is an area considered to have air quality worse than
890 the National Ambient Air Quality Standards as defined in the Clean Air Act Amendments of
891 1970 (P.L. 91-604, Sec. 109). Nonattainment areas must have and implement a plan to meet the
892 standard, or risk losing some forms of federal financial assistance. An area may be a
893 nonattainment area for one pollutant and an attainment area for others. However, based on the
894 latest information from USEPA, McKinley County, New Mexico is listed as an attainment area,
895 therefore, small short-term increases are allowable without a permit.

896 **3.7 CULTURAL, ARCHEOLOGICAL, AND NATIVE AMERICAN RESOURCES**

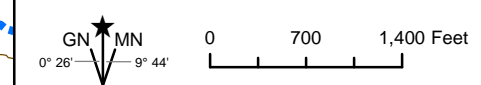
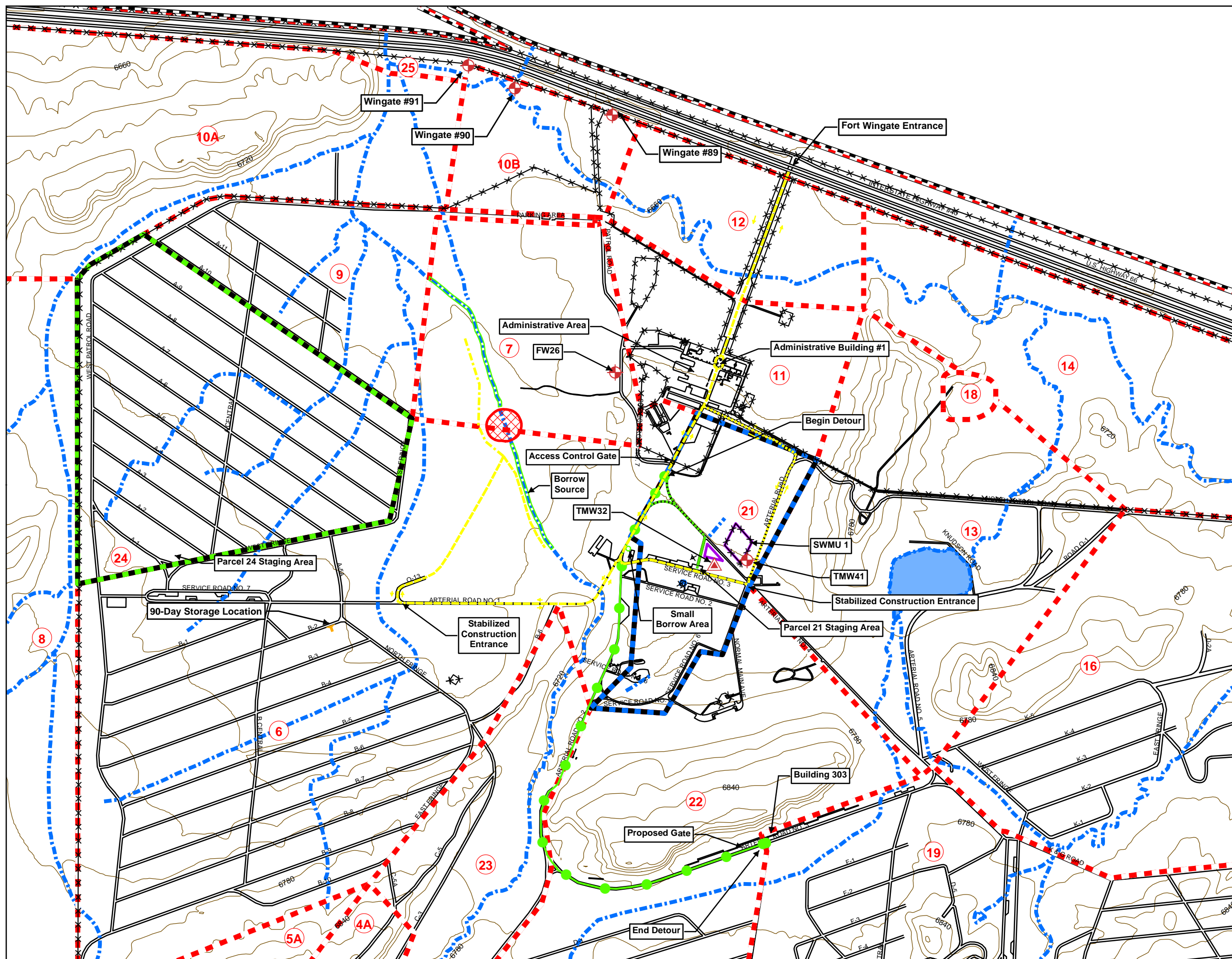
897 Traditional Cultural Properties (TCPs) and other cultural resources have been documented within
898 FWDA boundaries and has been the subject of a number of studies. Based on those studies, over
899 750 cultural and historical sites have been identified on FWDA. Greater densities of sites occur
900 on upland surfaces and gentle slopes, while fewer sites occur on the alluvial flats. The lower
901 elevation-sites tend to be Lithic scatter sites. The Fenced Up-Horse Canyon contains the highest
902 frequency of pueblo sites (AMEC 2013); however, this area is approximately 2 miles from the
903 project sites and will not be affected by project activities.

904
905 A Programmatic Agreement among the U.S. Army, the Navajo Nation (NN), the Pueblo of Zuni
906 (POZ), and the New Mexico State Historic Preservation Office (SHPO) was signed in 2008
907 which addresses FWDA's Section 106 Cultural requirements. This agreement is currently in
908 force at FWDA for actions related to investigation and remediation activities. The U.S. Army
909 has coordinated with the two Tribes and SHPO on all previous RFI sampling at Parcels 21 and
910 24. No cultural resource sites have been encountered thus far. Thus, the project team does not
911 anticipate encountering cultural resources on this project and no cultural resources monitoring is
912 planned during site operations.

913

914 Prior to initiating soil remediation activities, the project team will coordinate with the Tribes and
915 SHPO as done in the past. NMED understands the Tribal concerns for cultural sites and will
916 work with the U.S. Army if needed. ZAPATA’s field team will be briefed on tribal concerns and
917 potential cultural resources that may be encountered (i.e., artifact, pottery shard, or ant hill). If
918 culturally sensitive issues arise and/or suspect items are encountered, ZAPATA will immediately
919 notify their USACE representative for further instruction. USACE will notify the Army, and the
920 Army will immediately notify the Tribal cultural points of contact for consultation per section
921 1.8 of the Programmatic Agreement.
922

KEY	
	Alluvial Monitoring Well Proposed for Abandonment
	Bedrock Monitoring Well Proposed for Abandonment
	Fence
	Traffic Flow Direction
	Access (Haul) Route
	Alternate Access (Haul) Route
	New Access (Haul) Road North of TCP
	Proposed Detour for FWDA Traffic
	Proposed Section of FWDA Roads To Be Temporarily Closed
	Arroyo
	Road
	Topographic Contour (20 ft)
	Borrow Source
	Parcel 24
	Parcel 21
	SWMU 1 TNT Beds
	90-Day Storage Location
	Parcel Boundary
	Traditional Cultural Property Buffer (200 ft)
	Water Body
	Installation Boundary



Source(s)
ZAPATA, USACE, 2009 Color Infrared Aerial Photo

Projection
NAD 1983 StatePlane New Mexico West FIPS 3003 Feet
Note: Main Data Frame Rotated to True North

Note(s)
Engineering scale may only be accurate on a map size of 11 x 17

Magnetic Declination Date: 06/16/2014
Magnetic Declination Shifting by 0° 7' W per year

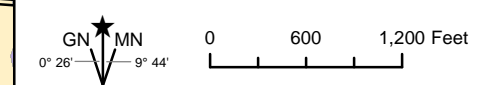
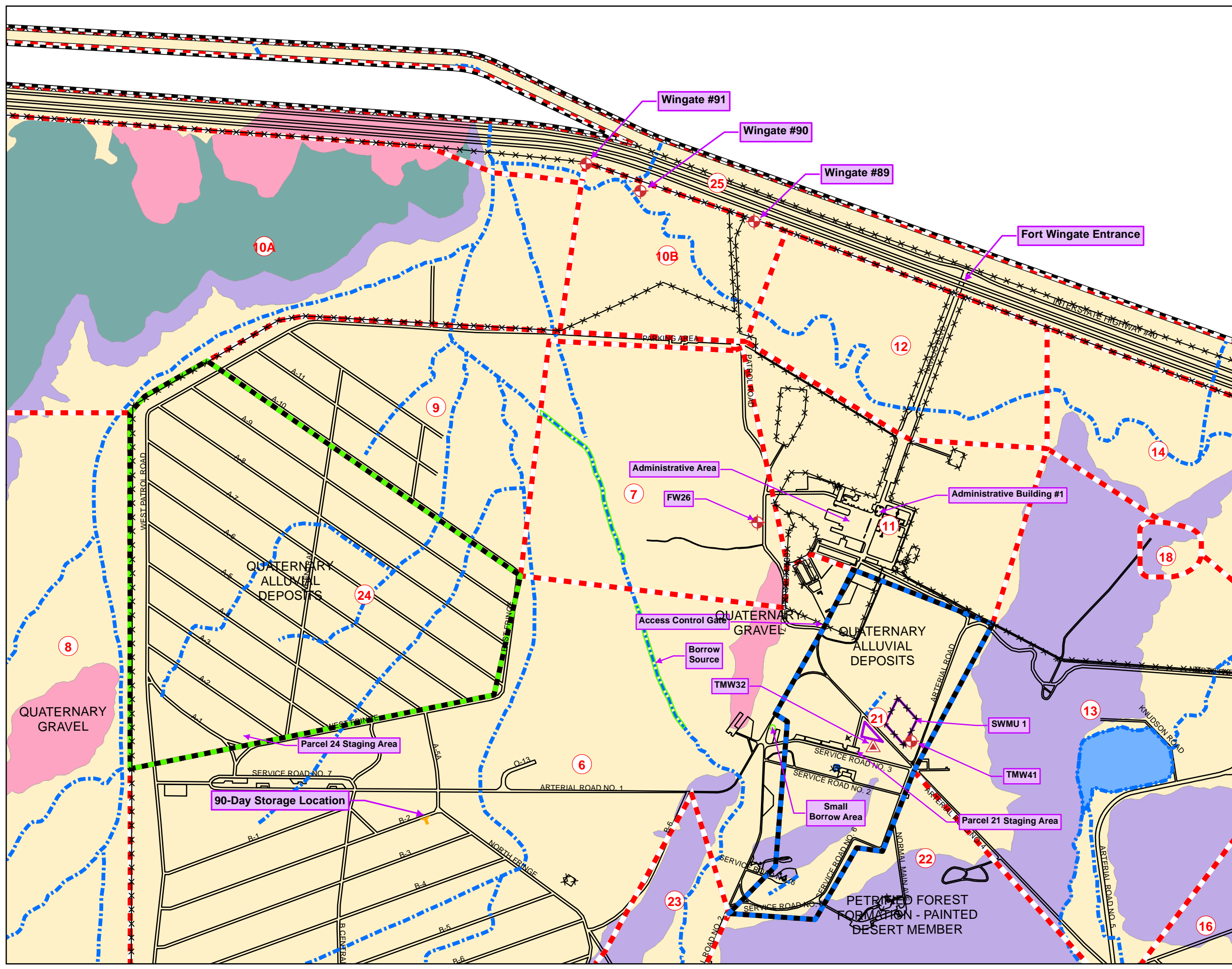
Checked By	Engineering Scale	Drawn By
SEM	1" = 1,400'	ATD



Geologic Map
Parcel 21 & Parcel 24
Fort Wingate, NM

Project Number	Date	Figure
R20179	FEBRUARY 2016	6

- KEY**
- Alluvial Monitoring Well Proposed for Abandonment
 - Bedrock Monitoring Well Proposed for Abandonment
 - Fence
 - Arroyo
 - Road
 - Borrow Source
 - Parcel 24
 - Parcel 21
 - SWMU 1 TNT Beds
 - 90-Day Storage Location
 - Parcel Boundary
 - Water Body
 - Installation Boundary
 - OWL ROCK FORMATION
 - PETRIFIED FOREST - PAINTED DESERT
 - QUATERNARY ALLUVIAL DEPOSITS
 - QUATERNARY GRAVEL



Source(s)
ZAPATA, USACE, 2009 Color Infrared Aerial Photo

Projection
NAD 1983 StatePlane New Mexico West FIPS 3003 Feet
Note: Main Data Frame Rotated to True North

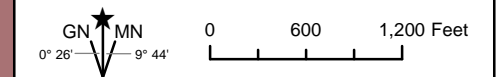
Note(s)
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Magnetic Declination Date: 06/16/2014
Magnetic Declination Shifting by 0° 7' W per year

Checked By SEM	Engineering Scale 1" = 1,200'	Drawn By GIS
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KEY	
	Alluvial Monitoring Well Proposed for Abandonment
	Bedrock Monitoring Well Proposed for Abandonment
	Fence
	Arroyo
	Road
	Borrow Source
	Parcel 24
	Parcel 21
	SWMU 1 TNT Beds
	90-Day Storage Location
	Parcel Boundary
	Water Body
	Installation Boundary
Soil Type	
	AQUIMA-HAWAIKUH SILT LOAM
	BAMAC EXTREMELY GRAVELLY SAND/LOAM
	CELAVAR-ATARQUE COMPLEX
	EVPAK-ARABRAB COMPLEX
	LAKE KNUDSON
	MIDO LOAMY FINE SAND
	OJOCAL SILT LOAM
	OJOCAL-VENADITO COMPLEX
	PLUMASANO - ROCK OUTCROP COMPLEX
	REHOBETH SILTY CLAY LOAM
	ROCK OUTCROP-RIZNO-TEKAPO COMPLEX
	ZIA SANDY LOAM



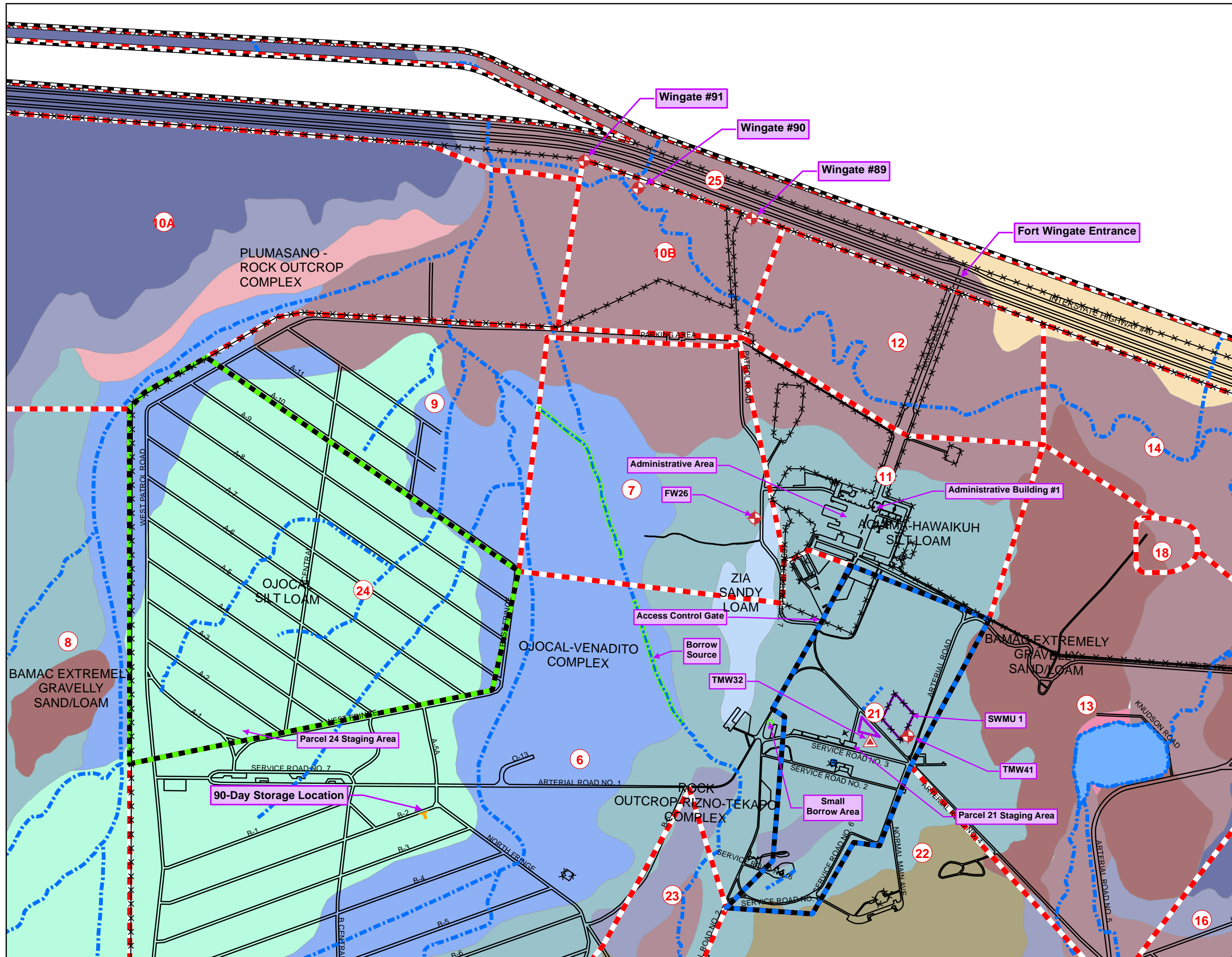
Source(s)
ZAPATA, USACE, 2009 Color Infrared Aerial Photo

Projection
NAD 1983 StatePlane New Mexico West FIPS 3003 Feet
Note: Main Data Frame Rotated to True North

Note(s)
Engineering scale may only be accurate on a map size of 11 x 17

Magnetic Declination Date: 06/16/2014
Magnetic Declination Shifting by 0° 7' W per year

Checked By	Engineering Scale	Drawn By
SEM	1" = 1,200'	GIS



933 **4.0 BIOLOGICAL AND SITE RESOURCES PROTECTION PLAN**

934 Environmental protection measures will be implemented during field activities to minimize or
935 mitigate any adverse impact to site resources. Areas that contain cultural resources,
936 archeological resources, and/or water resources will be identified and protected during the entire
937 duration of this project. Although a Biological Survey was not completed under this TO, a “pre-
938 project Biological Survey” was recently completed by AMEC for remediation activities at
939 nearby Parcel 18; approximately 2,000 feet east of Parcel 21 – SWMU 1. AMEC’s Biological
940 Survey did not identify any T&E species, their habitat, wetlands, or other natural resources that
941 would require avoidance. The ZAPATA team’s site reconnaissance on June 5, 2014 and follow-
942 up site visit on September 10, 2014 agreed with AMEC’s survey; noting similar habitats and
943 natural resources existed on Parcel 18, 21 and 24. Environmental protection mitigation actions
944 are described below for each identified site resource.

