DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 377TH AIR BASE WING (AFMC)

Mr. Thomas Berardinelli
377 ABW/DS
2000 Wyoming Blvd SE
Kirtland AFB NM 87117-5000

Mr. John Kieling
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Dr East, Bldg 1
Santa Fe NM 87505-6303

Mr. Kieling

Please find attached our response to your 22 November 2010 Notice of Disapproval (NOD) 2009 Resource Conservation and Recovery Act Facility Investigation for Solid Waste Management Unit WP-26, Sewage Lagoons and Golf Course Main Pond, September 2009. An extension to 20 June 2011 for submission of our response was approved in your letter dated 7 March 2011.

If you have any questions with regard to this submittal, please contact Mr. John S. Pike, (505) 846-8546.

Sincerely

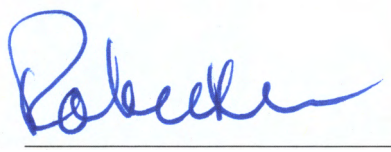
THOMAS F. BERARDINELLI
Director of Staff

Attachment:
Response to NOD

cc:
NMED HWB - Mr. McDonald
USEPA-Region 6 (6PD-N), Ms King
AFCEE, Mr. Oyelowo
AFCEE/EXEC, Mr. Litman
CH2M Hill, Ms. Jarocki
Admin. Record, CNM, Montoya Campus
File

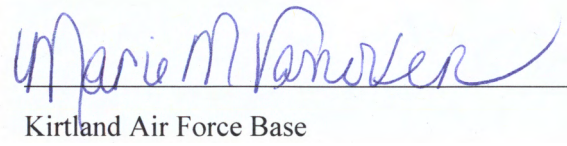
40 CFR 270.11
DOCUMENT CERTIFICATION
JUNE 2011

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



ROBERT L. MANESS, Colonel, USAF
Commander

This document has been approved for public release.



Kirtland Air Force Base
377th Air Base Wing Public Affairs

Solid Waste Management Unit WP-26, Sewage Lagoons
Comment Response Matrix

Comment Response Matrix
Notice of Disapproval: 2009 Resource Conservation and Recovery Act Facility Investigation Report for Solid Waste Management Unit WP-026, Sewage Lagoons and Golf Course Main Pond, September 2009
Kirtland Air Force Base, EPA ID# NM9570024423, KAFB-09-011
November 22, 2010

#	Location			Comment	Reviewer	Kirtland Air Force Base's Response
	Page	Line	Section			
1	Figure 2-22			Water-level elevation contours on Figure 2-22 (Groundwater Elevations Perched Zone) do not concur with groundwater elevation data (i.e., the perched aquifer 5,155 ft elevation contour and groundwater elevation data for KAFB-2622 [5154.87 ft]). The Permittee must correct the subject map so that water-table elevation contours are consistent with water-level data.	NMED	The contours were revised and an updated figure is attached.
2	None			Perched water-level elevation contours are not contiguous with other portions of perched systems surrounding WP-026. The Permittee must provide a perched groundwater elevation map that clearly shows the connectivity (or lack thereof) of the perched groundwater at WP-026 with the rest of the perched groundwater around WP-026.	NMED	A review of perched groundwater elevations from the *Third Annual Groundwater Monitoring Report for Nitrate-Contaminated Groundwater* indicate that perched groundwater contours may be contiguous. The groundwater elevation measured in monitoring well WYO-4 was 5100.82 feet (ft) while the elevation measured in monitoring well KAFB-0506 was 5155.4 ft, both measured in October 2009 (Figure 3-1 from the Third Annual Groundwater Monitoring Report). These wells are located approximately 3,300 ft apart. Monitoring wells KAFB-2623 and KAFB-2627 are located between monitoring wells KAFB-0506 and WYO-4. Monitoring wells KAFB-2623 and KAFB-2627 are completed within the perched groundwater zone but are both dry indicating that perched groundwater in this area is not continuous between KAFB-0506 and WYO-4. Perched groundwater located beneath the former sewage lagoons and the larger perched groundwater to the east may have been connected in the past but do not appear to be connected at this time based on dry wells located between the two perched water bodies. The perched groundwater beneath the former sewage lagoons appears to be isolated in both saturated thickness and aerial extent.
3	None			KAFB-2625: The easting coordinate ("1,1546157.96 ft") reported on the Well Completion Diagram (Appendix D) is erroneous; the correct easting on Figure C-1 is 1,546,157.96 ft.	NMED	The extra 1 from the coordinate was removed from the well completion diagram. The corresponding soil boring log was also corrected.

Comment Response Matrix
Notice of Disapproval: 2009 Resource Conservation and Recovery Act Facility Investigation Report for Solid Waste Management Unit WP-026, Sewage Lagoons and Golf Course Main Pond, September 2009
Kirtland Air Force Base, EPA ID# NM9570024423, KAFB-09-011
November 22, 2010

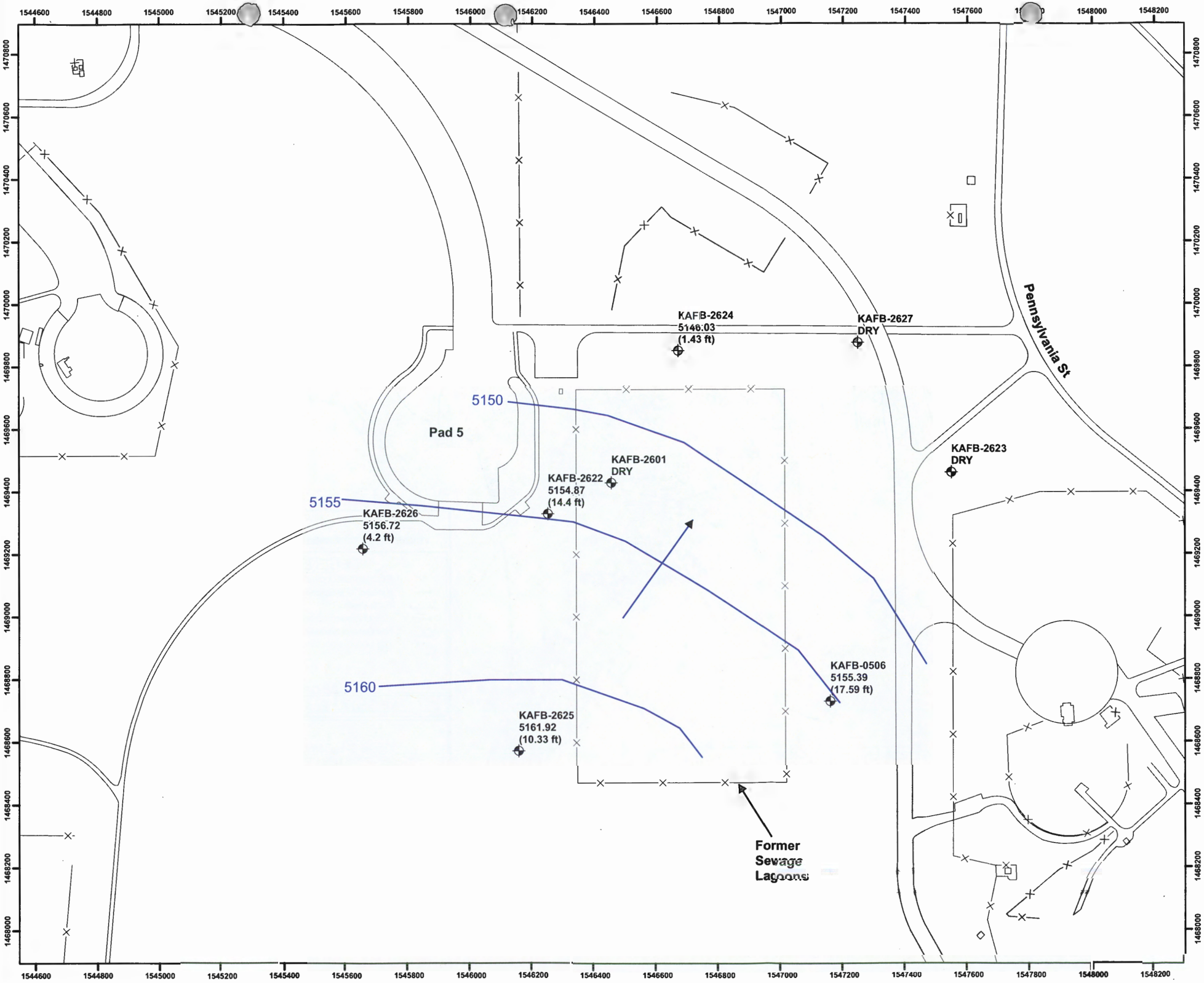
#	Location			Comment	Reviewer	Kirtland Air Force Base's Response
	Page	Line	Section			
4	None			KAFB-2624: The easting and northing coordinates on the Groundwater Database GIS do not agree with those in the Excel spreadsheet. The Permittee must provide the correct coordinates for this well.	NMED	The surveyed coordinates for monitoring well KAFB-2624 provided in the *2006 Resource Conservation and Recovery Act Facility Investigation Comprehensive Report for Solid Waste Management Unit WP-26, Sewage Lagoons and Golf Course Main Pond* (USAF, 2007) place the monitoring well on the east side of the former sewage lagoons which is not the correct location of the well. Monitoring well KAFB-2624 is physically located on the north side of the former sewage lagoons near regional aquifer monitoring well KAFB-0505. This well will be resurveyed to correct the well coordinates following installation of additional site wells.
5	None			KAFB-2626: The easting coordinate ("1,1545655.89 ft") as shown on the Well Completion Diagram (Appendix D) is erroneous; the correct easting as shown on Figure C-1 (Appendix C) is 1,545,655.89 ft. The Permittee must correct this error.	NMED	The extra 1 from the coordinate was removed from the well completion diagram. The corresponding soil boring log was also corrected.
6	None			KAFB-2627: The easting coordinate ("1,1547246.35 ft") as shown on the Well Completion Diagram (Appendix D) is erroneous; the correct easting as shown on Figure C-1 (Appendix C) is 1,547,246.35 ft. The Permittee must correct this error.	NMED	The extra 1 from the coordinate was removed from the well completion diagram. The corresponding soil boring log was also corrected.
7	None			The Permittee must provide the Department a copy of the surveyor's plat and survey for each monitoring well and borehole constructed for WP-026, and each monitoring well used for construction related regional and perched groundwater potentiometric surface maps.	NMED	Surveyor's plats were not included within the individual documents that provided the well construction details for the wells installed near the former sewage lagoons. A surveyor's plat can be generated for the site following the installation and surveying of the required groundwater monitoring wells.
8	None			KAFB-0504: The measuring-point elevation given in the groundwater-elevation spreadsheet differs from that given in the well information spreadsheet. The Permittee must resolve this discrepancy.	NMED	The measuring point elevation for monitoring well KAFB-0504 is 5355.20 ft msl. This monitoring well is dry.