945 **4.1 LAND RESOURCES**

946 All excavation activities will be limited to the known lateral and vertical extent of the two TNT
947 Leaching Beds at SWMU 1 and the small drainage areas below the drain pipes removed at
948 specific igloos (approximately 1/4 cubic yard of soil each) of Parcel 24 in Igloo Block A (see
949 **Figures 2 and 3**, respectively). Prior to excavation of the leaching beds, ZAPATA will identify
950 and obtain pre-excavation survey information on the excavation boundary and all surface
951 topographical features of the area to develop a baseline topographic depiction. Once defined,
952 ZAPATA will clearly mark and monitor the limits of the excavations. Excavation and removal
953 of soil will only be performed within the known confines of the excavation areas and side slopes,
954 if required, for safe entry. This will limit the potential for disturbance and impacts to land
955 resources outside the excavation areas. Once the excavations of the leaching beds are completed,
956 the boundary of the excavation areas will be delineated with a final survey, while the smaller
957 excavation areas at Parcel 24 in Igloo Block A will be delineated with a global positioning
958 system (GPS). These boundaries will be provided to USACE as part of a final report detailing
959 excavation removal activities.

960 **4.2 THREATENED AND ENDANGERED SPECIES**

961 No T&E species have been identified at the project locations. However, as indicated in the
962 previous section, gray vireos tend to breed in juniper savannahs which were found in areas
963 surrounding the excavation areas. However, within proposed excavation boundaries themselves,
964 these plants were not identified. Therefore, it is unlikely that breeding gray vireos will reside
965 within areas marked for excavation. However, individuals may pass through the project site
966 temporarily for foraging or migration. A protocol for surveying for gray vireos at FWDA was
967 adapted under AMEC’s investigation and remediation activities at nearby Parcel 18. Due to its
968 applicability to the investigation at Parcels 21 and 24, this protocol is included in Appendix A.

969

970 Additionally, burrowing owls have the potential to occupy the project sites. Although previous
971 site reconnaissance of Parcels 21 and 24 did not indicate individual burrowing owls or signs of
972 burrowing owls, guidelines and recommendations developed by NMDGF for surveying and
973 mitigation for burrowing owls is included in Appendix B.

974
975 If endangered or threatened species are encountered during site activities, ZAPATA will flag the
976 area(s) and immediately notify and obtain guidance from USACE before continuing operations
977 within the flagged area(s). Flagged areas will be logged with a GPS and coordinates will be
978 provided to USACE. All ZAPATA site personnel will adhere to the specific guidance received
979 from the USACE. The local NMDGF and USFWS offices will also be contacted; contact
980 information is provided below:

981

USFWS	NMDGF
New Mexico Division of Biological Services	Northwest Area Office
(505) 248-6817	(505) 222-4700
500 Gold Avenue SW	3841 Midway Place NE
Albuquerque, NM 87102	Albuquerque, NM 87109

Mailing:

P.O. Box 1306
Albuquerque, NM 87103

982 **4.3 WETLANDS**

983 Wetlands are not common in the region surrounding FWDA and no wetland areas have been
984 previously identified within Parcels 21 and 24. If wetlands are encountered, USACE will be
985 notified prior to any soil mixing or removal. No disturbance, digging, or excavation will occur
986 within an area identified as a wetland. If such disturbances are deemed necessary, the USACE
987 will be notified so that these appropriate actions can be taken with respect to state and federal
988 laws, which govern the protection of wetlands.

989 **4.4 VEGETATION**

990 Ground disturbance will be limited to that necessary to complete the project objectives. All
991 disturbed areas (including staging areas and haul routes) will be revegetated using native
992 vegetation seed mix as detailed in the re-seeding plan of the IMWP (ZAPATA 2016a).

993
994 The Zuni fleabane is listed as a threatened plant species by the USFWS and is potentially present
995 in the project sites. The species was not identified in the project area during earlier site
996 reconnaissance by our project team. However, if this species is identified near or within
997 potentially disturbed areas, ZAPATA will perform all site activities in such a manner as to avoid
998 or minimize adverse effects to the species. ZAPATA will flag the areas in which the species has
999 been identified and immediately notify and obtain guidance from the USACE before continuing

1000 operations within the flagged area. Flagged areas will be logged with a GPS and coordinates
1001 will be provided to USACE. All ZAPATA site personnel will adhere to the specific guidance
1002 received from the USACE.

1003 **4.5 WATER RESOURCES**

1004 The ZAPATA SUXOS/Site Manager will keep soil mixing and removal activities under
1005 surveillance, management, and control to avoid pollution of surface and ground waters. Two
1006 major drainage systems are located within FWDA: Milk Ranch Canyon and Fenced-Up Horse
1007 Canyon. Bread Springs Wash is a minor drainage system. All drainages in this area are
1008 intermittent with flow occurring only during, and after, heavy rainfall events or during snowmelt.
1009

1010 A Storm Water Pollution Prevention Plan (SWPPP) will be prepared for this project. The plan
1011 will be prepared in accordance with the applicable permit process and will identify the pollution
1012 prevention controls and procedures to be implemented during soil mixing and excavation
1013 activities as well as the inspection and maintenance required to ensure the measures remain
1014 protective of water resources. This may include the use of silt fencing or other Best
1015 Management Practices (BMPs) as appropriate. The SWPPP will detail the BMPs to be
1016 implemented during all field activities, specifically for the TNT leaching beds at Parcel 21 and
1017 onsite borrow area.
1018

1019 FWDA is underlain by an extremely complex hydrogeologic regime that includes several
1020 groundwater-bearing formations. Groundwater is encountered at varying depths below ground
1021 surface, dependent on subsurface geology. ZAPATA does not anticipate any contact with or
1022 disturbance of groundwater during soil mixing and removal activities. If, however, groundwater
1023 is encountered, ZAPATA will immediately notify USACE personnel for a determination on how
1024 to proceed.

1025 **4.6 NATIVE AMERICAN CULTURAL, ARCHEOLOGICAL, AND RESOURCES**

1026 Traditional Cultural Properties (TCPs) and other cultural resources have been documented within
1027 FWDA boundaries. USACE Fort Worth has developed a Programmatic Agreement
1028 cooperatively with the Pueblo of Zuni and the Navajo Nation to specify procedures to be
1029 employed during environmental characterization and remediation activities. In the event of the
1030 inadvertent discovery of human remains and/or associated funerary objects, the requirements of
1031 the Native American Graves Protection and Repatriation Act will be strictly followed. If
1032 artifacts are detected during soil mixing/excavation, work will be suspended in the immediate
1033 area and the USACE archaeologist will be contacted for guidance. Appendix C includes a copy
1034 of the Programmatic Agreement as well as letters to the Navajo Nation and to Pueblo of Zuni
1035 summarizing operating procedures for soil excavation projects at FWDA.
1036

1037 Maps showing the locations of TCPs relative to proposed investigation locations will not be
1038 included in this plan, which will be a public document when final. Instead, the consultation

1039 process will include review by Tribal cultural resource personnel to confirm the presence or
1040 absence of identified cultural resources within the proposed investigation locations. If needed,
1041 Tribal cultural resource personnel will walk each proposed investigation location prior to the
1042 initiation of intrusive activities. Tribal cultural resource personnel will be available for consult
1043 during conduct of the on-site investigations. TCPs identified during our field activities will have
1044 at least a 200 foot buffer zone established.

1045
1046 Two such TCPs have already been identified; with one near the main borrow source area (west
1047 of the Administrative Area) and a second to the south of southern TNT Leaching Bed. For the
1048 TCP near the borrow source, it is likely that additional borrow material will be required further
1049 north than where previous contractors acquired borrow soils from the main borrow source area.
1050 Currently, the access road to reach the main borrow source terminates near a 200 foot buffer
1051 which protects a TCP. In order for the team to gain access to the northern areas of the arroyo
1052 borrow source, the dirt access road will be expanded to the north to avoid the 200 foot buffer and
1053 allow the team to reach sections of the arroyo north of the buffer. It is estimated an additional .4
1054 miles of temporary dirt access road maybe constructed along this section.

1055
1056 The second TCP near the site is approximately 350 feet south of the furthest extent of the
1057 proposed excavation of the southern TNT Leaching Bed and approximately 150 feet south of the
1058 existing Service Road No. 3. The latter will be used as part of our haul route for soil removal.
1059 Regardless of the location of the TCPs, the ZAPATA team will adhere to the requirements listed
1060 above when in the vicinity of these areas. Vehicles and equipment used for excavation, landfill
1061 hauling, borrow soils, and road maintenance will be routed to ensure avoidance of any current or
1062 future identified TCP. The overall planned access route, proposed temporary access route, and
1063 work areas are discussed further in Section 8 and illustrated on **Figure 4**.

1064

1065 **5.0 AIR POLLUTION CONTROL PLAN**

1066 It is anticipated that planned activities will generate fugitive dust emissions as well as vehicle
1067 emissions associated with equipment. Area ambient air will be periodically monitored in real
1068 time at the parcel boundary for dust emissions by visual assessment. If observations indicate the
1069 need for dust control, measures will be implemented at the source to limit the generation of dust
1070 to the extent possible. Dust control measures include wetting down excavated material, roads or
1071 equipment. Haul roads within the work area will be maintained to reduce dust generation.
1072 Wetting operations will be monitored to limit ponding or runoff. **Figure 4** is an overall project
1073 work area map indicating the location of access (haul) roads and the detour alignment anticipated
1074 for interim measures at both Parcel 21 – SWMU 1 and Parcel 24 – Igloo Block A. Section 8
1075 contains additional details concerning site access routes.

1076 **6.0 SPILL CONTROL PLAN**

1077 This Spill Control Plan addresses general requirements for handling spills and discharges of
1078 hazardous or controlled materials during activities at FWDA. The development, implementation
1079 and use of this plan are essential to ensure that spills and leaks can be quickly contained and
1080 cleaned up. As a general rule, the approach to spill cleanup is to first contain the spill by
1081 securing the spill source and deploying spill containment materials, including sorbent pillows,
1082 socks, sheets and granules. Small spills are responded to by the operator involved in the spill.
1083 Clean up of residues managed as hazardous or solid waste will be disposed of accordingly. In
1084 addition to this sub-plan of the EPP, we have also developed a site specific Spill Prevention,
1085 Control, and Countermeasures (SPCC) plan under 40 CFR Part 112 for our team to follow while
1086 conducting field operations at the project sites (ZAPATA 2016c).

1087
1088 If a spill does occur, it will be reported immediately to a member of the ZAPATA Pollution
1089 Prevention Team (ZAPATA’s Project Manager, SUXOS/Site Manager, Site Safety and Health
1090 Officer (SSHO) or Project Engineer). If necessary, the Pollution Prevention Team will contact
1091 FWDA’s Installation On-Scene Coordinator (IOSC) and members of the USACE Support Group
1092 (USACE Program Manager, USACE Project Manager and the On-Site USACE Oversight
1093 Coordinator). The IOSC has been designated to be the FWDA Caretaker (40 CFR 264.55). The
1094 IOSC will function as the facility emergency coordinator. If the IOSC cannot be contacted then
1095 a temporary alternate contact will be another member of the FWDA Caretaker staff. Names,
1096 roles, and phone numbers of the IOSC, USACE Support Group, and Pollution Prevention Team
1097 are provided in Table 4.

1098
1099 In accordance with 40 CFR 264.56, the responsibilities of the IOSC include assessing the
1100 emergency, determining the need for agency notification, requesting additional manpower and
1101 resources if required, contacting emergency services if required, and coordinating mitigation,
1102 cleanup, and reporting. The IOSC will be supported by ZAPATA’s Pollution Prevention Team.

1103 **6.1 TYPES AND PROPERTIES OF HAZARDOUS MATERIAL**

1104 Hazardous materials are chemicals (such as paints, oils, and fuels), biological agents (such as
1105 disease-causing materials), or physical agents (such as radioactive materials) that are dangerous
1106 to humans or to animals and plants.

1107
1108 The most likely hazardous materials planned to be on site during activities that could possibly be
1109 released to the environment consist of diesel, gasoline, motor oil and hydraulic oil associated
1110 with heavy equipment and asphalt cement (petroleum crude oil) associated with road
1111 construction and patchwork. All petroleum products are flammables. The physical and chemical
1112 properties for diesel fuel, gasoline and other petroleum products are included in Safety Data
1113 Sheets (SDS) that will be maintained on site at all times.

1114

1115 In order to maintain uninterrupted operation of equipment, a temporary fueling station will be set
1116 up at the staging area of Parcel 21. The staging area will also include our field office trailer, two
1117 portable toilets, an eye wash station, and a hand wash area located near the trailer. All required
1118 safety and labor postings will be located in the trailer. This staging area is proposed southwest of
1119 the south (triangle shaped) TNT leaching bed; using the area between former building
1120 foundations B501 and B503. The temporary fueling station will consist of a double-walled 3,000
1121 gallon diesel fuel tank staged in a secure earth berm. Petroleum storage also includes auxiliary
1122 fuel tanks (approximately 100 gallons or less) on site vehicles. Quantities of motor oil and
1123 hydraulic oil kept in approved containers (5-gallons or less) may also be transported and stored in
1124 the support or crew trucks. Small quantities of petroleum products (5-gallons or less), which
1125 may include oil, grease, and hydraulic fluid for equipment maintenance, will be stored in
1126 enclosed storage areas at the laydown area on site. Containers will not be stored where a leak or
1127 spill could enter a stormwater conveyance or arroyo.

1128
1129 ZAPATA is proposing the following stationary oil storage containers with capacities of 55
1130 gallons or greater to be temporary staged at our staging area at Parcel 21 – SWMU 1:

- 1131 • One 3000-gallon AST
- 1132 • One 55-gallon drum of hydraulic fluid
- 1133 • One 55-gallon drum of waste oil

1134
1135 In addition to the above storage containers that will be stored in a fixed location, we are also
1136 proposing the following fuel tank capacities that exceed 55 gallons which will be mounted on
1137 heavy excavation equipment, water trucks, dump trucks, asphalt pavers, or supporting vehicles.

- 1138 • One 163-gallon fuel tank for Caterpillar 330 Hydraulic Excavator
- 1139 • One 100-gallon fuel tank for Caterpillar 325 Hydraulic Excavator
- 1140 • One 25-gallon fuel tank for John Deere 310 Backhoe
- 1141 • One 108-gallon fuel tank for Caterpillar 966F II Wheel Loader
- 1142 • One 75-gallon fuel tank for Caterpillar 950 Wheel Loader
- 1143 • One 75-gallon fuel tank for Caterpillar 140G Motor Grader
- 1144 • One 50-gallon fuel tank for 2K Ford F800 Water Truck
- 1145 • Two 105-gallon fuel tanks for two support trucks
- 1146 • Up to Four 100-gallon fuel tanks for four dump trucks (on site at any one time)
- 1147 • One 75-gallon self-propelled asphalt paver (road reconstruction only)
- 1148 • One 65-gallon Front End Loader Pneumatic Tire, 3 CY (road reconstruction only)
- 1149 • One 75-gallon Caterpillar 140H Motor Grader (road reconstruction only)
- 1150 • One 35-gallon double drum steel roller (road reconstruction only)
- 1151 • One 56-gallon pneumatic roller (road reconstruction only)
- 1152 • One 70-gallon fuel tank for 3K Ford Water Truck (road reconstruction only)
- 1153 • Up to 100-gallon fuel tanks for asphalt haul trucks (road reconstruction only)

1154

1155 **Table 2** summarizes the oil storage containers that are proposed at the Parcel 21 staging area that
1156 exceed 55-gallons. It includes both fixed containers and vehicle/equipment fuel tanks that will
1157 occasionally be parked at the Parcel 21 staging area. A dedicated overnight parking area for any
1158 equipment stored at the FWDA during off hours will be established at the Parcel 21 staging area.
1159 Drip pans will be utilized whenever heavy equipment, dump truck and/or support trucks are
1160 parked for extended times onsite (i.e., during work breaks, overnight, etc.).

1161
1162 Containers, heavy equipment, and support facilities proposed for staging at Parcel 21 will also be
1163 used in support of field activities at Parcel 24 - Igloo Block A and groundwater well abandonments.
1164 Because the use of powered equipment will be limited at Igloo Block A and to abandon wells, we do
1165 not anticipate moving the storage of petroleum based products from the staging area at Parcel 21.
1166 Heavy equipment such as excavators and loaders are also not planned outside of Parcel 21. The only
1167 vehicles we plan to use outside of Parcel 21 are support and dump trucks.

1168
1169 The total fixed oil storage volume is approximately 3,110 gallons. See the project specific SPCC
1170 Plan for more details on petroleum storage (ZAPATA 2016c).