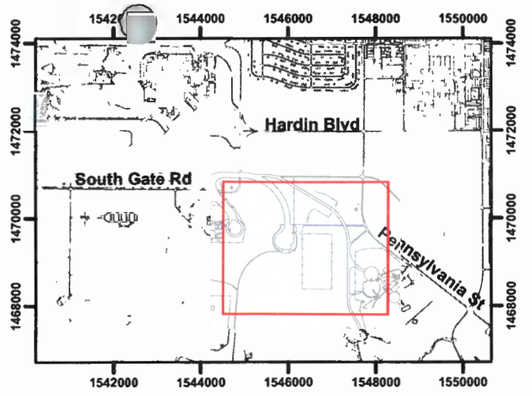
Comment Response Matrix
Notice of Disapproval: 2009 Resource Conservation and Recovery Act Facility Investigation Report for Solid Waste Management Unit WP-026, Sewage Lagoons and Golf Course Main Pond, September 2009
Kirtland Air Force Base, EPA ID# NM9570024423, KAFB-09-011
November 22, 2010

#	Location			Comment	Reviewer	Kirtland Air Force Base's Response
	Page	Line	Section			
9	None			KAFB-0505: Ground surface elevation is not given in Table B-12. Also, water-level elevation contours are not consistent with groundwater elevation data for this monitoring well (e.g., the regional aquifer 4,853 ft contour). The Permittee must resolve this discrepancy.	NMED	The ground surface elevation for monitoring well KAFB-0505 is 5358.14 ft msl as documented in the *Supplemental Investigation Report for Post-Closure Activities at Site WP-26, Sewage Lagoons and Golf Course Main Pond* (USAF, 2000). The regional groundwater contours were corrected on Figure 2-23 and a new figure is attached.
10	None			KAFB-0506: Ground surface elevation is not given in Table B-12. The Permittee must include this information.	NMED	The ground surface elevation for monitoring well KAFB-0506 is 5358.27 ft msl as documented in the *Supplemental Investigation Report for Post-Closure Activities at Site WP-26, Sewage Lagoons and Golf Course Main Pond* (USAF, 2000).
11	Table 2-7		2	KAFB-0522: Measuring point elevation given in the groundwater elevation spreadsheet (Section 2, Table 2-7, 5,264.81 ft) differs from that in the table titled Groundwater Elevation Data, Kirtland Air Force Base, New Mexico, February 2009, found in the Groundwater Database (5,262.95 ft). The Permittee must resolve this discrepancy.	NMED	The measuring point elevation for monitoring well KAFB-0522 is 5,264.81 ft as listed in Table 2-7. The ground surface elevation at this monitoring well is 5,262.95 ft. Both of these elevations are listed in the February 2009 Groundwater Database correctly.
12	None			The Permittee must submit to NMED, for review and approval, a work plan for installing at least two additional regional monitoring wells for the purpose of improving the regional groundwater model. These monitoring wells should be located as follows: A. One northeast of WP-026 at the Permittee's proposed location, and B. One southeast of WP-026 near KAFB-4.	NMED	A work plan was prepared for the installation of the required regional groundwater monitoring wells.

Comment Response Matrix
Notice of Disapproval: 2009 Resource Conservation and Recovery Act Facility Investigation Report for Solid Waste Management Unit WP-026, Sewage Lagoons and Golf Course Main Pond, September 2009
Kirtland Air Force Base, EPA ID# NM9570024423, KAFB-09-011
November 22, 2010

#	Location			Comment	Reviewer	Kirtland Air Force Base's Response
	Page	Line	Section			
13	None			The Permittee must submit to NMED, for review and approval, a work plan for installing at least four additional perched monitoring wells at Wp-026 so that the extent of the perched system at Wp-026 is delineated north, south, east, and west of the site, and so that the relationship between perched groundwater at WP-026 and the perched nitrate plume east of WP-026 can be determined. These monitoring wells should be located as follows: A. Northeast of the lagoons 600 feet northeast of the proposed new regional monitoring well location; B. Southeast of the lagoons near KAFB-4; C. 900 feet southwest of the lagoons; and D. 900 feet northwest of the lagoons.	NMED	A work plan was prepared for the installation of two perched groundwater monitoring wells, at locations B and C specified by the NMED. A meeting was held on 11 May 2011 between NMED and Kirtland AFB. The locations of perched monitoring wells at locations A and D were discussed. Kirtland AFB presented information to demonstrate that those locations will likely be dry for perched groundwater. NMED agreed and indicated they would send a revised NOD letter indicating that wells do not need to be installed at those locations.





Legend

- Groundwater Montitoring Well
- 5146.03 — Groundwater Elevation in Perched Zone (feet above mean sea level)
- (10.33 ft) — Saturated thickness of well screen based on March 2009 data
- Groundwater Elevation Contour
- 1541000 — New Mexico Central State Plane NAD83 Feet Coordinates