1171 **6.2 CATEGORIES OF LEVELS OF SPILLS AND DISCHARGES**

1172 Fuel spills from diesel and gasoline storage required by on-site equipment can be categorized as
1173 “major accidental” or “minor incidental” spills. A major accidental spill could result from
1174 breach of the fuel storage tank, from a vehicle collision or an unattended open valve. Minor
1175 incidental spills could result from careless operator handling of transfer equipment during
1176 fueling, broken hydraulic lines or engines that leak oil.

1177 **6.3 SPILL CONTROL PROCEDURES**

1178 Fuels and oils will be stored in containers as summarized in **Table 2**. This table also summarizes
1179 the containment system(s) and/or drainage controls associated with each container. **Table 3**
1180 summarizes the sources of a potential discharge and predicts the direction, flow rate, and
1181 quantity that could be discharged as a result of equipment failure. In addition to those
1182 containers, container storage also includes fuel tanks (approximately 100 gallons or less) and
1183 containers (5 gallons or less) on support vehicles. Containers will not be stored where a leak or
1184 spill could enter a stormwater conveyance or arroyo. An emergency spill containment and
1185 cleanup kit including such items as lined drums, absorbent pads, portable containment berms,
1186 and granular absorbent will be stored and available in the immediate work site area, either within
1187 the laydown area or within site trucks. Drip pans will be utilized whenever heavy equipment,
1188 dump truck and support trucks are parked for extended times onsite (i.e., during work breaks,
1189 overnight, etc.). A dedicated overnight parking area for any equipment stored at the FWDA
1190 during off hours will be established at the Parcel 21 staging area.

1191
1192 Additional spill control procedures that will be implemented during interim activities at Parcel
1193 21 include constructing a stabilized construction entrance and exit area. A decontamination area
1194 will be constructed before the exit point from the leaching beds on the side of the excavation.

1195
1196 Outside contractors will fill the ASTs, remove waste oil drums, and deliver hydraulic fluid
1197 drums. Hot asphalt mix will also be brought in by outside contractors for any road
1198 construction/repair work. The ZAPATA SUXOS/Site Manager or member of our Pollution
1199 Prevention Team will be present to monitor the filling, emptying, and delivery of all operations
1200 at the Parcel 21 staging area. Equipment operators will be under constant supervision and will
1201 not be allowed to congest the work area, thus limiting the potential for accidents.
1202

1203 Each member of our field team will be responsible for monitoring fuel storage, delivery and
1204 construction equipment for leaks. The individual that discovers a release will immediately notify
1205 the ZAPATA SUXOS/Site Manager or member of our Pollution Prevention Team via radio
1206 communication or telephone (contact information is included below in **Table 4**). A member of the
1207 Pollution Prevention Team will contact emergency services and a cleanup contractor, if required.
1208

1209 If a spill was to occur, the ZAPATA SUXOS/Site Manager will be responsible for all spill
1210 containment and cleanup activities. If a small spill occurs on-site, ZAPATA will immediately
1211 respond with appropriately trained personnel. Any larger spills may also be cleaned up by
1212 ZAPATA personnel trained to complete the task or local spill response contractors. The source
1213 of the spill will be stopped, if possible, by closing valves, turning off pumps etc. The spill will
1214 be contained by using sorbent materials in spill kits located throughout the project work site.
1215 Sorbents, solids and recovered material will be containerized in drums. The drums will be
1216 labeled with contents and a licensed waste disposal contractor, capable of handling oil wastes,
1217 will be contacted to dispose of the recovered materials. Contact information for our local waste
1218 disposal contractor is included below in **Table 4**. Detailed spill response and cleanup procedures
1219 are included in Appendix C of the SPCC Plan (ZAPATA 2016c).
1220

1221 Should a spill occur off-site, the delivery driver will immediately contact the ZAPATA
1222 SUXOS/Site Manager as well as the responsible local and/or state emergency response agencies
1223 so that a response may be made to the spill. Action will be taken immediately to contain and
1224 recover the spilled material. The spill will be contained so that removal equipment can clean up
1225 the spill. If a spill occurs on soil, the area will be over excavated to clean soil, to verify that all
1226 spilled material is removed. If a spill occurs on concrete or pavement, brooms or vacuums may
1227 be used to ensure that all spilled material is recovered.
1228

1229 The cause of any spill will be determined and corrective action will be taken. The Spill Incident
1230 Report, included as Appendix D of the SPCC Plan (ZAPATA 2016c), will be completed as soon
1231 as possible after the discovery of and response to a spill. If necessary, the form will be used to
1232 convey the required information to the USEPA Region 6 RA and other agencies and includes:
1233 address and phone of the facility, date and time of discharge, type of material discharged,
1234 estimates of the quantity discharged, source, affected media, cause of discharge, injuries,
1235 mitigation activities, need for evacuation and individuals/organizations that have been contacted.
1236

1237
1238

TABLE 2 OIL STORAGE CONTAINER INFORMATION

Proposed Fixed Oil Storage Container Information at Parcel 21 Staging Area*					
Container ID/ Description	Location	Volume (gals.)	Quantity	Contents	Container Construction
Fuel Oil #1	Parcel 21 - SWMU 1 Staging Area	3,000	1	Diesel Fuel	Double-Walled Steel Tank
Hydraulic Fluid Drum	Parcel 21 - SWMU 1 Staging Area	55	1	Hydraulic Oil	55-Gallon Steel Drum
Waste Oil Drum	Parcel 21 - SWMU 1 Staging Area	55	1	Waste Oil	55-Gallon Steel Drum
Proposed Vehicle and Equipment Fuel Tank Capacities for Excavation, Loading, and Road Maintenance					
Excavation Equipment #1	Caterpillar 330 Hydraulic Excavator	163	1	Diesel Fuel	Internal Fuel Tank
Excavation Equipment #2	Caterpillar 325 Hydraulic Excavator	100	1	Diesel Fuel	Internal Fuel Tank
Excavation Equipment #3	Caterpillar 966 F II Wheel Loader	108	1	Diesel Fuel	Internal Fuel Tank
Excavation Equipment #4	Caterpillar 950 Wheel Loader	75	1	Diesel Fuel	Internal Fuel Tank
Excavation Equipment #5	Caterpillar 140G Motor Grader	75	1	Diesel Fuel	Internal Fuel Tank
Excavation Equipment #6	John Deere 310 Backhoe	25	1	Diesel Fuel	Internal Fuel Tank
Truck Type #1	2K Ford F800 Water Truck	50	1	Diesel Fuel	Internal Fuel Tank
Truck Type #2	Support Truck(s)	105	2	Diesel Fuel	Internal Fuel Tank
Truck Type #3	Dump Truck	100	4 (on site at any one time)	Diesel Fuel	Internal Fuel Tank
Proposed Vehicle and Equipment Fuel Tank Capacities for Road Reconstruction					
Road Reconstruction Equipment #1	Asphalt Paver, Self-Propelled	75	1	Diesel Fuel	Internal Fuel Tank
Road Reconstruction Equipment #2	Front End Loader, Pneumatic Tire, 3 CY	65	1	Diesel Fuel	Internal Fuel Tank
Road Reconstruction Equipment #3	Caterpillar 140H Motor Grader	75	1	Diesel Fuel	Internal Fuel Tank
Road Reconstruction Equipment #4	Double Drum Steel Roller	35	1	Diesel Fuel	Internal Fuel Tank
Road Reconstruction Equipment #4	Pneumatic Roller	56	1	Diesel Fuel	Internal Fuel Tank
Road Reconstruction Truck #1	3K Ford Water Truck	70	1	Diesel Fuel	Internal Fuel Tank
Road Reconstruction Truck #2	Dump Truck (to haul asphalt mix from offsite source to paver)	100	1	Diesel Fuel	Internal Fuel Tank

1239 *The total fixed oil storage volume is approximately 3,110 gallons.

1240 **TABLE 3 POTENTIAL SPILL SOURCES**

Proposed Fixed Oil Storage Container Information at Parcel 21 Staging Area				
Container ID/ Description	Type of Failure	Volume Released (gals.)	Rate of Release (gallons/minute)	Direction of Spill
Fuel Oil #1	Partial or complete rupture	Up to 3,000	Up to 300	In berm
	Tank spill or overfill	Up to 100	Up to 45	In berm
	Leak from tank truck	Up to 100	Up to 5	On ground or drip pans
Hydraulic Fluid	Partial or complete rupture (delivery)	Up to 55	Up to 9	On ground or in plastic catch basin or spill pallets
	Partial or complete rupture (use)	Up to 55	Up to 9	In plastic catch basin or spill pallets
Waste Oil	Partial or complete rupture (delivery)	Up to 55	Up to 9	On ground or in plastic catch basin or spill pallets
	Partial or complete rupture (use)	Up to 55	Up to 9	In plastic catch basin or spill pallets

1241

1242

1243 **TABLE 4 EMERGENCY CONTACT LIST**

Name	Organization	Project Role	Phone
------	--------------	--------------	-------

LOCAL EMERGENCY RESPONSE ORGANIZATIONS – ALL EMERGENCIES DIAL 911

Dispatcher	Metro Dispatch	Emergency Response	(505) 722-2002
Fire Department	McKinley County Fire Dept.	Emergency Response	(505) 863-3839
State Police	New Mexico State Police	Emergency Response	(505) 863-9353
Local Police	Gallup Police	Emergency Response	(505) 863-9365
Hospital	Rehoboth McKinley Christian Hospital	Emergency Response	(505) 863-7000

**U.S. ARMY CORPS OF ENGINEERS (USACE) &
FORT WINGATE DEPOT ACTIVITY (FWDA)**

Brenda Anderson	USACE Tulsa District	USACE Contracting Officer	(918) 669-7274
Mark Patterson	Base Realignment and Closure Office	Base Realignment & Closure Environmental Coordinator (BEC)	(330) 358-7312
Steve Smith	USACE Fort Worth District	FWDA Program Manager	(817) 886-1879
Saqib Khan	USACE Tulsa District	Project Manager/Project Geologist	(918) 669-7374
Mike Scoville	USACE Fort Worth District	On-Site USACE Oversight Coordinator	(817) 866-1875
Angela Lane	USACE	Project Chemist	(817) 886-1824
Dennis “DJ” Meyers	USACE Fort Worth District	Onsite Corps Ordnance & Explosives Safety Specialist (OESS)	(817) 609-5014
Richard Cruz	FWDA	FWDA Caretaker and Installation On-Scene Coordinator (IOSC)	(505) 905-6190
-	FWDA	FWDA Administrative Records Manager	(505) 905-6108

**NEW MEXICO ENVIRONMENT DEPARTMENT (NMED) &
ENVIRONMENTAL PROTECTION AGENCY (EPA)**

John Kieling	NMED	NMED Resource Conservation and Recovery Act (RCRA)	(505) 476-6016
Dave Cobrain	NMED	NMED Hazardous Waste Bureau	(505) 476-6055
Federal Agency	EPA	National Response Center (24 hours)	(800) 424-8802

ZAPATA INCORPORATED

Steve Morrissette	ZAPATA (Pollution Prevention Team)	Project Manager	(402) 871-2891
Heather McArthur	ZAPATA (Pollution Prevention Team)	Project Professional Engineer	(704) 378-4926
Chuck Wentzel	ZAPATA (Pollution Prevention Team)	Senior UXO Supervisor / Site Manager	(704) 905-9786
Jimmy Lord	ZAPATA (Pollution Prevention Team)	Site Safety and Health Officer	(704) 378-4947
Bryan Moeller	ZAPATA	Technical Manager	(704) 907-5116
Brad Kuntz	ZAPATA	Corporate Safety and Health Officer	(704) 378-4920

EXCAVATION SUBCONTRACTOR

Kevin Shafer	Bohunk Excavating	ZAPATA Spill Response Contractor	(928) 220-0077
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1244 **6.4 REPORTING REQUIREMENTS**

1245 Spills will be reported immediately to a member of the ZAPATA Pollution Prevention Team
1246 (ZAPATA’s Project Manager, Senior UXO Supervisor (SUXOS)/Site Manager, SSHO or
1247 Project Engineer). If necessary, the Pollution Prevention Team will contact FWDA’s IOSC and
1248 members of the USACE Support Group (USACE Program Manager, USACE Project Manager
1249 and the On-Site USACE Oversight Coordinator). The IOSC will function as the facility
1250 emergency coordinator and is responsible for assessing the emergency, determining the need for
1251 agency notification, requesting additional manpower and resources if required, and coordinating
1252 mitigation, cleanup, and reporting. All emails and correspondence will be copied to the USACE
1253 Support Group. Names, roles, and phone numbers of the IOSC, USACE Support Group and
1254 Pollution Prevention Team are provided in **Table 4**.

1255
1256 All spills or leaks, regardless of their quantity, will be reported to NMED at the following
1257 numbers:

- 1258 • NMED emergencies: 505-827-9329 (twenty-four hours a day);
- 1259 • NMED non-emergencies: 866-428-6535 (voice mail, twenty-four hours a day);
- 1260 • NMED non-emergencies and to reach an on-duty NMED staff member: 505-476-6000
1261 (normal business hours only).

1262
1263 All spills will be documented and contain the following information:

- 1264 • Description of the material spilled (including the quantity and manifest number, if any);
- 1265 • Exact time and location of spill, including a description of the area involved;
- 1266 • Containment and cleanup procedures;
- 1267 • Summary of any communications with government officials, including NMED;
- 1268 • Reason for spill; and
- 1269 • Corrective action to prevent future spills.

1270
1271 Both our SPCC Plan and this Spill Control Plan of the EPP will be available at the project sites
1272 so that personnel will be able to quickly access and use the information to respond to spills.
1273 Emergency telephone numbers and any other relevant numbers will be posted in the staging area
1274 of Parcel 21 and kept readily available to all site personnel. In addition to the posted
1275 information, all project personnel will be briefed about spill control procedures, at the initial site
1276 briefing and through daily tailgate safety meetings.

1277 Contacts for the National Response Center, emergency response contractors, appropriate
1278 agencies, and other emergency services are also provided in **Table 4** and Appendix A and C of
1279 the SPCC Plan (ZAPATA 2016c).

1280

1281 **7.0 STORAGE AREAS AND LAYDOWN FACILITIES**

1282 Whenever possible, ZAPATA will locate on-site storage and laydown facilities in such a manner
1283 as to minimally affect site resources. All storage locations will be approved by USACE before
1284 their use and will be removed and restored once field activities have been completed.

1285 **7.1 SOIL STOCKPILES OUTSIDE OF SWMU BOUNDARIES (AREAS OF CONTAMINATION)**

1286 **7.1.1 Stockpiling Contaminated Soil**

1287 Under the original PWS, the excavation at Parcel 21 – SWMU 1 was not to exceed 10 ft bgs.
1288 Due to those limits, it was proposed that any temporary soil stockpiling would be within the
1289 SWMU 1 boundary (basically the boundary of the two former TNT Leaching Beds). However,
1290 to allow for the protection of groundwater under Modification 01, excavation at this site will
1291 extend to a maximum depth of 35 ft bgs. Due to the new depth requirements and volume to be
1292 excavated, USACE and FWDA will allow excavated soil to be temporary staged outside of the
1293 SWMU 1 boundaries for later transportation and disposal and/or backfill. Several “Areas of
1294 Contamination” (AOCs) are required to be established and approved by NMED – Hazardous
1295 Waste Bureau (HWB) prior to execution of the fieldwork. The AOC’s primary purpose is to
1296 facilitate the staging and segregation of remediation waste without triggering a new point of
1297 generation or placement of waste subject to RCRA requirements.

1298
1299 The AOC(s) will be implemented as a reserve and special waste stockpile area for excavated
1300 soils from within the SWMU 1 boundary per the approved 2016 IMWP. The proposed AOC
1301 boundaries address the following needs:

- 1302 • Increase the overall separation of work areas resulting in safer work conditions for
1303 workers and the environment.
- 1304 • Provides an area to manage and temporary stockpile soil to provide greater access to the
1305 excavation area.
- 1306 • Provides an area to separate potential “clean” soils from non-hazardous special waste that
1307 will require future testing and disposal.

1308
1309 Soils in the AOC will be staged/managed in separate 1,000 CY stockpiles approximately 15 ft
1310 high. As required by the approved disposal facility’s DMP, waste characterization samples will
1311 be collected as discrete samples from four different locations for each designated contaminated
1312 soil stockpile (i.e., stockpiles will be quartered for discrete samples every 250 CY). Upon
1313 analytical result acceptance, contaminated soils from these stockpiles will be loaded in haul
1314 trucks and transported to Red Rocks Regional Landfill in Thoreau, New Mexico for disposal.
1315 No material will be removed from the site until USACE approves the submitted waste profile
1316 information. See Appendix E of the WMP/HWCP for the landfill’s DMP and the NMED
1317 Approval Letter.

1318 **7.1.2 Stockpiling “Clean” Soil**

1319 New excavation requirements will require both sloping and benching in order to manage and
1320 remove the volume of impacted soils safely and provide access to excavation equipment and
1321 personnel. As shown on **Figure 2**, a large volume of these soils for sloping and setbacks will be
1322 removed from areas beyond the SWMU 1 boundary, primarily in the southern leaching bed.
1323

1324 Soils considered potentially “clean” (i.e., outside of the SWMU 1 boundary, as well as soils
1325 excavated from within the SWMU 1 boundary that were previously delineated not exceeding
1326 cleanup criteria) will be segregated from expected contaminated soil at temporary locations
1327 within the AOCs; also using 1,000 CY stockpiles. To confirm the soil is “clean”, “confirmation
1328 samples” will be collected using a 10-point composite sample per 1,000 CY. Soil meeting
1329 cleanup levels (SSLs/RSLs) will be identified as “clean” and designated for future backfilling of
1330 the excavation. If analytical confirmation samples indicate exceedances of cleanup levels
1331 (SSLs/RSLs) for these stockpiles, the soil will be identified as contaminated and will follow the
1332 previously stated waste characterization sampling requirements for contaminated soils. Pending
1333 waste characterization results, the soils will be designated for transportation and disposal at the
1334 designated disposal facility.
1335

1336 Temporary staging of soil that is assumed “clean” at the AOC(s), because it originated from
1337 outside of the SWMU 1 boundary (or other “clean” locations), ensures no soils are staged outside
1338 of the approved AOC areas that are later identified as exceeding confirmation screening criteria.