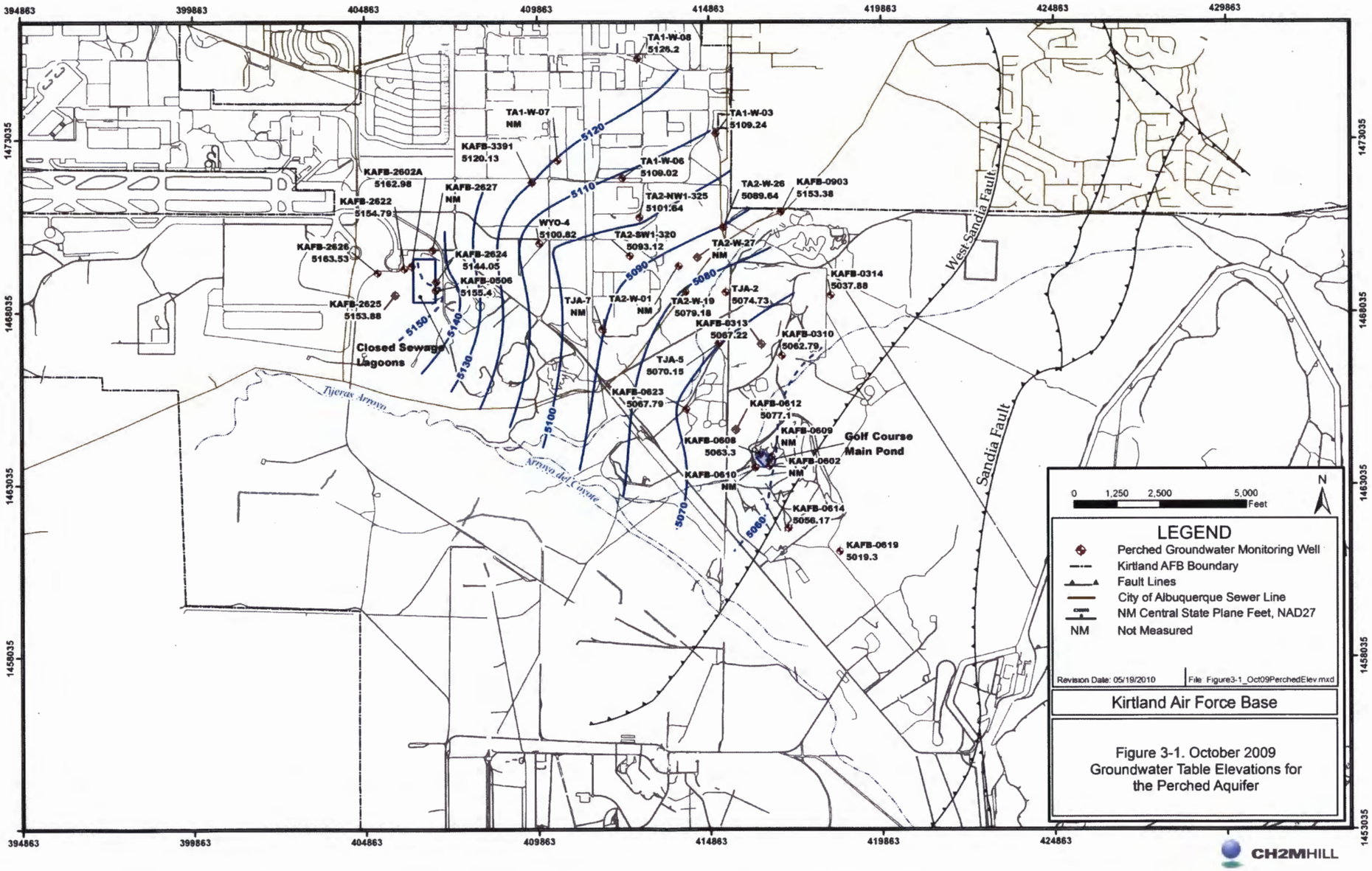
0 150 300 600 Feet

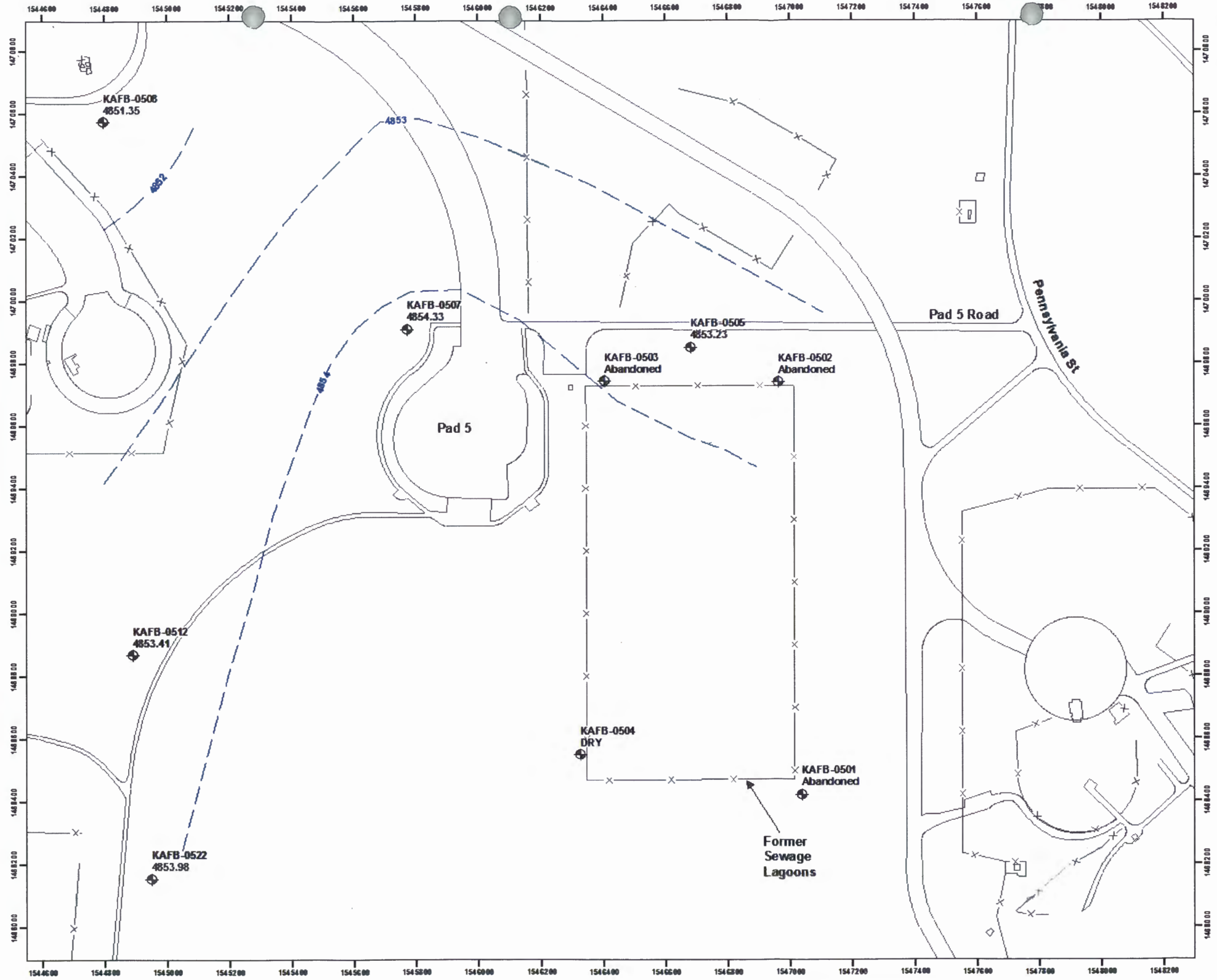
N

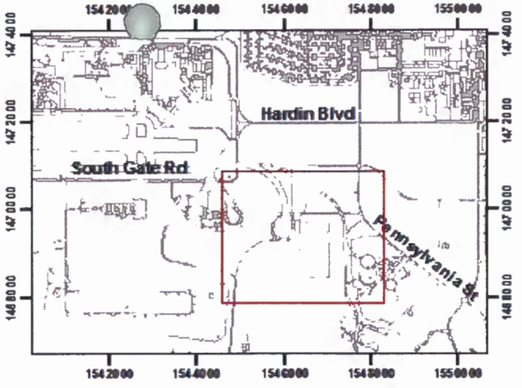
2009 RFI Report for SWMU WP-26, Sewage Lagoons

Figure 2-22

Groundwater Elevations Perched Zone, March 2009


384863
399863
404863
409863
414863
419863
424863
429863
1473035
1468035
1463035
1458035
1453035
TA1-W-08
5126.2
TA1-W-07
NM
TA1-W-03
5109.24
KAFB-3391
5120.13
TA1-W-06
5109.02
KAFB-2602A
5162.98
KAFB-2627
NM
TA2-W-26
5089.64
KAFB-0903
5153.38
KAFB-2622
5154.79
TA2-NW1-325
5101.64
WYO-4
5100.82
TA2-SW1-320
5093.12
KAFB-2626
5163.53
KAFB-2624
5144.05
TA2-W-27
NM
KAFB-0506
5155.4
KAFB-0314
5037.88
KAFB-2625
5153.88
TJA-7
NM
TA2-W-01
NM
TA2-W-19
5079.18
TJA-2
5074.73
KAFB-0313
5067.22
KAFB-0310
5062.79
Closed Sewage
Lagoons
TJA-5
5070.15
Tijeras Arroyo
KAFB-0623
5067.79
KAFB-0612
5077.1
KAFB-0609
NM
Golf Course
Main Pond
KAFB-0608
5063.3
KAFB-0602
NM
KAFB-0610
NM
KAFB-0614
5056.17
KAFB-0619
5019.3
Arroyo del Coyote
West Sandia Fault
Sandia Fault
5150
5140
5130
5120
5110
5100
5090
5080
5070
5060
0 1,250 2,500 5,000 Feet
N
LEGEND
Perched Groundwater Monitoring Well
Kirtland AFB Boundary
Fault Lines
City of Albuquerque Sewer Line
NM Central State Plane Feet, NAD27
NM Not Measured
Revision Date: 05/19/2010
File Figure3-1_Oct09PerchedElev.mxd
Kirtland Air Force Base
Figure 3-1. October 2009
Groundwater Table Elevations for
the Perched Aquifer
CH2MHILL





Legend

- Groundwater Montitoring Well
- 5146.03 — Groundwater Elevation in Regional Aquifer (feet above mean sea level)
- Groundwater Elevation Contour
- 1541000 — New Mexico Central State Plane NAD83 Feet Coordinates

0 150 300 600 Feet

N

2009 RFI Report for SWMU WP-26, Sewage Lagoons

Figure 2-23

Groundwater Elevations Regional Aquifer, March 2009

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
356732.01.26.FI	KAFB-2625	SHEET 1 OF 3

SOIL BORING LOG

PROJECT : WP-26 RFI **LOCATION :** 1468574.06 ft N; 1546157.96 ft E; west of sewage lagoons

ELEVATION : 5354.79 ft msl DRILLING CONTRACTOR : Water Development Corporation/ Javier Leon

DRILLING METHOD AND EQUIPMENT USED : Air Rotarty Casing Hammer; Speedstar 50K

WATER LEVEL : 195.09' bgs **START :** 2/25/09 1030 **END:** 2/28/09 12:00 **LOGGER :** T. Arrowood, A.Forsberg

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
10	10	NA	CT		Silt w/ Sand and Gravel (ML), light brown (5YR 6/3), dry, no plasticity, ~15% sand, 20% gravel	
20	20	NA	CT		Silt (ML), brown, (7.5YR 5/4), dry, no plasticity, ~15% sand, 10% clay, 3% gravel	
30	30	NA	CT		As above	
40	40	NA	CT		Silt (ML), brown, (7.5YR 4/4), damp, no plasticity, ~15% sand, minor clay, no gravel	
50	50	NA	CT		Silt (ML), brown, (7.5YR 5/4), dry, no plasticity, ~10% sand, minor clay	
60	60	NA	CT		As above	
70	70	NA	CT		Silt + Lean Clay (ML+ CL), brown, (5YR 4/4), damp, low plasticity, ~5% sand, ~25% clay	
80	80	NA	CT		As above	

* - All PID readings in headspace unless otherwise noted
- PID -- photoionization detector
- ppm -- parts per million

CH2MHILL

PROJECT NUMBER	BORING NUMBER	SHEET 2 OF 3
356732.01.26.FI	KAFB-2625	

SOIL BORING LOG

PROJECT :	WP-26 RFI	**LOCATION :**	1468574.06 ft N; 1546157.96 ft E; west of sewage lagoons
ELEVATION :	5354.79 ft msl	DRILLING CONTRACTOR :	Water Development Corporation/ Javier Leon
DRILLING METHOD AND EQUIPMENT USED :		Air Rotarty Casing Hammer; Speedstar 50K	
WATER LEVELS :	195.09' bgs	**START :** 2/25/09 1030	**END:** 2/28/09 12:00 **LOGGER :** T. Arrowood, A.Forsberg

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
90	90	NA	CT		Silt + Lean Clay (ML+CL), brown, (7.5YR 5/4), dry, low plasticity, ~5% sand, 25% clay	
100	100-102		SS		As above w/ ~35% clay, 0% sand	PID = 0.4 ppm, Split spoon collected at 1550
	102-110	NA	CT		As above	
110	110	NA	CT		As above	**END 2/25/09 - START 2/26/09**
120	120-122		SS		As above	PID = 1.3 ppm, Split spoon collected at 0918
	122-130	NA	CT		As above	
130	130	NA	CT		As above	
140	140-142		SS		Lean clay (CL), brown, (7.5YR 5/4), dry-damp, low plasticity, abundant silt present (~45% silt)	PID = 3.0 ppm, Split spoon collected at 1041
	142-150	NA	CT		As above	
150	150	NA	CT		As above w/ ~40% silt	
160	160-162		SS		As above	PID = 1.5 ppm, Split spoon collected at 1134
	162-170	NA	CT		As above	* - All PID readings in headspace unless otherwise noted - PID -- photoionization detector - ppm -- parts per million

CH2MHILL	PROJECT NUMBER	BORING NUMBER	SHEET 2 OF 3
	356732.01.26.FI	KAFB-2625	

SOIL BORING LOG

PROJECT :	WP-26 RFI	**LOCATION :**	1468574.06 ft N; 1546157.96 ft E; west of sewage lagoons
ELEVATION :	5354.79 ft msl	DRILLING CONTRACTOR :	Water Development Corporation/ Javier Leon
DRILLING METHOD AND EQUIPMENT USED :		Air Rotarty Casing Hammer; Speedstar 50K	
WATER LEVELS :	195.09' bgs	**START :** 2/25/09 1030	**END:** 2/28/09 12:00 **LOGGER :** T. Arrowood, A.Forsberg

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
170	170	NA	CT		As above	
180	180-182		SS		Lean clay (CL), brown, (7.5YR 5/4), dry-damp, low plasticity, abundant silt present (~45% silt)	PID = 1.5 ppm, Split spoon collected at 1338
	182-190	NA	CT		Poorly Graded Sand (SP), brown, (7.5YR 5/6), dry to slightly damp, fine sand.	
190	190	NA	CT		Silt w/ Sand (ML), brown, (7.5YR 5/6), dry, low to no plasticity, med sand	
200	200-202		SS		Lean clay (CL), brown, (7.5YR 5/4), dry-damp, low plasticity, abundant silt (~45% silt)	PID = 1.5 ppm, Split spoon collected at 1722 Sample **WP26-SO-2625-140** at 1728 Sample **WP26-SO-2625-160** at 1733 Sample **WP26-SO-2625-180** at 1737 Sample **WP26-SO-2625-200** at 1742 Sample **WP26-SO-2625-180-99** at 1746 Sample **WP26-SO-2625-200 MS/MSD** at 1753
	202-210	NA	CT		Lean clay (CL), brown, (7.5YR 5/4), wet, med plasticity, abundant silt, 2% med gravel, 10% fine sand	
210	210	NA	CT			**END 2/26/09 - START 2/27/09**
						PID= 1.3 ppm @ 213
216					Poorly Graded Sand (SP), brown, (7.5YR 5/4), damp, fine sand.	PID= 1.3 ppm @ 216
220	220-222		SS		As above	PID = 1.9 ppm, **Sample WP26-SO-2625-0220** collected at 1025
					TOTAL DEPTH - 220' bgs	**End Of Log** water level at 195.09 bgs

CH2MHILL	PROJECT NUMBER 356732.01.26.FI	WELL NUMBER KAFB-2625	SHEET 1 OF 1

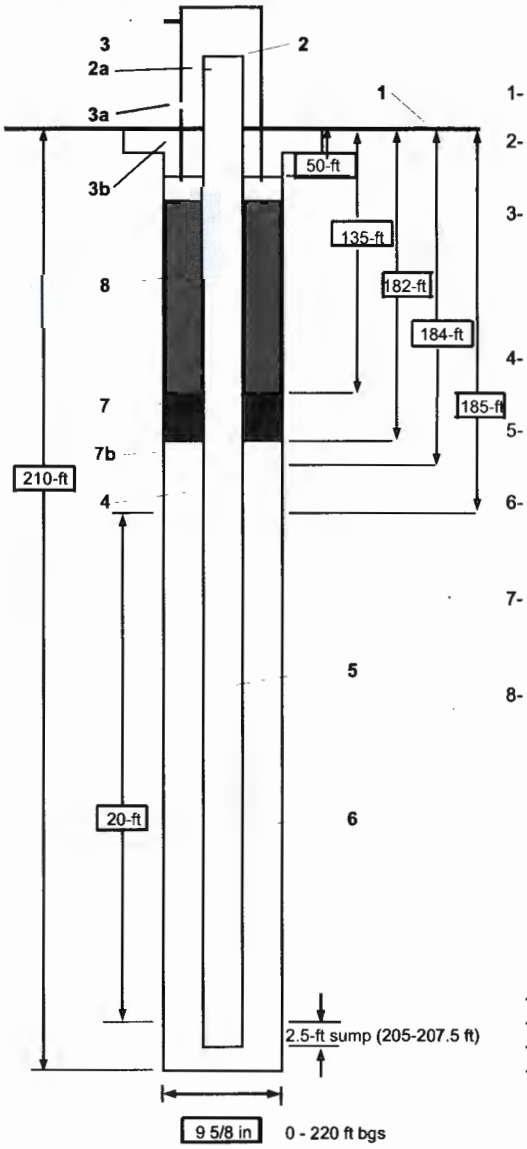
WELL COMPLETION DIAGRAM

PROJECT : WP-26 LOCATION : West of former Sewage Lagoons, KAFB Driller: Javier Leon