1339 **7.1.3 Management of Soil Stockpiles Outside of SWMU Boundaries**

1340 Upon acceptance of waste characterization/confirmation analysis results, each 1,000 CY
1341 stockpile will be clearly marked (using signs, barrier type, etc.) if the material is “clean” or
1342 marked for future transportation and disposal. In preparation for stockpile loading, any section
1343 of the stockpiles that were identified through sample analysis as non-hazardous ADC special
1344 waste will be separated from “clean” soils and stockpiled to the side. ZAPATA will implement
1345 standard soil stockpile protocols and cover the material with at least 6-mil plastic and add
1346 erosion control measures around the material and add fencing and signage, as described in the
1347 SWPPP. Once the non-hazardous soil is clearly segregated from any “clean” soils, the soil will
1348 be “live loaded” into haul trucks. If necessary, 6-mil plastic will be placed beneath the truck to
1349 ensure no contaminated soils drop onto the surface while loading. Any soil that does fall onto
1350 this plastic will be placed back into the truck. All excavations and traffic areas will be watered,
1351 as necessary, throughout the duration of the project to minimize dust generation.
1352

1353 Baseline and post-stockpile removal soil sampling will be conducted throughout the proposed
1354 AOC area footprints after all soil excavation and backfilling/disposal activities are complete.
1355 Baseline sampling will be conducted within the proposed AOC areas to establish the soil
1356 characteristics prior to excavation activities and subsequent stockpile activities at Parcel 21 –
1357 SWMU 1. Both baseline and closure (after the stockpile is removed) sampling for the AOCs

1358 will be conducted by dividing each of the AOC footprints into six roughly equal sized zones.
1359 Each of these six zones will consist of one composite “confirmation” sample using the same
1360 suite of analysis identified for confirmation samples of the excavation area. Each composite
1361 sample will be comprised of nine subsamples randomly collected from within each sampling
1362 area. For closure sampling after final stockpiles are removed, the team will scrape the top few
1363 inches of the ground surface that was previously covered by the non-hazardous soil stockpile.
1364 This will assist in preparing the disturbed surface for vegetation restoration as well as ensure that
1365 any native soil that may have been in direct contact with the potentially contaminated soil
1366 stockpiles is also removed.

1367
1368 At the conclusion of the closure sampling, if any contaminants of potential concern are above
1369 screening levels (SSLs/RSLs) due to stockpiling operations, ZAPATA will remove any
1370 contaminated soil from the natural ground IAW the requirements of the contract. The site will
1371 be restored with native vegetation following operations and/or any additional remediation
1372 activities.

1373
1374 Interim activities associated with Parcel 24 – Igloo Block A will not require soil stockpiling (see
1375 Section 1.4.2 for details concerning waste storage, handling, and disposal at Parcel 24).

1376 **7.2 STAGING/LAYDOWN AREAS**

1377 Site storage requirements will include the use of storage trailers for equipment (Connex box),
1378 several petroleum storage tanks or containers, office trailer, two portable toilets, an eye wash
1379 station and a hand wash area. These storage and laydown areas are proposed southwest of the
1380 south (triangle-shaped) TNT leaching bed; using the area between former building foundations
1381 B501 and B503. This area is approximately 400 feet south of a small arroyo identified north of
1382 the triangle-shaped leaching bed and across the main access road (Arterial Road # 4) between the
1383 two leaching beds. The staging area will be approximately 150 ft by 75 ft in area and will be
1384 utilized for operations at both Parcel 21 and 24. A small laydown area to stage tools and
1385 equipment that will be utilized for interim measures at Parcel 24 will be established along the
1386 entrance and haul route of Igloo Block A; at the intersection of West Fringe Road and A-1.
1387 During field activities at Parcel 24, the project office, storage trailer, portable toilets and
1388 petroleum containers will remain at the main storage and laydown area proposed at Parcel 21 –
1389 SWMU 1. See **Figures 2 and 3** for proposed locations of both staging areas at Parcels 21 and
1390 24, respectively.

1391
1392 In order to maintain uninterrupted operation of equipment, a temporary fueling station will be set
1393 up at the main staging area of Parcel 21 using a double-walled 3,000 gallon diesel fuel tank
1394 staged in a secure berm. Petroleum storage also includes auxiliary fuel tanks (100 gallons or
1395 less) on site vehicles. Quantities of motor oil and hydraulic oil kept in approved containers (5-
1396 gallons or less) may also be transported and stored in the support or crew trucks. Small
1397 quantities of petroleum products (5-gallons or less), which may include oil, grease, and hydraulic

1398 fluid for equipment maintenance, will be stored in enclosed storage areas at the laydown area on
1399 site. Containers will not be stored where a leak or spill could enter a stormwater conveyance or
1400 arroyo. Installation environmental personnel will be consulted to assure SPCC procedures/
1401 permits are met. See the project specific SPCC Plan for more details on petroleum storage
1402 (ZAPATA 2016c).

1403
1404 In addition, ZAPATA will construct a stabilized construction entrance and exit area to begin
1405 operations. A decontamination area will be constructed before the exit point from the leaching
1406 beds on the side of the excavation. All required safety and labor postings will be located at the
1407 office trailer.

1408

1409 **8.0 ACCESS CONTROL AND ROUTES**

1410 **8.1 WORK AREA ACCESS CONTROL AND THRU TRAFFIC DETOUR**

1411 All site personnel will enter FWDA from the main entrance (administrative area) and proceed
1412 south of the Administration Building 1 to Gate 51. Gate 51 will be locked at all times or manned
1413 by a guard to allow access to the project work areas. Entry and exit onto FWDA is shown on
1414 **Figure 4.**

1415
1416 We anticipate that a section of Arterial Road No. 4 and/or Service Road No. 3A will be removed
1417 during the excavation of SWMU 1's Pre-1962 (south triangle-shaped) TNT leaching bed. As
1418 shown on **Figure 2**, ZAPATA will close these sections off to all thru traffic during the SWMU 1
1419 excavation and backfilling stage of this project. During this period, a detour will be established
1420 for FWDA thru traffic that will bypass Arterial Road No. 4. Figure 4 identifies this detour,
1421 which will begin just south of Gate 51 at the intersection of Arterial Road No. 1 and Arterial
1422 Road No. 4 and continue south and then east to Arterial Road No. 3 where the detour will
1423 terminate near Building 303.

1424
1425 Work area access controls for the closed portions of Arterial Road No. 4/Service Road No. 3A
1426 and haul route temporary entrance/exit points for SWMU 1 will be updated with posted signs
1427 with barrier tape and/or construction fence for easy visibility and prevent unauthorized entry. A
1428 24 ft double gate (two vehicle width) will be constructed within the fence crossing the road at the
1429 detour termination point (near Building 303). ZAPATA will add signage along the extent of the
1430 detour road and maintain/repair any holes created during the detour period. At the end of the
1431 detour period, ZAPATA will remove and dispose of all fencing and pylons and patch holes
1432 created when adding the temporary gate.

1433
1434 Signs will also be placed along the fenced boundaries or on any erosion control features of the
1435 project. Signs for the site will direct visitors to the site trailer at Parcel 21 and away from
1436 restricted work areas at the boundaries. Visitors will be allowed within the boundaries of the
1437 project site only when their required H&S certifications are on file and they have had the site-
1438 specific H&S and site training. Visitors will be escorted when inside the work zone.

1439 **8.2 TRAFFIC MANAGEMENT AND ROUTES**

1440 ZAPATA plans to provide and utilize the safest and most direct route for haul trucks and will to
1441 the greatest extent possible use existing roadways to minimize the impact of site operations. The
1442 traffic pattern within the fenced boundary will be based on safety, soil conditions, minimal dust
1443 generation, and production requirements. In some cases, existing roads may require some
1444 improvements for site access. Any road improvement that may be required will be coordinated
1445 with USACE. If new site access routes are absolutely required, ZAPATA, with USACE
1446 concurrence, will establish them so as to minimize their impact on surrounding resources and

1447 will return the disturbed areas to their previous condition at project completion. Proposed
1448 improvements are listed below.

1449 **8.2.1 Parcel 21 – SWMU 1 Access**

1450 There will be a single entrance/exit for each of the two leaching bed excavation areas to
1451 minimize soil tracking off site. For SWMU 1’s Post-1962 (northern diamond-shaped) TNT
1452 leaching bed, the team will construct a temporary dirt access road between the eastern berm and
1453 Arterial Road. The access road will be in a hook configuration; trucks will enter from the north
1454 and exit from the south. A portion of this temporary access road will cross an observed area
1455 which has the potential for channelized flow near the leaching bed’s eastern berm. This
1456 depression is a relatively flat channel and filled with vegetation. However, to account for any
1457 runoff that could occur at this location during heavy precipitation events, a culvert will be placed
1458 in the channel. Borrow material will be filled in around the culvert and to bring the elevation of
1459 the depression with the level of the temporary access road. After backfill operations are
1460 complete, the depression will be restored to its original condition and excavated material will be
1461 placed in the leaching beds. The culverts will be disposed of as C&D waste.

1462
1463 For AOCs designated for SWMU 1’s south leaching bed and the smaller excavation areas near
1464 the former settling tank, the team will construct a temporary dirt covered access road parallel and
1465 just north of Service Road No. 3. Haul trucks will enter the temporary access road from Service
1466 Road No. 3 and continuing east to the AOC load areas. A turnaround area will also be
1467 designated near the eastern extent of the access road to aid loading near the eastern AOC.

1468
1469 A stabilized construction entrance (SCE) and exit (or track outs) will be used at both entrance
1470 and exit locations to the two temporary access roads to remove excess soil from vehicle tires as
1471 they enter and leave the paved surface (see **Figure 2** for track outs in vicinity of the excavation
1472 areas). The tracking pads will be gravel on top of geotextile. If necessary, additional controls to
1473 remove sediment from vehicle tires will be utilized. These controls may include administrative
1474 controls or mechanical removal. If track out of sediment from site operations is observed onto
1475 the pavement at the location where the unpaved access road leads to the work site, sweeping,
1476 shoveling, or other equivalent means will be used to remove sediment by the end of the same
1477 work day. Additional details on SCE are provided in the SWPPP.

1478
1479 During various stages of the excavation, ZAPATA may use a portion of the closed paved road(s)
1480 listed above as an alternate access (haul) route since some heavy equipment will originate from
1481 SWMU 1 on the non-closed side of the road(s). **Figure 2** shows SWMU 1 details of the
1482 proposed access roads, proposed sections of road to be closed, loading areas, stockpile locations
1483 within the berm, and locations where the existing drain channel will be filled. More detailed
1484 figures showing topography and excavation details are provided in the SWPPP and IMWP.

1485 **8.2.2 Borrow Source Access**

1486 Soil used for backfilling the excavations at Parcel 21 – SWMU 1 will be excavated from existing
1487 above ground soil piles located within FWDA. These backfill sources will come from two main
1488 areas. A smaller borrow source is located about 1/3 mile southwest of SWMU 1; while the main
1489 soil borrow area is located southwest of the Administration Area along an existing arroyo.
1490 FWDA has directed that the smaller borrow source will be used first before using the larger
1491 borrow source southwest of the Administrative Area. As previous contractors have been
1492 directed, borrow source soils will be removed from the west face of the existing soil piles only.
1493 At the end of each day, and during non-active time periods, the locations of the borrow area that
1494 have been disturbed will be contained with a soil berm not less than 6-inches in height to limit
1495 sediment transport in the case of a storm event. Water will be sprayed over the surface of the
1496 disturbed areas in a manner which creates a crust to minimize sediment transport during non-
1497 active periods.

1498
1499 It is likely that additional borrow material will be required further north than where previous
1500 contractors acquired borrow soils from the main borrow source area. Currently, the access road
1501 to reach the main borrow source terminates near a 200 foot buffer which protects a Traditional
1502 Cultural Property (TCP). In order for the team to gain access to the northern areas of the arroyo
1503 borrow source, the dirt access road will be expanded to the north to avoid the 200 foot buffer and
1504 allow the team to reach sections of the arroyo north of the buffer. It is estimated an additional .4
1505 miles of temporary dirt access road maybe constructed along this section. The overall planned
1506 access route, proposed temporary access route, and alternate access routes in relation to the
1507 borrow sources are illustrated on **Figure 4**.

1508
1509 At both Parcel 21 and the borrow site, we will maintain the existing access (haul) roads. Several
1510 SCE (i.e., track outs) either already exist (i.e., intersection of Arterial Road and Arterial Road
1511 No. 4) or will also be positioned along key intersections where trucks enter/exit paved surfaces
1512 between Parcel 21 and the FWDA borrow sources. Any pre-existing SCE will be maintained.
1513 **Figure 4** identifies locations of these SCE along the haul/access routes. Additional details on
1514 SCE are provided in the SWPPP.

1515
1516 After backfill operations are complete, the disturbed areas in the borrow area will be graded to
1517 match adjacent topography and to promote drainage, minimize erosion, and prevent ponding of
1518 water. ZAPATA will complete slope sides of the borrow site berm that was disturbed at a 1:1
1519 slope.

1520
1521 **8.3 TRUCK SAFETY REQUIREMENTS**

1522 ZAPATA will use tandem axle trucks and ensure that all drivers have the necessary licenses,
1523 skills, experience, and site-specific training to operate the trucks in a safe manner. California

1524 tandem trailers will be avoided as the geometry of these tends to be more destructive to roads
1525 during tight turns.

1526
1527 The traffic pattern will be indicated on site access maps provided to the drivers and discussed
1528 with them during the daily safety meetings and huddle sessions. If and when traffic patterns
1529 need to be changed, all drivers will be notified prior to the change. If adverse weather conditions
1530 are anticipated, the SSHO will advise on the safe equipment operation during the huddle-up
1531 sessions. All waste carrying haul trucks will be tarped, loaded, or unloaded, while in-transit.
1532 Loads will be inspected and adjusted prior to the tarps being deployed to ensure that no
1533 interference with the tarp system occurs. ZAPATA will employ BMPs to keep the loading zones
1534 neat and clean and will safely regulate and control transportation of materials and personnel
1535 associated with interim measures at all project sites.

1536

1537 **9.0 POST PROJECT CLEANUP**

1538 At the conclusion of backfilling operations, any erosion control berms and perimeter fencing will
1539 be removed. ZAPATA will remove all signs of temporary facilities such as work areas, stakes,
1540 or any other signs of remediation activities within the project, storage, and access areas. Any
1541 damage to roads, bridges, gates, and the like, will be restored to pre-project conditions. Prior to
1542 demobilization and after grading has been approved, the entire disturbed area will be reseeded
1543 with native mix from a local nursery. Seeding will be implemented for late fall or winter seeding
1544 schedules at the rate of 100 Pure Live Seed per square foot of seeded area when the soil is loose
1545 and moist. At least two watering events will be completed after reseeded if sufficient meteoric
1546 water is not present to initiate seed germination.

1547

1548 **10.0 PERSONNEL**

1549 The ZAPATA Project Manager, Mr. Steve Morrissette P.G., C.P.G., or his designee, is
1550 responsible for ensuring adherence to this EPP. Mr. Morrissette holds the requisite qualifications
1551 necessary to implement this EPP, and he or an appointed designee will be responsible for
1552 training environmental protection personnel and coordinating activities with USACE personnel.

1553
1554 **Table 4** provides contact information for key personnel that will oversee and assist with field
1555 operations.

1556

1557 **11.0 REFERENCES**

- 1558 AMEC Environmental & Infrastructure, Inc. (AMEC). 2013. *Final Environmental Protection*
1559 *Plan, Parcel 18, Eastern Landfill*. AMEC Environment & Infrastructure (AMEC),
1560 prepared for USACE Forth Worth District, July 2013.
- 1561
- 1562 Brown, David, ed. 1994. *Biotic Communities: Southwestern United States and Northwestern*
1563 *Mexico*. University of Utah Press, Salt Lake City. 342 pp.
- 1564
- 1565 Delong and Williams. 2006. *Status report and biological review of the Gray Vireo in New*
1566 *Mexico*. Unpublished report to the New Mexico Dept. of Game and Fish, Santa Fe, NM.
- 1567
- 1568 ERM, 1994. *Property Transfer Investigation of the Southern Property, Igloo Blocks A, B, and C,*
1569 *and the Three Former Ballistic Missile Launch Sites*, Environmental Resources
1570 Management, Inc. (ERM), 26 January 1994.
- 1571
- 1572 FWDA, 1980. *Installation Assessment of Fort Wingate Depot Activity*, US Army Toxic and
1573 Hazardous Materials Agency, Aberdeen Proving Ground, Maryland, January 1980.
- 1574
- 1575 NatureServe. 2016. NatureServe Explorer. Website visited January 13, 2016. Available
1576 at <http://www.natureserve.org/explorer/>.
- 1577
- 1578 New Mexico Department of Game and Fish (NMDGF). 2007. Guidelines and
1579 Recommendations for Burrowing Owl Surveys and Mitigation. Website visited
1580 January 13, 2016 at [http://www.wildlife.state.nm.us/conservation/habitat_handbook/](http://www.wildlife.state.nm.us/conservation/habitat_handbook/documents/2007burrowingowlfinalfinal.pdf)
1581 [documents/2007burrowingowlfinalfinal.pdf](http://www.wildlife.state.nm.us/conservation/habitat_handbook/documents/2007burrowingowlfinalfinal.pdf)
- 1582
- 1583 New Mexico Department of Game and Fish (NMDGF). 2016. Biota Information System of
1584 New Mexico. Website visited January 13, 2016. Available at
1585 www.bison-m.org/speciesreports.aspx.
- 1586
- 1587 NMED, 2015. *Review of Alternate Daily Cover (“ADC”) Pilot Test Results for Fort Wingate*
1588 *Soils, Red Rocks Regional Landfill*, New Mexico Environmental Department, Solid
1589 Waste Bureau, Letter dated August 31, 2015.
- 1590
- 1591 NMED, 2016. *Approval of Disposal Management Plan for Fort Wingate Soils (Industrial Solid*
1592 *Waste), Red Rocks Regional Landfill*, New Mexico Environmental Department, Solid
1593 Waste Bureau, Letter dated January 7, 2016.
- 1594
- 1595 NNMRSWA, 2015. *Fort Wingate, Explosives Contaminated Soils Disposal Management Plan*
1596 *(DMP)*, Northwest New Mexico Regional Solid Waste Authority, Red Rocks Regional
1597 Landfill, Thoreau, New Mexico, December 2015.
- 1598
- 1599 PMC, 1997. *Final Remedial Investigation/Feasibility Study & RCRA Corrective Action*
1600 *Program Document*, PMC Environmental (PMC), 15 November 1997.