DRILLING METHOD AND EQUIPMENT USED: Air Rotary Casing Hammer; Speedstar 50K DRILLING CONTRACTOR : WDC Exploration & Well

TOP OF CASING ELEVATION: 5356.59 in NAVD88 WATER LEVEL 195.09 ft bgs START: 2/27/09 12:30 END: 2/28/09 12:00

COORDINATES: 1468574.06 ft N; 1546157.96 ft E, New Mexico State Plane, Central Zone, NAD83 LOGGER : A. Forsberg



1- Ground elevation at well	5354.79 ft msl
2- Top of casing elevation	5356.59 PVC/5357.82 Steel riser (in ft msl)
a) vent hole?	no
3- Wellhead protection cover type	locking above ground 8 inch diameter steel monument
a) weep hole?	no
b) concrete pad dimensions	4' x 4' with 4 concrete filled bollards land surface to 50 ft bgs
4- Dia./type of well casing	4-in schedule 80 Monoflex PVC
5- Type/slot size of screen	Monoflex schedule 80 - 0.010 inch slot 20 ft screen, from 185 ft to 205 ft bgs
6- Type screen filter	10/20 Colorado Silica Sand
a) Quantity used	28 bags; from 184 ft to 210 ft
a) Transition sand	2 bags 20/40 sand; from 182 ft to 184 ft
7- Type of seal	hydrated bentonite chips
a) Quantity used	31 bags; 135 ft to 182 ft bgs
8- Grout	
a) Grout mix used	bentonite quick-grout/neat cement grout
b) Method of placement	tremmie bentonite grout/hose tremmie cement grout
c) Vol. of well casing grout	56.7 ft^3., 58 ft to 135 ft bgs/27 ft^3 0-50 ft bgs
Development method	bail, swab, bail, pump
Development time	see developmemt log
Development purge volume	see development log

Comments Formation collapses at bottom of hole (216-220 ft bgs)
Holeplug bentonite chips (4 bags) below filter pack at 210-216 ft bgs
Bentonite slurry grout 135 to 58 feet, then bentonite chips used from 58-50 ft bgs
Neat cement grout is 0-50 ft bgs (16 bags portland cement)

Not to scale

CH2MHILL

PROJECT NUMBER	BORING NUMBER	SHEET 1 OF 3
356732.01.26.FI	KAFB-2626	

SOIL BORING LOG

PROJECT : WP-26 RFI **LOCATION :** 1469219.78 ft N; 1545655.89 ft E; west of sewage lagoons

ELEVATION : 5355.65 ft msl DRILLING CONTRACTOR : Water Development Corporation/ Javier Leon

DRILLING METHOD AND EQUIPMENT USED : Air Rotarty Casing Hammer; Speedstar 50K

WATER LEVEL : 200.51' bgs **START :** 2/20/09 1025 **END:** 2/22/09 17:40 **LOGGER :** T. Arrowood

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
					Silt (ML), light brown (5YR 5/4), dry, no plasticity, ~10% coarse sand	
10	10	NA	CT		Silt (ML), light brown (5YR 5/4), dry, no plasticity	
20	20	NA	CT		As above	
30	30	NA	CT		As above	
40	40	NA	CT		Lean Clay + Silt (CL+ML), brown (7.5YR 5/4), dry, low plasticity	
50	50	NA	CT		As above w/ coloring of 5YR5/4	
60	60	NA	CT		Lean clay + Silt (CL+ML), brown (7.5YR 5/4), dry, low plasticity, ~10% coarse sand and gravel	
70	70	NA	CT		As above w/ ~2% sand-gravel	
80	80	NA	CT		Lean clay +Silt (CL+ML), brown (7.5YR 5/4), dry, low plasticity, ~10% coarse sand and gravel	* - All PID readings in headspace unless otherwise noted - PID -- photoionization detector - ppm - - parts per million

CH2MHILL

PROJECT NUMBER	BORING NUMBER	SHEET 2 OF 3
356732.01.26.FI	KAFB-2626	

SOIL BORING LOG

PROJECT :	WP-26 RFI	**LOCATION :**	1469219.78 ft N; 1545655.89 ft E; west of sewage lagoons
ELEVATION :	5355.65 ft msl	DRILLING CONTRACTOR :	Water Development Corporation/ Javier Leon
DRILLING METHOD AND EQUIPMENT USED :		Air Rotarty Casing Hammer; Speedstar 50K	
WATER LEVELS :	200.51' bgs	**START :** 2/20/09 1025	**END:** 2/22/09 17:40 **LOGGER :** T. Arrowood

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
90	90	NA	CT		As above	
100	100-102	6,0,0	SS		Lean Clay + Silt (CL+ML), brown (7.5YR 5/4), dry, low plasticity, ~10% coarse sand and gravel	PID = 0.5 ppm, Split spoon collected at 1455
	102-110	NA	CT		As above	
110	110	NA	CT		As above w/ coloring of 5YR 5/4	
120	120-122	6,0,0	SS		Lean Clay + Silt (CL+ML), brown (7.5YR 5/4), dry, low plasticity, ~10% coarse sand and gravel	PID = 0.2 ppm, Split spoon collected at 1612
	122-130	NA	CT		As above w/ coloring of 5YR 5/4	
130	130	NA	CT		Silt with Sand (ML), brown (7.5YR 5/4), dry, no plasticity, ~25% sand	
140	140-142	3,0,0 3,0,0	SS		Lean Clay (CL), brown (5YR 5/4), dry, low plasticity, stiff, abundant silt (~30%), 20% gravel	PID = 0.2 ppm, Split spoon collected at 1750 **END 2/20/09 - START 2/21/09**
	142-150	NA	CT		As above w/ coloring of 7.5YR 5/4	
150	150	NA	CT		Lean Clay (CL), brown (10YR 5/4), dry, low plasticity, stiff, abundant silt (~40%)	
160	160-162		SS		As above, bits of red rubber in sample from drill rig	PID = 0.4 ppm, Split spoon collected at 0850
	162-170	NA	CT		Silt (ML), brown (7.5YR 4/4), damp, ~25% clay, ~5% sand	* - All PID readings in headspace unless otherwise noted - PID -- photoionization detector - ppm -- parts per million

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
356732.01.26.FI	KAFB-2626	SHEET 3 OF 3

SOIL BORING LOG

PROJECT : WP-26 RFI **LOCATION :** 1469219.78 ft N; 1545655.89 ft E; west of sewage lagoons

ELEVATION : 5355.65 ft msl DRILLING CONTRACTOR : Water Development Corporation/ Javier Leon

DRILLING METHOD AND EQUIPMENT USED : Air Rotarty Casing Hammer; Speedstar 50K

WATER LEVELS : 200.51' bgs **START :** 2/20/09 1025 **END:** 2/22/09 17:40 **LOGGER :** T. Arrowood

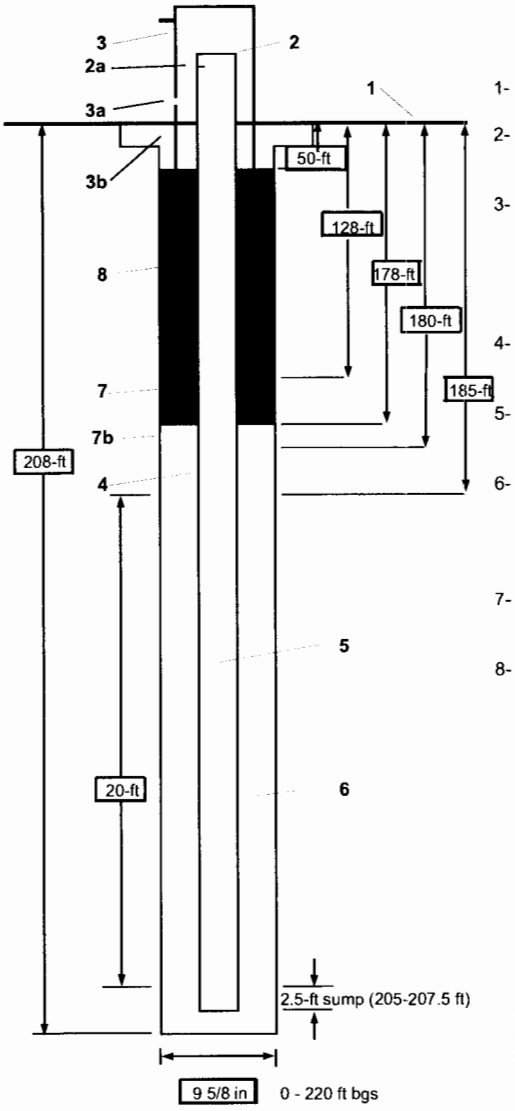
DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
170	170	NA	CT		Silt as above	
180	180-182		SS		Lean clay (CL), brown (5YR 5/4), moist, medium plasticity, ~10% silt	PID = 2.4 ppm, Split spoon collected at 1017
	182-190	NA	CT		Lean clay (CL), brown (5YR 5/4), moist, med plasticity, abundant silt (~35%)	
190	190	NA	CT		Lean clay(CL), brown (5YR 5/4), moist, high plasticity, with silt (~30%)	
200	200-202		SS		As above w/ ~10% gravel	PID = 1.5 ppm, Split spoon collected at 1136
	202-210	NA	CT		As above but damp	
210	210	NA	CT		Sandy Silt (ML), brown (7.5YR 6/4), dry, no plasticity, ~40% sand	Sample **WP26-SO-2626-100** at 1620 Sample **WP26-SO-2626-160** at 1625 Sample **WP26-SO-2626-180** at 1631 Sample **WP26-SO-2626-200** at 1634
220	220-222		SS		Poorly Graded Sand with Silt (SP-SM), brown (7.5YR 6/4), dry, ~10% silt **TOTAL DEPTH - 220' bgs**	**End Of Log** water level at 200.51 bgs

CH2MHILL

PROJECT NUMBER	WELL NUMBER	
356732.01.26.FI	KAFB-2626	SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : WP-26 LOCATION : West of former Sewage Lagoons, KAFB Driller: Javier Leon
DRILLING METHOD AND EQUIPMENT: Air Rotary Casing Hammer; Speedstar 50K DRILLING CONTRACTOR : WDC Exploration & Wells
TOP OF CASING ELEVATION: 5357.51 ft msl in NAVD88 WATER LEVEL 200.51 ft bgs START: 2/22/09 09:00 END: 2/22/09 17:40
COORDINATES: 1469219.78 ft N; 1545655.89 ft E, New Mexico State Plane, Central Zone, NAD83 LOGGER : T. Arrowood



1- Ground elevation at well	5355.65 ft msl
2- Top of casing elevation	5357.51 PVC/5358.82 Steel riser (in ft msl)
a) vent hole?	no
3- Wellhead protection cover type	locking above ground 8 inch diameter steel monument
a) weep hole?	no
b) concrete pad dimensions	4' x 4' with 4 concrete filled bollards land surface to 50 ft bgs
4- Dia./type of well casing	4" schedule 80 Monoflex PVC
5- Type/slot size of screen	Monoflex schedule 80 - 0.010 inch slot 20 ft screen, from 185 ft to 205 ft bgs
6- Type screen filter	10/20 Colorado Silica Sand
a) Quantity used	30 bags; from 180 ft to 208 ft
b) Transition Sand	2 bags 20/40 Colorado silica sand (178-180 ft)
7- Type of seal	hydrated bentonite chips
a) Quantity used	47 bags; 128 ft to 178 ft bgs
8- Grout	
a) Grout mix used	bentonite quick-grout/neat cement grout
b) Method of placement	tremmie bentonite grout/hose tremmie cement grout
c) Vol. of well casing grout	55.92 ft^3., 52 to 128 ft bgs/33 ft^3, 0 to 50 ft bgs
Development method	bail, swab, bail, pump
Development time	see developmemt log
Development purge volume	see development log

Comments
Bottom of hole backfilled with medium bentonite chips (19 bags), 208-220 ft bgs
Bentonite slurry grout 128 to 52 feet, then bentonite chips used from 52-50 ft bgs
Neat cement grout is 0-50 ft bgs (20 bags portland cement)

Not to scale

CH2MHILL

PROJECT NUMBER	BORING NUMBER	SHEET 1 OF 3
356732.01.26.FI	KAFB-2627	

SOIL BORING LOG

PROJECT : WP-26 RFI **LOCATION :** 1469876.30 ft N; 1547246.35 ft E; Northeast of sewage lagoons

ELEVATION : 5365.19 ft msl DRILLING CONTRACTOR : Water Development Corporation/ Javier Leon

DRILLING METHOD AND EQUIPMENT USED : Air Rotarty Casing Hammer; Speedstar 50K

WATER LEVEL : dry **START :** 2/28/09 15:00 **END:** 3/02/09 16:15 **LOGGER :** A. Forsberg

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
					Silt (ML), pink (7.5YR 8/4), dry, no plasticity, 5-7% medium sand	PID = 0.4 ppm
10	10	NA	CT		Silty Sand (SM), brown (7.5YR 5/4), dry, no plasticity, 5% fine to medium gravel	PID = 0.0 ppm
20	20	NA	CT		Silt (ML), yellowish red (5YR 4/6), dry, low to no plasticity, 5% medium sand	PID = 0.4 ppm
30	30	NA	CT		As above	PID = 0.3 ppm
40	40	NA	CT		Well Graded Gravel with Silt (GW-GM), reddish brown (5YR 5/3), dry, angular, no plasticity fines	PID = 0.2 ppm Add water during drilling
50	50	NA	CT		Silt (ML), yellowish red (5YR 4/6), dry, low to no plasticity, 10% medium rounded gravel	PID = 0.3 ppm
60	60	NA	CT		Silt (ML), yellowish red (5YR 4/6), dry, low to no plasticity, 2% medium subangular gravel	**END 2/28/09 - START 3/01/09**
70	70	NA	CT		Silt (ML), brown (7.5YR 5/4), dry, low to no plasticity, 7-10% coarse sand	PID = 0.1 ppm
80	80	NA	CT		Silt with Sand (ML), brown (7.5YR 4/6), dry, no plasticity, 15% well-graded sand, 2% angular medium gravel.	PID = 0.0 ppm * - All PID readings in headspace unless otherwise noted - PID -- photoionization detector - ppm -- parts per million

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
356732.01.26.FI	KAFB-2627	SHEET 2 OF 3

SOIL BORING LOG

PROJECT : WP-26 RFI **LOCATION :** 1469876.30 ft N; 1547246.35 ft E; Northeast of sewage lagoons

ELEVATION : 5365.19 ft msl DRILLING CONTRACTOR : Water Development Corporation/ Javier Leon

DRILLING METHOD AND EQUIPMENT USED : Air Rotarty Casing Hammer; Speedstar 50K

WATER LEVELS : dry **START :** 1/0/1900 **END:** 3/02/09 16:15 **LOGGER :** A. Forsberg

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
90	90	NA	CT		Poorly Graded Sand (SP). strong brown (7.5YR 5/6), dry, 5-7% medium to coarse sand.	PID = 0.4 ppm
100	100-102	6,0,0	SS	6-9-17	Silt with Sand (ML), stong brown (7.5YR 5/6), dry, firm, no plasticity, 15% well-graded sand.	PID = 0.5 ppm, Split spoon collected at 11:14
	102-110	NA	CT		Well Graded Sand (SW), light brown (7.5YR 6/4), dry	
110	110	NA	CT		Silt (ML), stong brown (7.5YR 5/6), dry, no plasticity, 5% medium sand.	
120	120-122	6,2,0	SS	18-45	Silty Sand (SM). strong brown (7.5YR 5/6), dry, dense, non-plastic fines.	PID = 1.2 ppm, Split spoon collected at 11:59
	122-130	NA	CT		As above	
130	130	NA	CT		As above but damp	PID = 1.6 ppm
140	140-142	6,2,0	SS	22-50	Well Graded Sand with Silt (SW-SM), brown (7.5YR 5/3), damp, dense, 2% fine gravel	PID = 15.4 ppm, Split spoon collected
	142-150	NA	CT			
150	150	NA	CT		Silt (ML), stong brown (7.5YR 5/6), dry, no plasticity, 2% medium sand.	PID = 53.7 ppm
160	160-162	6,2,0	SS	25-60	Silty Sand (SM). strong brown (7.5YR 4/6), dry, hard, fine sand with 7% medium sand, 2% fine gravel.	PID = 26.2 ppm, Split spoon sample **WP26-SO-2627-0160** collected at 1604
	162-170	NA	CT		Silt (ML), reddish yellow (7.5YR 6/6), dry, low to no plasticity.	* - All PID readings in headspace unless otherwise noted - PID -- photoionization detector - ppm -- parts per million