- 1601
1602 PMC, 2001. *Final RCRA Facility Investigation Report for the TNT Leaching Beds Area, Fort*
1603 *Wingate Depot Activity*. PMC Environmental (PMC), September 2001. FWDA
1604 Information Repository Document Number FW 01-4.
1605
1606 TPMC, 2008. *Final RCRA Facility Investigation Work Plan, Parcel 21, Fort Wingate Depot*
1607 *Activity*, TerranearPMC, 30 September 2008.
1608
1609 TPMC, 2011. *Final RCRA Facility Investigation Report, Parcel 21, Fort Wingate Depot*
1610 *Activity*, TerranearPMC, 14 January 2011.
1611 USACE, 2008. Fort Wingate Depot Activity Facility Wide Ground Water Monitoring Report for
1612 January, April, July 2008, December 2008.

1613 USACE, 2009. Fort Wingate Depot Activity Facility Wide Ground Water Monitoring Report for
1614 October 2008 to January 2009, June 2009.

1615 USACE, 2010a. Fort Wingate Depot Activity Facility Wide Ground Water 11 Monitoring Report
1616 for April 2009 to July 2009, January 2010.

1617 USACE, 2010b. Fort Wingate Depot Activity Facility Wide Ground Water 13 Monitoring
1618 Report for April 2010 to July 2010, December 20, 2010.

1619 USACE, 2014a. *Request for Proposal (RFP), Interim Measures for Parcel 21 – Solid Waste*
1620 *Management Unit (SWMU) 1 & Parcel 24 – Igloo Block A & Abandonment of Wells for*
1621 *Fort Wingate Depot Activity (FWDA), New Mexico, Amendment 0004*. U.S. Army Corps
1622 of Engineers, Tulsa District, Tulsa Oklahoma. 24 June 2014.
1623
1624 USACE, 2014b. *Final RCRA Facility Investigation Report – Parcel 11, Fort Wingate Depot*
1625 *Activity*. U.S. Army Corps of Engineers, Fort Worth District. May 23, 2014.
1626
1627 USACE, 2014c. *Release Assessment Report, Parcel 24, Fort Wingate Depot Activity*, United
1628 States Army Corps of Engineers, Fort Worth District, January 31, 2014.
1629
1630 USACE, 2015. *Revised Performance Work Statement (PWS), Interim Measures for Parcel 21 –*
1631 *Solid Waste Management Unit (SWMU) 1 & Parcel 24 – Igloo Block A & Abandonment*
1632 *of Wells for Fort Wingate Depot Activity (FWDA), New Mexico, Modification No. 01*.
1633 U.S. Army Corps of Engineers, Tulsa District, Tulsa Oklahoma. 30 August 2015.
1634
1635 US Army. 1995. *Final Environmental Assessment. Disposal of a Portion of Fort Wingate Depot*
1636 *Activity, New Mexico*. United States Department of the Army, August 1995.
1637
1638 US Environmental Protection Agency (USEPA). 2012. EPA Greenbook Nonattainment Area
1639 Map. Last updated December 2012. Website visited January 12, 2016. Available
1640 at <http://www.epa.gov/oaqps001/greenbk/mapnpoll.html>.
1641

- 1642 USATHAMA, 1980. *Installation Assessment of Fort Wingate Army Depot Activity, Report No.*
1643 *136.* U.S. Army Toxic and Hazardous Materials Agency, January 1980. FWDA
1644 Information Repository Document Number FW 80-1.
1645
- 1646 United States Fish and Wildlife Service (USFWS), 2016a. New Mexico Ecological Services
1647 Field Office: All Listed and Sensitive Species in New Mexico by County. Website
1648 visited January 11, 2016. Available at <http://www.fws.gov/southwest/es/newmexico/>
1649
- 1650 United States Fish and Wildlife Service (USFWS), 2016b. Black-Footed Ferret Draft
1651 Recovery Plan. Second Revision. Website visited January 13, 2016. Available at
1652 [http://www.fws.gov/mountain-](http://www.fws.gov/mountain-prairie/species/mammals/blackfootedferret/2013DraftRevisedRecoveryPlan.pdf)
1653 [prairie/species/mammals/blackfootedferret/2013DraftRevisedRecoveryPlan.pdf](http://www.fws.gov/mountain-prairie/species/mammals/blackfootedferret/2013DraftRevisedRecoveryPlan.pdf)
1654
- 1655 United States Fish and Wildlife Service (USFWS), 2016c. Species Profile: Black-Footed ferret
1656 (*Mustela nigripes*) Website visited January 13, 2016. Available
1657 at <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A004>
1658
- 1659 ZAPATA, 2014a. *Final Abandonment and Plugging Plans for Groundwater Monitoring Wells*
1660 *Wingate 89, 90, 91, FW 26, TMW32/41, Fort Wingate Depot Activity, Zapata*
1661 *Incorporated, September 2014.*
1662
- 1663 ZAPATA, 2014b. *Notification of Permittee-Initiated Interim Measures, Parcel 24 – AOC 18,*
1664 *Igloo Block A, Fort Wingate Depot Activity, Zapata Incorporated, October 2014.*
1665
- 1666 ZAPATA, 2015. *Final Abandonment/Plugging Report for Groundwater Monitoring Wells*
1667 *Wingate 89, 90, 91, and FW 26, Fort Wingate Depot Activity, Zapata Incorporated, July*
1668 *2015.*
1669
- 1670 ZAPATA, 2016a. *Draft Interim Measures Workplan, Parcel 21 – SWMU 1, Fort Wingate*
1671 *Depot Activity, Zapata Incorporated, March 2016 (still under development).*
1672
- 1673 ZAPATA, 2016b. *Draft Environmental Protection Plan, Interim Measures for Parcel 21 – Solid*
1674 *Waste Management Unit 1, Parcel 24 – Igloo Block A, and Abandonment of Wells, Fort*
1675 *Wingate Depot Activity, Zapata Incorporated, February 2016.*
1676
- 1677 ZAPATA, 2016c. *Draft Spill Prevention, Control, and Countermeasure Plan, Interim Measures*
1678 *for Parcel 21 – Solid Waste Management Unit 1, Parcel 24 – Igloo Block A, and*
1679 *Abandonment of Wells, Fort Wingate Depot Activity, Zapata Incorporated, February*
1680 *2016.*
1681
- 1682 ZAPATA, 2016d. *Draft Waste Management Plan & Hazardous Waste Contingency Plan,*
1683 *Interim Measures for Parcel 21 – Solid Waste Management Unit 1, Parcel 24 – Igloo*
1684 *Block A, and Abandonment of Wells, Fort Wingate Depot Activity, Zapata Incorporated,*
1685 *February 2016.*
1686

1687 ZAPATA, 2016e. *Draft Project Management Plan, Interim Measures for Parcel*
1688 *Waste Management Unit 1, Parcel 24 – Igloo Block A, and Abandonment of Wells, Fort*
1689 *Wingate Depot Activity, Zapata Incorporated, February 2016.*

1690
1691 ZAPATA, 2016f. *Draft Storm Water Pollution Prevention Plan, Interim Measures for Parcel*
1692 *21 – SWMU 1, Fort Wingate Depot Activity, Zapata Incorporated, March 2016 (still*
1693 *under development).*

1694
1695 ZAPATA, 2016g. *Draft Accident Prevention Plan, Interim Measures for Parcel 21 – Solid*
1696 *Waste Management Unit 1, Parcel 24 – Igloo Block A, and Abandonment of Wells, Fort*
1697 *Wingate Depot Activity, Zapata Incorporated, February 2016.*
1698

APPENDIX A

**RECOMMENDED PROTOCOL FOR SURVEYING
FOR GRAY VIREOS IN NEW MEXICO**

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Appendix 2. Recommended Protocol for Surveying for Gray Vireos in New Mexico

Adapted From: DeLong, J. P. and Williams, S. O., III. 2006. Status Report and Biological Review of the Gray Vireo in New Mexico. New Mexico Department of Game and Fish, Santa Fe, New Mexico.

HABITATS TO SURVEY

The Gray Vireo (*Vireo vicinior*) uses three main types of habitats in New Mexico. In the northern part of the State and on the Colorado Plateau, the species uses piñon (*Pinus* spp.)-Utah juniper (*Juniperus osteosperma*) stands 5800–7200 ft in elevation. In the central and western parts of the State, Gray Vireos typically use oneseed juniper (*J. monosperma*) savannas 5500–7000 ft in elevation. In the southern and southeastern parts of the State, the species uses mixed juniper-oak (*Quercus* spp.) woodlands and desert riparian communities 4300–6600 ft in elevation. Any project site that falls into these habitat types and elevations should be surveyed for Gray Vireos prior to conducting project or management activities.

WHEN TO SURVEY

The species arrives on breeding areas in New Mexico in late April in the south and early May in the north. Surveys can begin early May in the south and central parts of the state, and by mid-May in the north. Surveys can be conducted through July, but the most reliable period is May and June. Some pairs can be hard to detect later in the breeding season because they have failed in their nesting attempts and abandoned their territories by July (DeLong and Cox 2005).

TIME OF DAY

Gray Vireos can sing all day, but, during the hottest parts of the breeding season, they can be considerably quieter after noon. Thus, the best time to survey for this species is between dawn and noon.

HOW MANY TIMES TO SURVEY

Ideally, one set of surveys should be conducted during May. If vireos are found, then the surveys can be considered complete. However, if no Gray Vireos are detected, then a second set of surveys

should be conducted in mid- to late June¹. This recommendation derives from our observation that, in dry years, Gray Vireos can delay nesting and be fairly difficult to detect. A second set of surveys increases the chances that a population would be detected if surveys were conducted during a time when vireos were not particularly vocal.

SURVEY METHODS

Tape-playback surveys should be conducted. Purely listening surveys can allow detection of Gray Vireos, but tape-playback surveys can locate as many as twice the number of territories.² In addition, although Gray Vireos are known for being vociferous, they can be quiet for considerable periods of time during the day. The quiet periods can be long enough for a passive listener to conclude the species is not present in a spot and move on. In addition, after the arrival and courtship portion of the breeding season, the birds can be less vocal and, therefore, harder to detect without the use of tape-playback methods. Therefore, when clearance-type surveys are required for pre-project activities, tape-playback methods should be used.

The standard song of the Gray Vireo should be played from points spaced 200–300 m apart, depending on habitat quality, topography, and locations of other Gray Vireos. The closest spacing of Gray Vireo territories (territory center to territory center) in New Mexico is about 200–300 m, suggesting that point-spacing of 200–300 m will allow detection of most territories. In addition, Gray Vireos can respond to the tape-playback calls from distances of 100 m or more, indicating that broadcast stations can effectively locate birds within about 150 m or so of the station.

¹ The current recommendation is that at least two additional surveys be completed May – late June.

² The question of whether the use of tape-playback methods causes undue disturbance is currently unanswered. There are no studies to demonstrate a negative effect of tape-playback surveys on the Gray Vireo, and the currently available data suggest that sites surveyed without the use of tape-playback experience similar levels of nest success as sites surveyed with tape-playback methods.

Each survey stop should begin with a listening period of 1–2 min, followed by 20–30 sec of broadcast, another 1–2 min of listening, 20–30 sec of broadcast, and end with 1–2 min of listening. Longer listening times after broadcasting can be helpful at times. The direction of broadcasting should rotate 360 degrees during the survey.

DATA COLLECTION

The following information should be recorded for each Gray Vireo survey:

- Site name, county, and distance and direction from nearest town;
- Date;
- Start and stop time;
- Observer's full name;
- Weather (e.g., wind-speed, temperature, cloud cover, precipitation);
- Habitat type;
- Location of each point surveyed whether Gray Vireos were detected or not (Universal Transverse Mercator coordinates or latitude/longitude coordinates of each point should be determined with a Global Positioning System [GPS] unit if possible), along with county and approximate distance to the nearest town;
- Number of Gray Vireos heard or seen;
- Age and sex of individuals seen (e.g., 2 adults with 1 fledgling);
- Exact location of birds seen (preferably using a GPS receiver);
- If exact location cannot be obtained, the distance and direction of the bird from the survey point;
- Presence of Brown-headed Cowbirds (*Molothrus ater*) and cattle at each point; and
- Habitat of survey area, including observations of habitat manipulations (cutting, burning, or development) at each point.

APPENDIX B

**NMDGF GUIDELINES AND RECOMMENDATIONS
FOR BURROWING OWL SURVEYS AND MITIGATION**

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**GUIDELINES AND RECOMMENDATIONS
FOR BURROWING OWL
SURVEYS AND MITIGATION**

NEW MEXICO DEPARTMENT OF GAME AND FISH

JULY 2007

(Note: Most of the following recommendations were developed by the New Mexico Burrowing Owl Working Group (2005), The California Burrowing Owl Consortium (1993), and The California Department of Fish and Game (1995))

The burrowing owl (*Athene cunicularia*) is considered a species of concern by the U.S. Fish and Wildlife Service and is protected by both the Migratory Bird Treaty Act and by New Mexico statute 17-2-14 (NMSA 1978). These guidelines are provided to assist in conducting burrowing owl surveys and mitigation during the preparation of environmental assessment reports and environmental impact statements. The guidelines also aid in the decision making process implemented when there is potential for any type of project to adversely affect burrowing owls or any of the resources that support them.

Project proponents should: 1) identify burrowing owl habitats and burrows; 2) choose and implement an appropriate survey method to confirm the presence of owls; and 3) determine and implement appropriate mitigation.

Step 1. Identify Burrowing Owl Habitat and Burrows

Seventy-five percent of New Mexico's ecological zones, as described by Dick-Peddie (1993), support or have the potential to support burrowing owls (Arrowood et al. 2001). These zones include: Chihuahuan desert scrub, closed basin scrub, desert grassland, Great Basin desert scrub, juniper savanna, lava beds, plains-mesa grassland, plains-mesa sand scrub, sand dunes, urban, and farmland (Arrowood et al. 2001). More specifically, burrowing owls generally are associated with dry, open, short-grass, treeless plains (Haug et al. 1993). Burrowing owls are also known to use areas that include shrubs such as creosote bush (*Larrea tridentata*), mesquite (*Prosopis* spp.), four-wing saltbush (*Atriplex canescens*), and rabbit-brush (*Chrysothamnus nauseosus*) (Martin 1973, Botelho and Arrowood 1996). Burrowing owls also inhabit human-modified landscapes, such as golf courses and parking lots.

Burrowing owls rarely dig their own burrows and, therefore, depend in part upon the presence of burrowing animals. In New Mexico, burrowing owls are associated with Gunnison's prairie dogs (*Cynomys gunnisoni*), black-tailed prairie dogs (*C. ludovicianus*), American badgers (*Taxidea taxus*), ground squirrels (*Spermophilus* spp.), rock squirrels (*S. variegatus*), foxes (*Vulpes* spp.), and coyotes (*Canis latrans*). Burrowing owls and prairie dogs are included as species of greatest conservation need in the western great plain shortgrass prairie vegetation type (Comprehensive Wildlife Conservation Strategy for New Mexico 2006). Burrowing owls can also utilize human-made structures, such as, storm drains, berms, roadsides, irrigation canals, and artificial burrows specifically constructed for the owls.

Occupancy of suitable burrowing owl sites can be verified by observing at least one burrowing owl, or owl molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance (The California Burrowing Owl Consortium 1993).

Step 2. Choose and Implement an Appropriate Survey Method to Confirm Owl Presence

The most suitable time to survey for burrowing owls in New Mexico is during the nest initiation and incubation phases (Table 1). Most burrowing owls are migratory in the state, although some over-winter in New Mexico, particularly males in southern New Mexico (Arrowood et al. 2001, Johnson et al. 1997). Migratory owls typically arrive on the breeding grounds by March and remain there until October.

Table 1. General breeding chronology of the burrowing owl in New Mexico.

Location	Pair Bonding/Nest Initiation	Egg Laying and Incubation	Chicks Fledge above Ground	Independence
New Mexico	March to April	Late April to early June	Early-Mid June	Mid-Late July

Surveys should not be conducted in certain weather conditions when owls are more likely to be in their burrows and not visible, such as temperatures above 30°C (86°F) and winds exceeding 20 km/hr (approx. 12 mph). Surveys also should be restricted to the early morning and evening hours, because above ground activity is often higher during these times (Conway and Simon 2003).

A single survey on a proposed project site is adequate to determine the presence or absence of active burrows. If owls are not observed, all active burrows should be inspected for indications of use by the presence of owl pellets, droppings, or feathers. If active burrows are found follow-up survey, utilizing the methods described below, should be scheduled to confirm the presence or absence and numbers of owls on a project site.

Burrowing owl surveys can be accomplished effectively by either walking or driving transects. Either the entire length of the transect or point count stations along the transect can be surveyed, and surveys can be conducted with or without broadcasting audio burrowing owl alarm (*quick-quick-quick*) and/or male territory (*coo-coo*) calls. Studies have shown that broadcasting calls increases detection probability of burrowing owls (Haug and Didiuk 1993, Conway and Simon 2003) and that trained surveyors can detect owls up to 300 m (Conway and Simon 2003). These methods might need to be modified depending upon the terrain and equipment being used, which, respectively, affect the distance owls and the broadcasted vocalizations can be heard.

If burrowing owl habitat is found at the project site, a 150-m buffer zone around the project should also be assessed for potential burrowing owl habitat. At the project site, use one of the following survey methods as recommended by the New Mexico Burrowing Owl Working Group (NMBOWG).

METHOD 1: Walking Surveys

Without Audio Calls

Transects should be established in suitable owl habitat. A single, straight line should be walked for the entire length of the transect (for specific protocol and comparison of line transect methodology see Emlen 1971 and 1977). Observers should record all owls observed along either side of the line. If a more thorough estimate of abundance in a specific area is desired, an observer should walk multiple parallel lines (or many observers walk parallel lines concurrently) that are approximately 50 m apart. All owls observed along either side of the transect line should be recorded. Data recorded should include: date and time of survey, weather conditions, dominant vegetation, burrow aspect, survey location (including GPS coordinates), number of owls observed, sex and age classes of owls (if determinable), and presence of prairie dogs and other burrowing animals.

With Audio Calls

Observers should proceed along a transect line, stopping at points approximately every 200 m to broadcast owl vocalizations and listen for responses. Distance between points will depend upon terrain and broadcast system, which, respectively, affect the distance owls and the broadcasted vocalizations can be heard. If the broadcast system and owl response calls, can be heard up to 200 m. then the observer should stop every 200 m. The distance between observation points can be shortened if necessary. If a more thorough estimate of abundance is desired, the observer should walk multiple parallel lines (or many observers walk parallel lines concurrently) to cover a greater proportion of the area. The lines should be spaced according to the same distance of audio coverage. At each observation point, the observer should scan for any owls with binoculars for the first two minutes, after which a territorial and/or alarm calls should be played for one minute. Finally, there should be two additional minutes of scanning after broadcasting. Scanning and broadcasting should be done in a 360° arc. All owls detected during this five-minute observation period should be recorded. Data recorded should include: date and time of survey, weather conditions, dominant vegetation, burrow aspect, survey location (including GPS coordinates), number of owls observed, sex and age classes of owls (if determinable), and presence of prairie dogs and other burrowing animals.

METHOD 2: Roadside Point-count Surveys

Without Audio Calls

Routes should be established along roads in the project site. Observers should stop the vehicle and pull off the side of the road at 0.5-mile (0.8 km) intervals (if project site is large enough). If visibility is impaired at a point, observers should continue until the next immediate suitable surveying spot is reached. All surveyors should exit the vehicle at each point and scan with binoculars in a 360° arc for a total of five minutes. All owls detected during this five-minute observation period should be recorded. Data recorded should include: date and time of survey, weather conditions, dominant vegetation, burrow aspect, survey location (including GPS coordinates), number of owls observed, sex and age classes of owls (if determinable), and presence of prairie dogs and other burrowing animals.

With Audio Calls

Routes should be established along roads in the project site. Observers should stop the vehicle and pull off the side of the road at 0.5-mile (0.8km) intervals (if project site is large enough). If visibility is impaired at a point, observers should continue until the next immediate suitable surveying spot is reached. Observers should exit the vehicle at each point and scan for the first two minutes. Afterwards, owl calls (territorial and/or alarm) should be played for one minute, followed by two additional minutes of scanning. Scanning should be done with binoculars in a 360° arc. All owls detected during this five-minute observation should be recorded. Data recorded should include: date and time of survey, weather conditions, dominant vegetation, burrow aspect, survey location (including GPS coordinates), number of owls observed, sex and age classes of owls (if determinable), and presence of prairie dogs and other burrowing animals.

Step 3. Determine and Implement Appropriate Mitigation

The objectives of these mitigation guidelines are to minimize the negative impacts to burrowing owls at a project site and preserve habitat that will support burrowing owl populations into the future. The mitigation process begins with the survey protocol to document the presence of burrowing owl habitat, and to determine if burrowing owls use the project site and the surrounding buffer zone. Occupied burrows should be determined based on survey information. If more than 30 days elapse between the initial survey and construction activities, project sites and buffer zones with suitable habitat should be resurveyed to ensure no burrowing owls have occupied these areas in the interim period. Resurveying the project site should be conducted no more than 30 days prior to initial project initiation. If ground disturbing activities are delayed or suspended for more than 30 days after the preconstruction survey, the site should be resurveyed.

If burrowing owls are present on a project site, the following mitigation measures should be followed to minimize negative impacts to burrowing owls, nest burrows and burrowing owl habitat.

According to the California Burrowing Owl Consortium there are three definitions of negative impacts:

- Disturbance or harassment within 50 m of occupied burrows.
- Destruction of burrows and burrow entrances. Burrows include structures such as culverts, concrete slabs and debris piles that provide shelter to burrowing owls.
- Destruction and/or degradation of foraging habitat adjacent to occupied burrows (within 100 m).

If burrowing owls are found at a project site, measures to avoid or mitigate negative impacts should follow one of three general approaches. These approaches are listed below:

1. Design and implement project activities to spatially avoid negative impacts and disturbance to burrowing owls and their habitat.
 - No disturbance should occur within 50 m of occupied burrows during the non-breeding season (September through February) or within 75 m during the breeding season (March through August). Avoidance also requires that a minimum of 6.5 acres of foraging habitat be maintained in undisturbed habitat condition for each pair or unpaired burrowing owl.
 - No disturbance or destruction of any prairie dogs or other burrowing animals or their burrows, should occur within the owl avoidance areas.

2. Design and implement project activities to seasonally avoid negative impacts and disturbances to burrowing owls.
 - Occupied burrows should not be disturbed during the nesting period, from March 1st through August 1st.
 - No disturbance or destruction of any prairie dogs or other burrowing animals or their burrows, should occur within the owl avoidance areas.
 - When destruction of burrows is unavoidable, burrow destruction or ground disturbing activities should only occur during the season when migratory owls have left the breeding site. The unoccupied season can be expected to begin in September or October and end in February or March. However, burrowing owl occupancy always must be confirmed by survey data, regardless of season. Immediately prior to burrow destruction a video probe should be used to confirm that the burrow is unoccupied.
 - For any occupied burrows that are destroyed outside of the nesting season, any remaining, undestroyed, burrows should be enhanced (enlarged or cleared of debris) or new burrows should be created (by installing artificial burrows) at a ratio of 2:1 on the protected lands site. A minimum of 6.5 acres of foraging habitat should be maintained in an undisturbed habitat condition for each pair or unpaired resident bird.
 - To ensure compliance with the federal Migratory Bird Treaty Act and state laws and regulations, the U.S. Fish and Wildlife Service and New Mexico Department of Game and Fish must be contacted to confirm that any construction activities resulting in destruction of burrows will not result in a taking of burrowing owls and, thus, violation of federal and state law.

3. Relocate burrowing owls that will be negatively impacted by project activities to protected areas of potential burrowing owl habitat.
 - If owls must be moved away from the disturbance area, passive relocation techniques should be used rather than trapping. At least one or more weeks will be necessary to accomplish this and to allow the owls to acclimate to alternate burrows. Passive relocation can be accomplished by use of one-way doors. Owls should be excluded from burrows in the immediate negatively impacted zone and within a 50-m buffer zone by installing one-way doors in burrow entrances. One-way doors should be left in place for approximately 48 hours to ensure that owls have left burrows before excavation. Prior to burrow destruction a video probe should be used to confirm that the burrow is unoccupied. If a video probe is not available burrows should be excavated with hand tools to ensure that the burrows are unoccupied. Two natural or artificial burrows should be provided for each burrow in the project area that will be rendered biologically unsuitable. Passive relocation should only be used during the non-breeding season,. This method should not be used once a pair of owls is at a burrow unless it is determined that the female does not exhibit a brood patch.
 - If removal or relocation is necessary, trapped burrowing owls should be released in a new location with suitable habitat in a soft release cage. Soft release involves placing owls in a cage with an artificial burrow and fed mice daily for three weeks. After three weeks one side of the cage is removed. More information on this technique is available from NMBOWG.
 - A minimum of 6.5 acres of foraging habitat should be maintained in an undisturbed habitat condition for each pair or unpaired resident bird. No disturbance or destruction of any prairie dogs or other burrowing animals or their burrows, should occur within the owl avoidance areas.
 - To ensure compliance with the federal Migratory Bird Treaty Act and state laws and regulations, the U.S. Fish and Wildlife Service (505-248-7882) and New Mexico Department of Game and Fish (505-476-8101) must be contacted and federal and state permits must be obtained for handling of owls.

Links

New Mexico Burrowing Owl Working Group

<http://www.hawksaloft.org/BUOW/BUOW.htm>

Use of Artificial Burrows by Burrowing Owls at the HAMMER Facility on the U.S. Dept. of Energy Hanford Site

http://www.pnl.gov/main/publications/external/technical_reports/PNNL-15414.pdf

How to Install Artificial Nesting Burrows for Burrowing Owls

<http://www.usga.org/turf/articles/environment/general/Burrowing-Owl-Brochure.pdf>

Artificial Burrowing Owl Burrow Design

<http://www2.ucsc.edu/scpbrg/artifici.htm>

Literature Cited

Arrowood, P. C., C. A. Finley, and B. C. Thompson. 2001. analysis of burrowing owl populations in New Mexico. *Journal of Raptor Research* 35: 362-370.

Botelho E. S., and P. C. Arrowood. 1996. Nesting success of western burrowing owls in natural and human-altered environments. *In* D. M. Bird, D. E. Varland, and J. J. Negro, editors. *Raptors in human landscapes: adaptations to built and cultivated environments*. Academic Press, Inc. San Diego, California.

California Department of Fish and Game. 1995. Staff report on burrowing owl mitigation. Unpubl. report. 10 p.

California Burrowing Owl Consortium (CBOC). 1993. Burrowing owl survey protocol and mitigation guidelines. Unpubl. report. 13 p.

Conway, C. J., and J. C. Simon. 2003. Comparison of detection probability associated with burrowing owl survey methods. *Journal of Wildlife Management* 67: 501-511.

Dick-Peddie, W. A. 1993. *New Mexico vegetation: past, present, and future*. University of New Mexico Press, Albuquerque. 244 pp.

Emlen J. T. 1971. Population densities of birds derived from transect counts. *Auk* 88: 323-342.

Emlen, J. T. 1977. Estimating breeding season bird densities from transects counts. *Auk* 94: 455-468

Haug, E. A., and A.B. Didiuk. 1993. Use of recorded calls to detect burrowing owls. *Journal of Field of Ornithology* 64: 188-194.

Haug, E. A., B. A. Millsap, and M. S. Martell. 1993. Burrowing owl (*Speotyto cunicularia*). *In* A. Poole and F. Gill, eds. *The birds of North America*, No. 61. The American Ornithologists' Union: The Academy of Natural Sciences; Washington, D.C.

Johnson, K., L. DeLay, P. Mehlhop, and K. Score. 1997. Distribution, habitat, and reproductive success of burrowing owls on Holloman Air Force Base. Unpubl. report by New Mexico Natural Heritage Program. 26 p.

Martin, D. J. 1973. Selected aspects of burrowing owl ecology and behavior. *Condor* 75: 446-456.

New Mexico Burrowing Owl Working Group (NMBOWG). 2005. Recommended burrowing owl survey and monitoring protocol. Unpubl. report. 5 p.

APPENDIX C

**PROGRAMMATIC AGREEMENT AND
TRIBAL LETTERS CONCERNING CULTURAL RESOURCES**

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DEPARTMENT OF THE ARMY
FORT WINGATE DEPOT ACTIVITY
P.O. BOX 268
FORT WINGATE, NM 87316

September 11, 2014

Mr. Ronald P. Maldonado
Navajo Nation Historic Preservation Department
Cultural Resource Compliance Section
P.O. Box 4950
Window Rock, Arizona 86515

Dear Mr. Maldonado:

The Army is preparing to implement soil removal and sampling activities described in the Fort Wingate Depot Activity (FWDA) Parcels 6, 16, 21 and 22 RFI Reports (Reports). The Tribes have already reviewed these four work plans. The purpose of this letter is to inform the Tribes of upcoming interim removal actions within the four parcels instead of a Phase 2 RFI. The RFI Reports for these four parcels recommend either additional soil sampling under Phase 2 or soil removal at the sites described in this letter. The Army has elected to perform soil removal at all of the sites mentioned in this letter under a permittee initiated interim measure in accordance with Resource Conservation Recovery Act (RCRA) Permit section VII.G.3 instead of a Phase 2 investigation. The Tribes will be provided work plans for the typical 60 day review of these upcoming actions in 2014 and 2015. The Army seeks Navajo Nation comments to comply with the Programmatic Agreement regarding cultural resources sites in the proposed work areas. A summary of the fieldwork is described below. Figures showing the locations of removal areas and sites to be sampled are enclosed.

Two locations in Parcel 6 will be subject to soil removal. SWMU 8 was subject to soil removal in the 1990s and further excavation of approximately 200 cubic yards (cu yd) of soil is required at this location to ensure all PCB contamination is removed to meet the NMED permit requirements. At SWMU 20, which partially extends into Parcel 7, a pile of surface debris will be removed for a total of approximately 1,200 cu yd of material removed. The closest archaeological site to the SWMU 8 location is approximately 400 feet away. There is an archaeological site located 200 feet from the SWMU 20 debris pile. In both cases, vehicles and equipment will be routed to ensure avoidance of all the sites within the parcel.

In Parcel 16, approximately 1,000 cu yd soil will be removed at the site of former Bldg Z135. Additional details can be found in section 3.5 of the Parcel 16 RFI Report. The nearest archaeological site to this location is approximately 350 feet. Vehicles and equipment will be routed to ensure avoidance of all the sites within the parcel.

Several areas within Parcel 21 will be subject to soil removal based on the results of earlier sampling. At SWMU 2 removal will cover one quarter of an acre and amount to approximately 750 cu yd. Additional soil will be removed west of former Building 515. In SWMU 7, SWMU 19, AOC 68, and AOC 63, soil removal will be on a small scale (50-300 cu

yd) and localized based on the results of earlier sampling. In AOC 60 only hand dug soil samples will be removed. Archaeological sites are located no closer than 400 feet (AOC 68) and up to 1,000 feet away from the planned soil removal sites in Parcel 21. Vehicles and equipment will be routed to ensure avoidance of all the sites within the parcel.

Also in Parcel 21, two former TNT beds will be fully removed from SWMU 1. These beds were sampled in the 1990s and will now be subject to total removal to comply with the NMED permit. Approximately 15,000 cu yd of soil is expected to be removed. A known archaeological site is located some 350- 400 feet away. Vehicles and equipment will be routed to ensure avoidance of all the sites within the parcel.

Finally, in Parcel 22 SWMU 27 soil removal will take place at five locations and total approximately 200 cu yd. The nearest archaeological site to this removal is approximately 250 feet away. Vehicles and equipment will be routed to ensure avoidance of all the sites within the parcel.

The Army is seeking Navajo comments pursuant to the Programmatic Agreement (PA). We seek input from the Navajo Nation for operating procedures for the Army Contractor to follow when performing removal actions. We would like to propose the following options:

a. Based on review of the previously submitted RFI Reports, this letter and enclosed figures, the Navajo are comfortable to make a determination that Cultural Sites are a sufficient distance away from the removal locations as to not be encountered during the field work or are in areas previously disturbed. If cultural resources are inadvertently encountered during the field work, the Army will immediately notify the Tribal cultural points of contact for consultation per section 1.8 of the PA. As stated in Section 1.4 of the PA, *avoidance of historic properties and potential NAGPRA cultural items will be the first choice for RCRA permit activities.*

b. The Army will set up a site visit with the Tribe to identify the general area of removal locations. Then, the Tribal representative(s) can visit the locations pursuant to Programmatic Agreement Sections 1.4 & 1.6 prior to removal to inspect, and then accept the location, or propose adjusting the removal area to avoid a cultural site(s), or propose no removal action at the site(s). This would require quick coordination between the Army, NMED, and the Tribal cultural contact. A written report/letter of any cultural resources monitoring/work will be required from the Tribe within 2 weeks of the conclusion of the field work for submittal to the Army in order to meet the Permit schedule. The Tribe will not be reimbursed by the Army or Contractor for the site visit, report, or letter.

Because the removal locations are in areas previously sampled, altered by construction and disposal activities with many years of work activities in the area, and because of the distance from the removal locations to identified cultural sites, we feel that either Option a or b would be reasonable, with a preference for Option a.

Please let us know which option the Navajo Nation prefers within 30 days of receipt of this letter or the Army will assume your concurrence with proposed Option a.

Should you have any questions, or require any further information concerning the above, please contact Ms. Nancy Parrish (Fort Wingate Project Archaeologist) of the U.S. Army Corps of Engineers, Fort Worth District, at (817) 886-1725, or by email at nancy.a.parrish@usace.army.mil.

Sincerely,

A handwritten signature in black ink that reads "Mark Patterson". The signature is written in a cursive style with a large, prominent initial "M".