CH2MHILL

PROJECT NUMBER	BORING NUMBER	SHEET 3 OF 3
356732.01.26.FI	KAFB-2627	

SOIL BORING LOG

PROJECT : WP-26 RFI **LOCATION :** 1469876.30 ft N; 1547246.35 ft E; Northeast of sewage lagoons

ELEVATION : 5365.19 ft msl DRILLING CONTRACTOR : Water Development Corporation/ Javier Leon

DRILLING METHOD AND EQUIPMENT USED : Air Rotarty Casing Hammer; Speedstar 50K

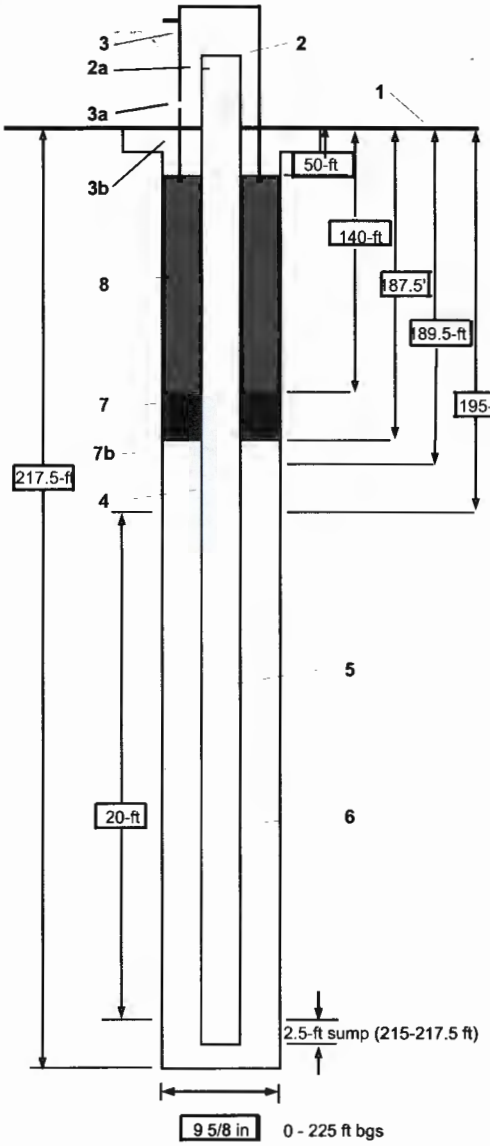
WATER LEVELS : dry **START :** 1/0/1900 **END:** 3/02/09 16:15 **LOGGER :** A. Forsberg

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
						PID = 21 ppm
170	170	NA	CT		Silt as above, but damp, and with 10% medium sand	PID = 56.9 ppm
180	180-182	6,6,0	SS	22-60	Well Graded Sand with Silt (SW-SM), strong brown (7.5YR 5/4), damp, dense.	PID = 41 ppm, Split spoon sample **WP26-SO-2627-0180** collected at 1558
	182-190	NA	CT		As above but moist	
190	190	NA	CT		Silty Sand (SM). brown (7.5YR 5/4), moist, well graded sand, non-plastic fines.	PID = 62.0 ppm
200	200-202	6,6,6	SS	12-32-48	Lean Clay (CL). brown (7.5YR 5/4), moist, hard, medium plasticity.	PID = 25.2 ppm, Split spoon sample **WP26-SO-2627-0200** collected
	202-210	NA	CT		As above but with low plasticity (approximatley 30-40% silt)	PID = 27.2 ppm
210	210	NA	CT		As above	
220	220-222	6,6,6	SS	20-29-40	Lean Clay (CL). brown (7.5YR 4/4), moist, hard, medium plasticity. **TOTAL DEPTH - 220' bgs**	PID = 6.0 ppm **End Of Log** No water in borehole

CH2MHILL	PROJECT NUMBER 356732.01.26.FI	WELL NUMBER KAFB-2627	SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : WP-26 RFI LOCATION : Northeast of former sewage laggons, KAFB Driller: Javier Leon
DRILLING METHOD AND EQUIPMENT: Air Rotary Casing Hammer; Speedstar 50K DRILLING CONTRACTOR : WDC Exploration & Wells
TOP OF CASING ELEVATION: 5367.47 ft msl in NAVD88 WATER LEVEL Dry START: 3/2/09 09:00 END: 3/2/09 16:15
COORDINATES: 1469876.30 ft N; 1547246.35 ft E, New Mexico State Plane, Central Zone, NAD83 LOGGER : T. Arrowood



1- Ground elevation at well	5365.19 ft msl
2- Top of casing elevation	5367.47 PVC/5368.46 Steel riser (in ft msl)
a) vent hole?	no
3- Wellhead protection cover type	locking above ground 8 inch diameter steel monument
a) weep hole?	no
b) concrete pad dimensions	4' x 4' with 4 concrete filled bollards land surface to 50 ft bgs
4- Dia./type of well casing	4" schedule 80 Monoflex PVC
5- Type/slot size of screen	Monoflex schedule 80 - 0.010 inch slot 20 ft screen, from 195 ft to 215 ft bgs
6- Type screen filter	10/20 Colorado Silica Sand
a) Quantity used	29 bags; from 189.5 ft to 217.5 ft
b) Transition Sand	2 bags 20/40 Colorado silica sand; 187.5-189.5 ft
7- Type of seal	hydrated bentonite chips
a) Quantity used	34 bags; 140 ft to 187.5 ft bgs
8- Grout	
a) Grout mix used	bentonite quick-grout/neat cement grout
b) Method of placement	tremmie bentonite grout/hose tremmie cement grout
c) Vol. of well casing grout	66.3 ft^3., 52 to 140 ft bgs/30 ft^3, 0 to 50 ft bgs
Development method	N/A
Development time	N/A
Development purge volume	N/A

Comments Formation collapse 200 to 225 ft.
Bottom of hole (220-217.5 ft) filled with bentonite chips, 2 bags
Transition sand from 187.5 ft to 189.5 ft bgs.
Bentonite slurry grout 140 to 52 feet, then bentonite chips used from 52-50 ft bgs
Neat cement grout is 0-50 ft bgs (18 bags portland cement)

Not to scale

Solid Waste Management Unit WP-26, Sewage Lagoons
Resource Conservation and Recovery Act Facility Investigation,
Work Plan Addendum

Resource Conservation and Recovery Act Facility Investigation Work Plan Addendum, Solid Waste Management Unit WP-26, Sewage Lagoons and Golf Course Main Pond, Kirtland Air Force Base, New Mexico
June 2011

1. This Addendum summarizes activities that will be conducted as part of an ongoing investigation at Solid Waste Management Unit (SWMU) WP-26, Sewage Lagoons and Golf Course Main Pond, Kirtland Air Force Base (AFB), New Mexico. This document constitutes an addendum to the *Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan for Solid Waste Management Unit WP-26, Sewage Lagoons and Golf Course Main Pond* dated April 2008 (U.S. Air Force [USAF], 2008). The April 2008 RFI Work Plan provides overall direction for the execution of investigation activities at the site, including the installation of groundwater monitoring wells.

2. Perched groundwater near SWMU WP-26 has been impacted by volatile organic compounds (VOCs). Activities proposed within this RFI Work Plan addendum include the installation of two regional aquifer groundwater monitoring wells and two perched groundwater monitoring wells, as requested in the Notice of Disapproval letter dated 22 November 2010, from the New Mexico Environment Department (NMED) to Mr. Wayne Bitner and as discussed with Mr. Bill McDonald (NMED) during a meeting on 11 May 2011. The NMED originally required that six additional groundwater monitoring wells be installed near the SWMU. Additional information was presented to Mr. McDonald during the 11 May 2011 meeting concerning potential locations of perched wells. Based on historic site information, it was agree that the northeast and northwest perched well locations would likely be dry. Mr. McDonald verbally indicated that those two perched locations would not be required and a revised NOD letter would be provided to Kirtland AFB.

3. Four additional groundwater monitoring wells will be installed in the area surrounding SWMU WP-26 at the locations shown on Figure 1. The exact physical location of each new well will be dependent on accessibility and utility clearances and may be slightly modified based on field observations.