Mark Patterson
BRAC Environmental Coordinator
Fort Wingate Depot Activity

Enclosures

CF:

Tony Perry, Navajo Nation

David Cobrain, NMED, HWB

Chuck Hendrickson, U.S. EPA Region 6

Steve Smith, USACE-SWF

Bob Estes, NM SHPO



DEPARTMENT OF THE ARMY
FORT WINGATE DEPOT ACTIVITY
P.O. BOX 268
FORT WINGATE, NM 87316

September 11, 2014

Mr. Darrell Tsabetsaye
Attn: Governor's Office
P.O. Box 339
1203B State Hwy 53
Zuni, New Mexico 87327

Dear Mr. Tsabetsaye:

The Army is preparing to implement soil removal and sampling activities described in the Fort Wingate Depot Activity (FWDA) Parcels 6, 16, 21 and 22 RFI Reports (Reports). The Tribes have already reviewed these four work plans. The purpose of this letter is to inform the Tribes of upcoming interim removal actions within the four parcels instead of a Phase 2 RFI. The RFI Reports for these four parcels recommend either additional soil sampling under Phase 2 or soil removal at the sites described in this letter. The Army has elected to perform soil removal at all of the sites mentioned in this letter under a permittee initiated interim measure in accordance with Resource Conservation Recovery Act (RCRA) Permit section VII.G.3 instead of a Phase 2 investigation. The Tribes will be provided work plans for the typical 60 day review of these upcoming actions in 2014 and 2015. The Army seeks Pueblo of Zuni comments to comply with the Programmatic Agreement regarding cultural resources sites in the proposed work areas. A summary of the fieldwork is described below. Figures showing the locations of removal areas and sites to be sampled are enclosed.

Two locations in Parcel 6 will be subject to soil removal. SWMU 8 was subject to soil removal in the 1990s and further excavation of approximately 200 cubic yards (cu yd) of soil is required at this location to ensure all PCB contamination is removed to meet the NMED permit requirements. At SWMU 20, which partially extends into Parcel 7, a pile of surface debris will be removed for a total of approximately 1,200 cu yd of material removed. The closest archaeological site to the SWMU 8 location is approximately 400 feet away. There is an archaeological site located 200 feet from the SWMU 20 debris pile. In both cases, vehicles and equipment will be routed to ensure avoidance of all the sites within the parcel.

In Parcel 16, approximately 1,000 cu yd soil will be removed at the site of former Bldg Z135. Additional details can be found in section 3.5 of the Parcel 16 RFI Report. The nearest archaeological site to this location is approximately 350 feet. Vehicles and equipment will be routed to ensure avoidance of all the sites within the parcel.

Several areas within Parcel 21 will be subject to soil removal based on the results of earlier sampling. At SWMU 2 removal will cover one quarter of an acre and amount to approximately 750 cu yd. Additional soil will be removed west of former Building 515. In SWMU 7, SWMU 19, AOC 68, and AOC 63, soil removal will be on a small scale (50-300 cu

yd) and localized based on the results of earlier sampling. In AOC 60 only hand dug soil samples will be removed. Archaeological sites are located no closer than 400 feet (AOC 68) and up to 1,000 feet away from the planned soil removal sites in Parcel 21. Vehicles and equipment will be routed to ensure avoidance of all the sites within the parcel.

Also in Parcel 21, two former TNT beds will be fully removed from SWMU 1. These beds were sampled in the 1990s and will now be subject to total removal to comply with the NMED permit. Approximately 15,000 cu yd of soil is expected to be removed. A known archaeological site is located some 350- 400 feet away. Vehicles and equipment will be routed to ensure avoidance of all the sites within the parcel.

Finally, in Parcel 22 SWMU 27 soil removal will take place at five locations and total approximately 200 cu yd. The nearest archaeological site to this removal is approximately 250 feet away. Vehicles and equipment will be routed to ensure avoidance of all the sites within the parcel.

The Army is seeking Zuni comments pursuant to the Programmatic Agreement (PA). We seek input from the Pueblo of Zuni for operating procedures for the Army Contractor to follow when performing removal actions. We would like to propose the following options:

a. Based on review of the previously submitted RFI Reports, this letter and enclosed figures, the Zuni are comfortable to make a determination that Cultural Sites are a sufficient distance away from the removal locations as to not be encountered during the field work or are in areas previously disturbed. If cultural resources are inadvertently encountered during the field work, the Army will immediately notify the Tribal cultural points of contact for consultation per section 1.8 of the PA. As stated in Section 1.4 of the PA, *avoidance of historic properties and potential NAGPRA cultural items will be the first choice for RCRA permit activities.*

b. The Army will set up a site visit with the Tribe to identify the general area of removal locations. Then, the Tribal representative(s) can visit the locations pursuant to Programmatic Agreement Sections 1.4 & 1.6 prior to removal to inspect, and then accept the location, or propose adjusting the removal area to avoid a cultural site(s), or propose no removal action at the site(s). This would require quick coordination between the Army, NMED, and the Tribal cultural contact. A written report/letter of any cultural resources monitoring/work will be required from the Tribe within 2 weeks of the conclusion of the field work for submittal to the Army in order to meet the Permit schedule. The Tribe will not be reimbursed by the Army or Contractor for the site visit, report, or letter.

Because the removal locations are in areas previously sampled, altered by construction and disposal activities with many years of work activities in the area, and because of the distance from the removal locations to identified cultural sites, we feel that either Option a or b would be reasonable, with a preference for Option a.

Please let us know which option the Pueblo of Zuni prefers within 30 days of receipt of this letter or the Army will assume your concurrence with proposed Option a.

Should you have any questions, or require any further information concerning the above, please contact Ms. Nancy Parrish (Fort Wingate Project Archaeologist) of the U.S. Army Corps of Engineers, Fort Worth District, at (817) 886-1725, or by email at nancy.a.parrish@usace.army.mil.

Sincerely,

A handwritten signature in black ink that reads "Mark Patterson". The signature is written in a cursive style with a large, stylized "M" and "P".

Mark Patterson
BRAC Environmental Coordinator
Fort Wingate Depot Activity

Enclosures

CF;

Kurt Dongoske, THPO

David Cobrain, NMED, HWB

Chuck Hendrickson, U.S. EPA Region 6

Steve Smith, USACE-SWF

Bob Estes, NM SHPO

PROGRAMMATIC AGREEMENT

*Among
The United States Army,
The Navajo Nation, the Pueblo of Zuni, and
The New Mexico State Historic Preservation Officer
for Environmental Restoration Activities to be Undertaken
at Fort Wingate Depot Activity and Associated Project Lands*

Whereas, the United States Army (Army) is proposing to close the Open Burn/Open Detonation Unit (OB/OD) and conduct post-closure care including ordnance cleanup, environmental restoration, and associated project activities at Fort Wingate Depot Activity (FWDA) including areas outside of the FWDA boundaries in accordance with the Resource Conservation and Recovery Act (RCRA) Permit EPA ID NM6213820974 (herein referred to as "the Undertaking"); and

Whereas, the Army has determined that ordnance removal, environmental restoration at non-ordnance related areas, and associated project activities from FWDA in New Mexico may have an effect upon properties that are or may be eligible to the National Register of Historic Places (National Register), and has consulted with the New Mexico State Historic Preservation Officer (SHPO) and the Advisory Council for Historic Preservation (ACHP) pursuant to 36 CFR Part 800, regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. Section 470(f), Section 110(f) of the same Act (16 U.S.C. Section 470h-2[f]), and Section 111 of the same Act (16 U.S.C. Section 470h-3) and has invited the SHPO and ACHP to participate as signatories to this agreement; and

Whereas, the ACHP has declined to participate in a letter dated 20 March 2007; and

Whereas, the Army is responsible for government-to-government consultation with Indian tribes and has formally invited the Zuni Tribe of the Zuni Reservation (Pueblo of Zuni) and the Navajo Nation to participate as invited signatories by virtue of the potential effects of the FWDA environmental restoration and ordnance cleanup project on properties to which they ascribe traditional religious and cultural significance, and the Army understands that the Navajo Nation has delegated signature authority to the Tribal Historic Preservation Officer (THPO) for undertakings off tribal land; and

Whereas, in accordance with 36 CFR 800.2 (c)(2)(i)(A), the Army has invited the Navajo Tribal Historic Preservation Officer and Pueblo of Zuni Governor to be signatories to this agreement for any undertakings that may affect historic properties on their respective tribal lands where they have assumed the responsibilities of the SHPO under section 101(d)(2) of the NHPA; and

Whereas, the Army has consulted with the Hopi, Apache, Comanche, Isleta Pueblo, Pueblo of Laguna, Pueblo of Acoma, and Pueblo of San Ildefonso and invited them to be concurring parties; and

Whereas, the Army Base Realignment and Closure (BRAC) Office is the responsible party for ensuring that all terms of this Programmatic Agreement (PA) are executed; and

Whereas, cultural resources at FWDA are at this time known to include properties likely eligible to the National Register; and

Whereas, the Army has completed the cultural resources survey of FWDA in compliance with requirements of the 1988 BRAC action; and

Whereas, many cultural resources that are likely eligible for the National Register are in locations that present a risk to human health and safety or will be subject to clean up actions that present a risk to human health and safety; and

Whereas, interested members of the public, including the Bureau of Land Management, Bureau of Indian Affairs, New Mexico Environmental Department, Department of the Interior, and Native Americans known to have an interest in the FWDA cultural resources, have been provided opportunities to comment on the effects of the FWDA environmental restoration and ordnance cleanup projects on historic properties through public hearings, consultation meetings, and other means; and

Now, Therefore, the Army, the SHPO, Pueblo of Zuni, and the Navajo Nation agree that the undertaking described above shall be implemented according to the following stipulations to take into account the effects of the undertaking on historic properties.

Definitions:

FWDA Project Archeologist: The professional archeologist employed by the Army who meets the Secretary of the Interior's Professional Qualification Standards for Archaeology and is charged with the oversight of the cultural resources investigations at FWDA for RCRA permit activities.

Professional archaeologists: Archaeologists employed by the Army who meet the Secretary of the Interior's Professional Qualification Standards for Archaeology.

Historic Properties: As defined by 36 CFR 800.16 (l) (1), *Historic property* means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria.

Properties of Religious and Cultural Significance to Indian Tribes: Within this document, this phrase means properties to which tribes attach religious and cultural significance but for which eligibility to the National Register has NOT YET been determined.

Tribal lands: as defined in 36 CFR 800.16 (x) *Tribal lands* means all lands within the exterior boundaries of any Indian reservation and all dependent Indian communities.

STIPULATIONS- The Army shall ensure that the following measures are carried out:

1. Mitigation of Environmental Restoration and Munitions Response Activities:

All NHPA-related RCRA permit activities will follow the procedures and requirements contained within Basic Safety Concepts and Considerations for Munitions and Explosives of Concern (MEC) Response Action Operations, Engineer Pamphlet 385-1-95a (EP 385-1-95a). Given the extent and magnitude of the proposed restoration and munitions response action undertakings occurring over an extended period of time, it can be anticipated that of the over 700 archaeological sites and identified properties of religious and cultural significance to Indian Tribes on FWDA, many will be found to be eligible for the National Register and many will have a high potential for susceptibility to adverse effects. Outlined within this document is a plan that addresses the potential effects of the proposed undertakings on historic properties, including properties of traditional religious and cultural importance to Indian tribes.

1.1. Due to the potentially hazardous environment and hazardous nature of clean up activities and the scheduling requirements of clean up activities, throughout the conduct of all RCRA permitted activities, all cultural resources within the Area of Potential Effects (APE) including those known and those inadvertently discovered shall be treated as eligible for the National Register except those that have been formally determined ineligible and mitigation applied per the stipulations contained within this PA.

In order to take into account the effects of RCRA permitted activities on historic properties, the Army shall provide a list of all known cultural resources within the APE to the SHPO, THPO of the Navajo Nation and Pueblo of Zuni Fort Wingate Historic Preservation Officer and shall convene a consultation meeting and/or teleconference to initiate discussions of determinations of National Register eligibility prior to the initiation of RCRA permit activities covered by this PA. During the initial meeting/teleconference a schedule will be set with the SHPO and Navajo Nation THPO and Pueblo of Zuni Fort Wingate Historic Preservation Officer to complete any remaining determinations that are not completed in the initial meeting. If SHPO, the Navajo Nation, or Pueblo of Zuni do not concur with a determination of ineligibility, the eligibility of the property shall remain undetermined but the property shall be treated as eligible for the purposes of RCRA permit activities. Mitigation shall be applied to sites according to the stipulations within this PA.

1.2 For actions on tribal land where the tribe has assumed the responsibilities of the SHPO under section 101(d)(2) of the NHPA, the Army shall consult with the appropriate THPO, shall follow provisions of 36 CFR 800.2 (c)(2)(ii), and shall follow tribal regulations for any actions on tribal lands. For tribal land where the tribe has not assumed the responsibilities of the SHPO, the Army shall consult with the SHPO and the tribal representative designated by the tribe according to 36 CFR 800.2 (c)(2)(i)(B). The

project personnel and professional archaeologists shall also follow all applicable tribal regulations.

1.3. Off-Site Mitigation Procedures

For areas and for actions on FWDA that present a threat to human health and safety, as defined by EP385-1-95a, where on-site mitigation is not possible, the Army shall employ the results of the study "Assessment of Sacred Sites and Properties of Traditional Religious and Cultural Importance within the Open Burn/Open Detonation Area at Fort Wingate Depot Activity, New Mexico" (NATHPO 2004) and the Department of Defense NALEMP study called "Conservation Plan for the Natural and Cultural Landscapes of Fort Wingate Depot Activity, New Mexico: A Demonstration Project for Partnership of The Navajo Nation, The Pueblo of Zuni, and the Department of the Army" (Office of Contract Archaeology, UNM 2007) as mitigation for adverse effects to historic properties.

1.4. On-Site Monitoring and Mitigation Procedures

Avoidance of historic properties and potential NAGPRA cultural items will be the first choice for RCRA permit activities. Where avoidance is not possible in areas and for actions determined by the Army not to represent a threat to human health and safety, the Army shall contract for professional archaeologists to accompany munitions and explosives of concern (MEC) clean-up personnel and the following measures outlined below will be implemented during munitions response and environmental restoration projects and activities under this PA.

Prior to the initiation of RCRA permit activities, the professional archaeologists and MEC personnel shall consult to develop procedures for field conduct that follow requirements of EP385-1-95a and shall discuss potential means of minimizing effects to sites when feasible during RCRA permit activities.

1.4.1.

Vehicular traffic/access roads and staging areas/ MEC surface removal

Determination of potential areas for vehicle access shall be coordinated with those persons designated by the Pueblo of Zuni and the Navajo Nation in order to minimize any adverse effects to historic properties.

When health and safety conditions permit, the Army shall employ professional archaeologists to monitor potential ground disturbing activities in areas containing or likely to contain historic properties. The professional archaeologists under contract to the Army will monitor conditions before and after surface removal of MEC within known site locations in order to avoid, if possible, or minimize any potential unnecessary adverse effects to such sites. Any work required on tribal land shall follow Stipulation

1.2.

1.4.2. MEC survey/removal

When health and safety conditions permit, the Army shall employ professional archaeologists to monitor MEC survey/removal activities within areas containing historic properties to avoid or minimize potential adverse effects. The archaeologists will document the findings before and after the activities with sketches, photos, and notes and will complete appropriate or update existing New Mexico Cultural Resource Information (NMCRIS) forms. In areas free of historic properties, during and after removal, inspections shall be accomplished to assess the possibility of the inadvertent discovery of previously unknown subsurface sites. In the event of inadvertent post-review discoveries, procedures outlined below in Stipulations 1.8 and 1.9 shall be followed. For MEC survey and removal on tribal land, the Army shall follow Stipulation 1.2.

1.4.3. MEC blow-in-place

When MEC items that are too hazardous to move are encountered, they shall be blown in place (BIP), in accordance with the provisions of EP 385-1-95a.

When health and safety considerations permit, the Army shall employ professional archaeologists to monitor MEC BIP within areas containing historic properties to avoid or minimize the potential adverse effects and shall record conditions before and after BIP. Areas subject to BIP and not containing historic properties shall be inspected by the professional archaeologists after BIP for the presence of inadvertent discoveries. In the event of inadvertent post-review discoveries, the project personnel shall follow the procedures in Stipulations 1.8 and 1.9. Where necessary, engineering controls (e.g. sandbagging), will be used during blow-in-place demolitions to minimize potential adverse impacts to historic properties.

For MEC BIP activities on tribal land the Army shall follow Stipulation 1.2.

1.4.4. New demolition craters/temporary stockpile areas/soil excavation and removal areas

The Army shall employ professional archaeologists to assist in the selection of placement of all required demolition craters in areas free of historic properties with the excavation of the required craters monitored for any inadvertently discovered subsurface cultural resources.

1.4.5. Existing demolition craters:

Existing demolition craters shall be used whenever possible and prior to any reuse, when health and safety considerations permit, shall be inspected by professional archaeologists for any evidence of historic properties. Any inadvertent discoveries shall be treated following the procedures in Stipulations 1.8 and 1.9. After consultation, reuse of existing demolition pits containing historic properties shall be used if the proposed prohibition of its use would have a detrimental effect on health and human safety.

1.4.6. Contaminated lands; excavation/posthole/soil borings by drill-rig/monitor well installation/soil sampling grids/ground-water cutoff trenches

The Army shall provide detailed maps of sampling or excavation project areas of FWDA and any other lands within the APE to the professional archaeologists, the Navajo Nation, the Pueblo of Zuni, and the SHPO and shall have all known historic properties flagged for avoidance within the area. All historic properties within the APE shall be located and flagged for avoidance. When allowed by health and safety requirements, the professional archaeologists shall accompany the Army personnel undertaking these activities to assist in the avoidance of historic properties. The professional archaeologists shall update historic property site information record the GPS (global positioning system) waypoint. Any new historic properties inadvertently discovered during this work shall be recorded according to New Mexico guidelines and the GPS waypoint will be recorded. Any inadvertent discoveries of potentially eligible historic properties during any of the above noted activities will be immediately (24 hrs) noted to the FWDA Project Archaeologist and procedures contained within Stipulations 1.8 and 1.9 shall be followed. Any activity on tribal land shall follow Stipulation 1.2.

1.5. Consultation Meetings

For all activities on non-tribal property, the Army shall consult with the Pueblo of Zuni, Navajo Nation, SHPO, and concurring parties in a conference meeting at least annually for the purpose of eliciting comments including input on access road placement and locations of historic properties for the goal of reducing the adverse effects upon these historic properties. Stipulation 1.2 shall be followed in the consultation meetings.

1.6. Tribal disclosure of Properties of Religious and Cultural Significance to Indian Tribes

The Army shall provide maps to the Pueblo of Zuni and the Navajo Nation (Tribes) showing the locations of individual projects and known properties of religious and cultural significance to Indian Tribes, archaeological sites, and any cultural resources determined to be historic properties. The Tribes shall be requested to indicate unrecorded properties of religious and cultural significance to Indian Tribes whose National Register eligibility may need to be assessed relevant to the FWDA munitions response and environmental restoration projects to the FWDA Project Archaeologist or his designee to be used in the planning the clean-up activities. This information will be maintained on an absolutely need-to-know basis. At least general locational information is critical for effective management, avoidance, and minimization of adverse impacts to these properties at FWDA and the entire APE. Such data is protected from disclosure under NHPA, Section 304, 16 U.S.C. 470w-3(a) and the Archeological Resources Protection Act (ARPA, Section 9(a), 16 U.S.C. 470hh(a). The exact location is not required unless the property of religious and cultural significance to an Indian Tribe is immediately adjacent to the proposed action.

The cultural significance of individual properties of religious and cultural significance to Indian Tribes is not required by the Army or its contractors except when such information is necessary to determine the eligibility of the site for inclusion in the National Register or under unusual circumstances where that information is critical to avoiding inadvertent impacts or other management concerns. Regardless, all information about properties of religious and cultural significance to Indian Tribes will be strictly managed and access to this information will only be provided after consultation with the Navajo Nation, Zuni Pueblo or other Tribe attaching traditional religious and/or cultural importance to the site(s) at issue. The Tribes shall be provided updated site information resulting from these activities.

1.7. Artifacts and related data

All artifacts and associated paper and electronic records and materials produced and/or procured during any and all project activities at FWDA shall be curated and managed in accordance with 36 CFR 79.

1.8 Inadvertent Discoveries

Upon any inadvertent discovery of cultural resources potentially eligible for the National Register and potentially subject to NAGPRA, the Army personnel shall immediately notify the professional archaeologists (if the discovery is not made by the archaeologists themselves), and Army personnel shall also notify the FWDA Project Archaeologist immediately. The professional archaeologists shall, in conjunction with the FWDA Project Archaeologist or his designee, make an assessment if potential NAGPRA cultural items are present. If potential NAGPRA cultural items are present, NAGPRA and Stipulation 1.9 shall be followed. If the inadvertent discovery does not include NAGPRA cultural items the professional archaeologist(s) shall treat the site as eligible, assess effects, and determine and apply appropriate mitigation per the provisions of this PA.

If threats to human health and safety preclude on-site mitigation, the alternate mitigation contained within stipulation 1.3 will be implemented. If conditions permit the recordation of information about the site before and after the required RCRA permit activity takes place, the archaeologists shall implement those procedures to mitigate adverse effects to the site.

1.9. Burials/subsurface and surface remains

Known burial locations and areas of any surface burial elements shall be avoided by restoration/ordnance clean-up activities if possible. If potential NAGPRA or NAGPRA Cultural Items are inadvertently discovered, they shall be avoided and activities relocated if possible. All instances of inadvertent discovery of NAGPRA cultural items (including human remains) shall be addressed in accordance with NAGPRA and its implementing regulations, 43 CFR Part 10 and the stipulations in the agreement document.

1.10. Buildings

The standing architectural resources and buildings of FWDA are not scheduled to be affected by restoration or remediation cleanup activities. Should such a requirement arise during the term of restoration and remediation activities, the Army shall coordinate with the SHPO.

1.11. Adverse Effects

Individual determinations of adverse effects to historic properties during environmental restoration activities will not require consultation with the ACHP and SHPO. Following the procedures outlined in the stipulations above, and taking into consideration previous historic and ethnographic studies conducted by the Army at FWDA, adverse effects will be considered to be mitigated for all environmental restoration activities.

1.12. Areas of severe risk

Due to risks to human health and safety concerns, remediation requirements shall take precedence over historic preservation concerns in highly hazardous and/or contaminated zones which shall be defined by the Army and EP385-1-95a. These areas shall be determined and clearly depicted on maps which shall be provided to all parties to this Agreement as these become known.

1.13. Cultural Resource Management reports

At the conclusion of each individual project a NMCRIS Information Abstract Form (NIAF) shall be completed and submitted to the Navajo Nation, Pueblo of Zuni, and SHPO. If historic properties or NAGPRA-related items are encountered, a preliminary report, along with copies of the appropriate state archaeological records, updated or new, as appropriate, and/or historic cultural property index (HCPI) forms for historic structures shall also accompany the NIAF form. The report shall contain a map of the project area, a description of the undertaking, results of any findings of cultural resources and/or NAGPRA related discoveries, the impacts to historic properties and/or NAGPRA-related items, and the mitigation measures employed. Any sensitive information that tribes do not want included in these reports shall be excluded upon their request.

An annual report containing the results of investigations carried out during the year shall be provided to the Navajo Nation, Pueblo of Zuni, and SHPO. In addition, a final technical cultural resources management report shall be produced for all restoration and cleanup actions at the conclusion of the RCRA clean-up process. This report shall summarize all of the work and all of the archaeological and cultural issues related to identification, determination of eligibility for the National Register, assessment and treatment of effects, data recovery, and curation. The final technical report shall be produced without tribally-defined sensitive data and shall exclude any other sensitive information that Tribes request be excluded.

A confidential technical report with project related data shall be produced in limited quantities for official use of the Army, SHPO, the Pueblo of Zuni, the Navajo Nation, and other relevant Native American tribes for all restoration and cleanup activities. If requested by Tribes, sensitive information particular to their tribe shall not be included in any other report except that provided to them.

If determined appropriate in consultation with signatories, public informational products shall be developed.

All draft reports shall be subject to 30 day review by the SHPO, Navajo Nation, and the Pueblo of Zuni, and THPOs if appropriate; the Army will consider all appropriate comments for inclusion within the final report.

2.0 DOD retained property

Provisions for historic properties on any retained lands, if any, shall be determined in consultation with the Pueblo of Zuni, the Navajo Nation, and SHPO.

3.0. Amendments

3.1. The *signatories* to this agreement may amend the terms of this Agreement and the provisions of any attachment hereto, by formal written notification of all parties (i.e., signatories and concurring parties) to this Agreement.

3.2. The Army shall ensure that any of the concurring parties to this PA whose interests may be affected by an amendment are asked to concur in such an amendment.

3.3. Upon execution of an amendment, each signatory shall attach a copy of the fully executed form to that party's copy of this PA, and shall enter the amendment number and date on the upper right hand corner of the first page of this PA.

4.0 Dispute resolution

4.1. Should any *signatory* to this Agreement object within 30 days to any plans or other documents provided by the Army or others for review pursuant to this Agreement or to any actions proposed or initiated by the Army that may pertain to the terms of this Agreement, the Army shall consult with the objecting *signatory* to resolve the objection. If the Army determines that the objection cannot be resolved, the Army shall forward the documentation relevant to the dispute to the ACHP. Within 30 days after receipt of all pertinent documentation, the ACHP will either:

4.1.1. Provide the Army with recommendations, which the Army will take into consideration in reaching a final decision regarding the dispute; or

4.1.2. Notify the Army that it will comment pursuant to 36 CFR 800.7, and proceed to comment. Any ACHP comment provided in response to such a request will be taken into consideration by the Army.

4.2. Any recommendation or comment provided by the ACHP pursuant to Stipulation 4.1 will be understood to pertain only to the subject of the dispute; the Army's responsibility to fulfill all actions under this Agreement that are not the subject(s) of the dispute will remain unchanged.

4.3. At any time during development of implementation plans for measures stipulated in this Agreement, should an objection to any such measure or its manner of implementation be raised by a member of the public, the Army shall take the objection into consideration and consult as needed with the objecting party, the SHPO, other relevant parties, and the ACHP to resolve the objection.

5.0. Termination

Any *signatory* to this PA may terminate the document by providing thirty (30) days notice to the other parties, provided that the parties will consult during the period prior to termination to seek agreement on amendments or other actions that would avoid termination. In the event of termination, the Army will comply with 36 CFR 800.4 through 800.6 with regard to individual undertakings covered by this Programmatic Agreement.

6.0 Term of Agreement

6.1 The Army intends the term of this PA document to be in effect for restoration activities until the land is transferred out of Army jurisdiction or for ten years from the date of execution of this agreement, whichever is shorter.

6.2 In the event the Army does not fulfill the terms of this PA, the Army will comply with 36 CFR 800.4 through 800.6 with regard to individual undertakings covered by this PA.

7.0 Compliance with Federal Law

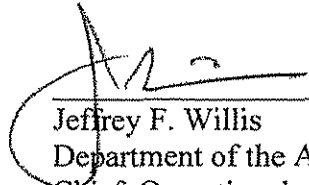
No provision of this PA shall be deemed to waive the provisions of Federal law, including, but not limited to the Archaeological Resources Protection Act, the National Historic Preservation Act, and the Native American Graves Protection and Repatriation Act.

The execution and implementation of this PA evidences that the Army has afforded the SHPO, Tribes, and ACHP a reasonable opportunity to comment on the effects of the MEC cleanup and environmental restoration projects of FWDA on historic properties and that the Army has taken into account the effects of the undertaking on historic properties.

8.0 Anti-Deficiency Clause

The stipulations of this agreement are subject to the provisions of the Anti-Deficiency Act. If compliance with the Anti-Deficiency Act alters or impairs the Army's ability to implement the stipulations of the agreement, the Army will consult according to the amendment and termination provisions found at Stipulations 3 and 5 of this agreement.

Signatories:



Jeffrey F. Willis
Department of the Army
Chief, Operational and Medical Branch
Base Realignment and Closure Division

Date: _____

MAY 06 2008

Date: _____

New Mexico State Historic Preservation Officer
(for undertakings affecting historic properties on non-tribal lands or where a tribe has not assumed the responsibilities of the SHPO under section 101(d)(2) of the NHPA)

Date: _____

Navajo Nation Tribal Historic Preservation Officer
(signator for those affecting historic properties on Navajo Tribal lands and invited signator with designated signatory authority from the Navajo Nation for 106 undertakings on non-tribal land)

Date: _____

Governor, Pueblo of Zuni (signator for undertakings affecting historic properties on Zuni Tribal lands and invited signator for undertakings on non-tribal lands)

Concurring Parties:

_____ Date: _____
Hopi

_____ Date: _____
Pueblo of San Ildefonso

_____ Date: _____
Isleta Pueblo

_____ Date: _____
Apache Nation

_____ Date: _____
Comanche Nation

_____ Date: _____
Pueblo of Laguna

_____ Date: _____
Pueblo of Acoma

_____ Date: _____
New Mexico Environmental Department

_____ Date: _____
Bureau of Land Management

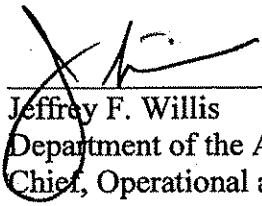
_____ Date: _____
Department of the Interior

_____ Date: _____
Bureau of Indian Affairs

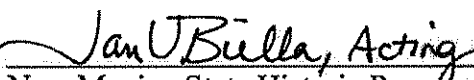
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Signatories:


Date: MAY 06 2008

Jeffrey F. Willis
Department of the Army
Chief, Operational and Medical Branch
Base Realignment and Closure Division


Date: 5/12/2008

New Mexico State Historic Preservation Officer
(for undertakings affecting historic properties on non-tribal lands or where a tribe has not assumed the responsibilities of the SHPO under section 101(d)(2) of the NHPA)

Date: _____
Navajo Nation Tribal Historic Preservation Officer
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Date: _____
Governor, Pueblo of Zuni (signator for undertakings affecting historic properties on Zuni Tribal lands and invited signator for undertakings on non-tribal lands)

8.0 Anti-Deficiency Clause

The stipulations of this agreement are subject to the provisions of the Anti-Deficiency Act. If compliance with the Anti-Deficiency Act alters or impairs the Army's ability to implement the stipulations of the agreement, the Army will consult according to the amendment and termination provisions found at Stipulations 3 and 5 of this agreement.

Signatories:



Date: MAY 06 2008

Jeffrey F. Willis
Department of the Army
Chief, Operational and Medical Branch
Base Realignment and Closure Division

Date: _____

New Mexico State Historic Preservation Officer
(for undertakings affecting historic properties on non-tribal lands or where a tribe has not assumed the responsibilities of the SHPO under section 101(d)(2) of the NHPA)



Date: 5.23.08

Navajo Nation Tribal Historic Preservation Officer
(signator for those affecting historic properties on Navajo Tribal lands and invited signator with designated signatory authority from the Navajo Nation for 106 undertakings on non-tribal land)

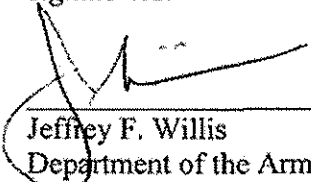
Date: _____

Governor, Pueblo of Zuni (signator for undertakings affecting historic properties on Zuni Tribal lands and invited signator for undertakings on non-tribal lands)

8.0 Anti-Deficiency Clause

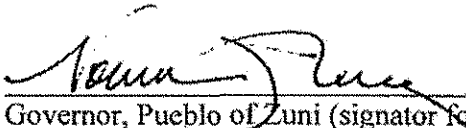
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Signatories:


Date: MAY 06 2008
Jeffrey F. Willis
Department of the Army
Chief, Operational and Medical Branch
Base Realignment and Closure Division

Date: _____
New Mexico State Historic Preservation Officer
(for undertakings affecting historic properties on non-tribal lands or where a tribe has not assumed the responsibilities of the SHPO under section 101(d)(2) of the NHPA)

Date: _____
Navajo Nation Tribal Historic Preservation Officer
(signator for those affecting historic properties on Navajo Tribal lands and invited signator with designated signatory authority from the Navajo Nation for 106 undertakings on non-tribal land)


Date: 5/20/05
Governor, Pueblo of Zuni (signator for undertakings affecting historic properties on Zuni Tribal lands and invited signator for undertakings on non-tribal lands)

APPENDIX D

COMMENT RESPONSE TABLES

*(Due to similarity between plan revisions, this Appendix includes comment responses to original plan reviews that were completed prior to Modification No. 01.
Due to changes in the PWS, some comments may no longer be relevant)*

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Comment Responses Table
Draft Environmental Protection Plan
Interim Measure for Parcel 21-SWMUI, Parcel 24-Igloo Block A & Abandonment of Wells
Ft Wingate Depot Activity
10/23/2014

Cmt. No.	Page No./Line No.	Comment	Recommendation	Response
<p><i>Commenter: Beverly VanCleaf, Environmental and Munitions Center of Expertise, 402 697-2559</i> <i>Respondent – Zapata, Incorporated</i></p>				
1	Page ii	<p>This refers to 40 CFR 270.11 and indicates the document is to be signed by the Fort Wingate Program Manager.</p> <p>40 CFR 270.11 pertains to signatories to permit applications and reports.</p>	<p>If the State requires a 40 CFR 270.11 certification for this plan, then ensure it is signed at the appropriate level. Per 40 CFR 270.11, permit applications are to be signed by a principal executive officer. If a 40 CFR 270.11 certification is not required, remove the reference to 40 CFR 270.11.</p>	<p>Agree. The reference to 40 CFR 270.11 has been removed.</p>
2	Page i/Line 16	<p>The acronym page lists CESWF as USACE Tulsa District.</p> <p>Tulsa District is SWT. SWF is Fort Worth District</p>	<p>Review whether SWF should be replaced with SWT or whether “Tulsa District” should be replaced with “Ft Worth District” on the acronym list and where used within the text of the document.</p>	<p>Agree. Tulsa District was used in the body of the document with the incorrect acronym, thus both the text and Acronym Page have been updated with SWT, as necessary.</p>
3	Page ii/Line 33	<p>The acronym page lists USACE CESWF as Tulsa District.</p> <p>Again, Tulsa District is typically designated as SWT</p>	<p>Review whether SWF should be replaced with SWT or whether “Tulsa District” should be replaced with “Ft Worth District” on the acronym list and where used within the text of the document.</p>	<p>Agree. Tulsa District was used in the body of the document with the incorrect acronym, thus both the text and Acronym Page have been updated with SWT, as necessary.</p>
4	Page 1-2/Line 5	<p>This states that NEPA is pertinent to this project.</p>	<p>Delete NEPA.</p>	<p>Agree. NEPA has been deleted from this document.</p>

Comment Responses Table
Draft Environmental Protection Plan
Interim Measure for Parcel 21-SWMUI, Parcel 24-Igloo Block A & Abandonment of Wells
Ft Wingate Depot Activity
10/23/2014

Cmt. No.	Page No./Line No.	Comment	Recommendation	Response
		RCRA corrective actions are exempt from NEPA per 32 CFR 651.5 (l) which states, "Response actions implemented in accordance with...the Resource Conservation and Recovery Act (RCRA) are not legally subject to NEPA and do not require separate NEPA analysis."		
5	Page 6-1/Line 27	This states, "The IOSC will be supported by ZAPATA's Pollution Prevention Team, which will contact emergency services and a cleanup contractor, if required."	Clarify, if this is intended to require "contact" or "contract" for emergency services.	Comment Noted. Zapata clarified that this was intended to indicate Zapata would "contact" emergency services. However, to better clarify this information, the paragraph has been revised with information added to the first sentence.
6	Page 6-1/Line 38	This refers to Material Data Safety Sheets (MSDSs). This is old terminology.	Replace "Material Safety Data Sheet" with "Safety Data Sheet".	Agree. Material Data Safety Sheets (MSDSs) has been replaced with Safety Data Sheets (SDS). The Acronym Page has also been updated.