4. Anticipated investigation activities for SWMU WP-26 are briefly described in the following bulleted sections. Overall, sample collection and well installation techniques will utilize the same field procedures outlined in Section 3.3 of the April 2008 RFI Work Plan.

    - The regional groundwater boreholes will be advanced using downhole air rotary casing hammer (ARCH) drilling and rotary over reaming bit drilling techniques. The boreholes will be advanced using 11 3/4-inch casing to approximately 180 ft below ground surface (bgs). A 9 5/8-inch casing will be telescoped inside the larger casing to drill from approximately 180 ft bgs to the final depth of the boreholes, estimated to be 530 ft bgs.

    - The perched groundwater boreholes will be advanced using downhole ARCH drilling and rotary over reaming bit drilling techniques. The boreholes will be advanced using 9 5/8-inch casing to the total depth of the borehole, estimated to be 220 ft bgs. Drilling near the anticipated depth of perched groundwater will be slowed to allow for detailed observation of the sediments to determine if perched groundwater is present. Once the anticipated depth of perched groundwater is reached, the drive casing will be pulled back 10 to 20 ft and the borehole will be allowed to sit open for 12 hours or more. A water level indicator will be lowered into the borehole at the end of 12 hours to determine if perched groundwater is present. If perched groundwater is present in the borehole, the depth to the perched groundwater will be used to determine the final depth of the well and screen placement and the perched groundwater well will be completed. If perched

groundwater is not present, a soil vapor sample will be collected from the borehole and the borehole will be abandoned per New Mexico regulations.

- Soils will be geologically logged at 10-ft intervals from returned drill cuttings by the onsite geologist. Drill cuttings will be field-screened with a photo ionization detector (PID) to assess whether VOCs are present in the returned drill cuttings during borehole advancement. Soil samples for laboratory analysis will be collected at approximately 100, 120, 140, 160, 180, and 200-ft bgs for perched groundwater boreholes. Soil samples for laboratory analysis will be collected at approximately 150, 200, 250, 450, and 500-ft bgs for regional groundwater boreholes. Soil samples will be analyzed for VOCs and nitrogen species.

- The regional groundwater monitoring well casings will be constructed of Schedule 80, nominal, 5-inch inner diameter polyvinyl chloride (PVC) pipe. The monitoring well screens will be 30-ft length of 0.010-inch slot PVC screen in order to extend the well life due to declining water levels. Approximately 5-ft of the well screen will be placed above the water table. A 2-ft blank PVC sediment sump will be installed below the screen.

- The perched groundwater monitoring well casings will be constructed of Schedule 80, nominal, 4-inch inner diameter PVC pipe. The monitoring well screens will be 20 to 30-ft length of 0.010-inch slot PVC screen. Final length of the well screens will be determined in the field during drilling depending on the saturated thickness of the perched groundwater. A portion of the well screen will be placed above the water table. A 2-ft blank PVC sediment sump will be installed below the screen.

- An appropriately sized filter pack for the screen slot size will be installed in the annular space surrounding the well screens to at least 2-ft above the top of the screen, overlain by 1-to 2-ft of finer grained transition sand. A bentonite seal of at least 20-ft will be placed in the annular space immediately above the filter pack with a high solids bentonite grout tremmied into place overlying the seal. Portland cement will be installed in the uppermost 30-ft of annular space around the well casing and the well will be completed with either a locking stick-up well casing or flushmount manhole, to be determined based on the well location. The monitoring well will be appropriately developed by mechanical bailing, surging, and over-pumping following installation.

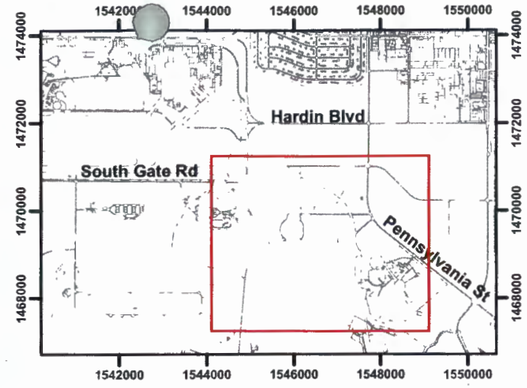
- A New Mexico-licensed professional surveyor will survey the horizontal well locations to the nearest one-tenth of one foot relative to New Mexico State Plane Coordinates and the vertical elevations to the nearest one-hundredth of one foot relative to mean sea level (MSL).

- The new monitoring wells will be integrated into the ongoing annual groundwater sampling schedule for SWMU WP-26 as part of the Kirtland AFB Long-Term Monitoring (LTM) Program. Groundwater samples and the appropriate quality assurance/quality control (QA/QC) samples will be collected and analyzed by the analytical laboratory following the sampling plan described in the most recent Long-Term Groundwater Monitoring Summary Report. The sampling methodology and analytical methods will adhere to the existing groundwater monitoring program established for SWMU WP-26.

5. To support refinement of the conceptual site model (CSM), geophysical logging will be conducted at a subset of the newly installed groundwater monitoring well and existing groundwater monitoring wells. Existing monitoring wells KAFB-2622, KAFB-2623, KAFB-2625, KAFB-2626, and

KAFB-2627 and newly installed monitoring wells KAFB-2628, KAFB-2629, and KAFB-2631 will be geophysically logged following well installation. Each well will be logged using natural gamma, neutron, and induction resistivity. Logging will take place in the PVC-cased groundwater monitoring wells. Graphical displays of the data will be generated and included within the well completion report.

6. The proposed schedule for activities for the installation of the groundwater monitoring wells is shown on Figure 2. The well installation details, groundwater analytical results, and findings will be reported in a well completion report to be prepared following well installation and sampling.



Legend

- Proposed Groundwater Monitoring Well Location
- Regional Groundwater Monitoring Well
- 4853.23 Regional Groundwater Elevation (feet above mean sea level)
- Perched Groundwater Monitoring Well
- 5146.03 Perched Groundwater Elevation (feet above mean sea level)
- 1541000 New Mexico Central State Plane NAD83 Feet Coordinates

N

0 250 500 1,000 Feet

2011 Pilot Study for SWMU WP-26, Sewage Lagoons

Figure 1

Proposed Perched and Regional Groundwater Monitoring Well Locations

ID	Task Name	Duration	Start	Finish
1	**Pilot Study**	**208 days**	**Wed 3/23/11**	**Fri 1/6/12**
2	**Preparation of Plans**	**66 days**	**Wed 3/23/11**	**Wed 6/22/11**
3	Work Plan Addendum	66 days	Wed 3/23/11	Wed 6/22/11
4	Pilot Study Sampling and Analysis Plan (UFP-QAPP)	66 days	Wed 3/23/11	Wed 6/22/11
5	Site Health and Safety Plan	20 days	Wed 4/20/11	Tue 5/17/11
6	**Sample Management/Data Validation/Data Evaluation**	**20 days**	**Mon 10/3/11**	**Fri 10/28/11**
7	Data Validation and Report	20 days	Mon 10/3/11	Fri 10/28/11
8	**Treatibility/Research and Development**	**130 days**	**Mon 7/11/11**	**Fri 1/6/12**
9	Pilot Study Field Test	40 days	Mon 7/11/11	Fri 9/2/11
10	**Document Treatibility Study**	**90 days**	**Mon 9/5/11**	**Fri 1/6/12**
11	Prepare Draft Pilot Study Report	55 days	Mon 9/5/11	Fri 11/18/11
12	Prepare Final Pilot Study Report	15 days	Mon 12/19/11	Fri 1/6/12

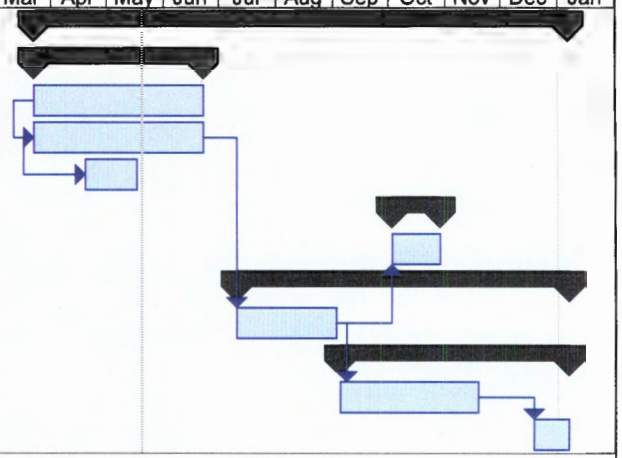


Figure 2. Schedule for Pilot Study Activites at Solid Waste Management Unit WP-26
Installation of Four Groundwater Monitoring Wells