FIGURES

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SECTION 1 FIGURES

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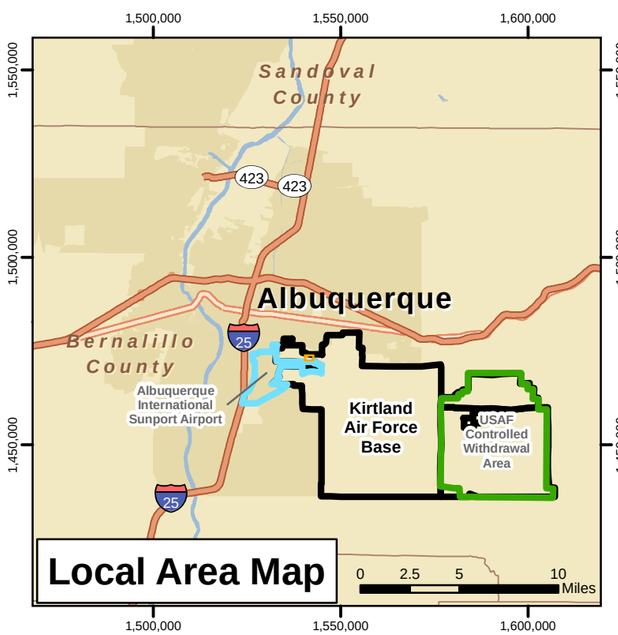

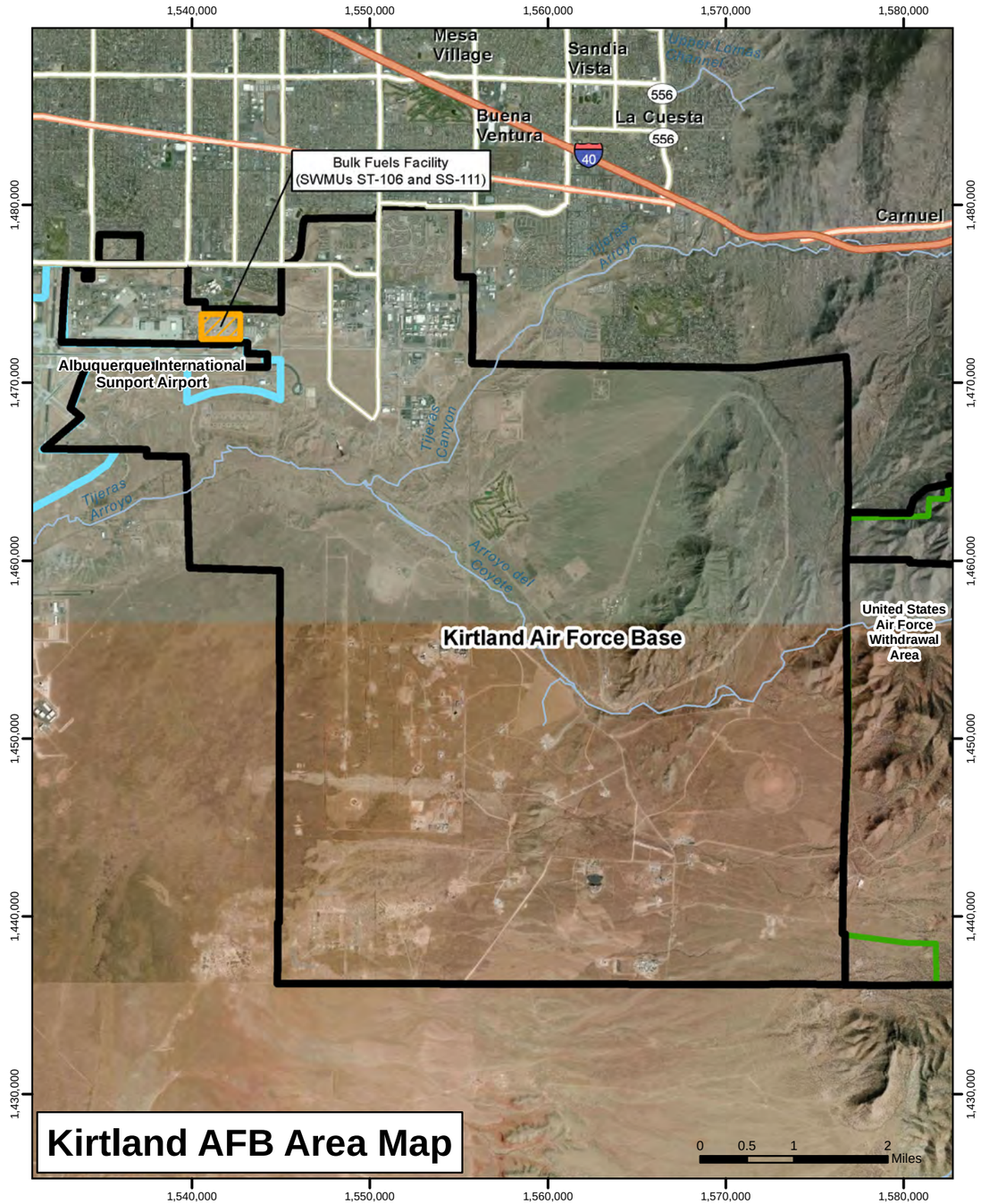

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Legend

- Installation Location
- Kirtland Air Force Base Installation Boundary
- Bulk Fuels Facility (SWMUs ST-106 and SS-111)
- Albuquerque International Sunport Airport
- United States Air Force Withdrawal Area
- Major Highways
- Highways
- Major Roads
- Rivers
- Urban Areas
- Counties
- States

N

Revision Date: 08/19/12

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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BULK FUELS FACILITY
KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 1-1

SITE LOCATION MAP

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_041_loc_map.mxd 08/19/12

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Location Types

- Borehole
- Monitor Well
- Water Supply Well
- Containment Well
- Injection Well
- Pneu Log
- SVM Cluster
- SVE Monitor Well
- SVE Extraction Well
- SVE Extraction Well
- USGS Piezometer Cluster

Plumes

- Historical Area of Observed NAPL (July 2009)
- Dissolved Plume

Contours

- Groundwater Level Contour (ft msl)
- Groundwater Depression
- 4,854.0 Groundwater Level Contour Label (ft msl)
- 10 Concentration Contour with Label
- Inferred Concentration Contour

Utilities

- Aboveground Fuel Transfer Line
- Underground Fuel Transfer Lines

Transportation and Related Features

- Major Road
- Road (at map scale < 1:12,000)
- Road (at map scale > 1:12,000)
- Paved Area

Inset Map Roads

- Limited Access
- Highway
- Major Road

Buildings and Related Features

- Structure
- Previously Existing Structure

Boundaries

- Installation Boundary
- Albuquerque International Sunport Airport
- Bulk Fuels Facility (Sites ST-106 and SS-111)
- United States Air Force Withdrawal Area
- Park
- Parcels

Other

- Cross-Section Line
- Installation Location

Other Well Symbols

- KAFB-106077 4856.94 — Monitor Well with Groundwater Elevation
- KAFB-10615 1 U ug/L — Monitor Well with Result (well symbol color varies based on result value)
- 0.28 — SVE/SVM Well with Result
- KAFB-106059 0.72 ft — Monitor Well with NAPL Measurement (detect)
- KAFB-10627 0 ft — Monitor Well with NAPL Measurement (non detect)

Revision Date: 08/06/12

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KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 1-2

LEGEND SHEET

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_035_legend_sheet.mxd8/6/2012

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SECTION 2 FIGURES

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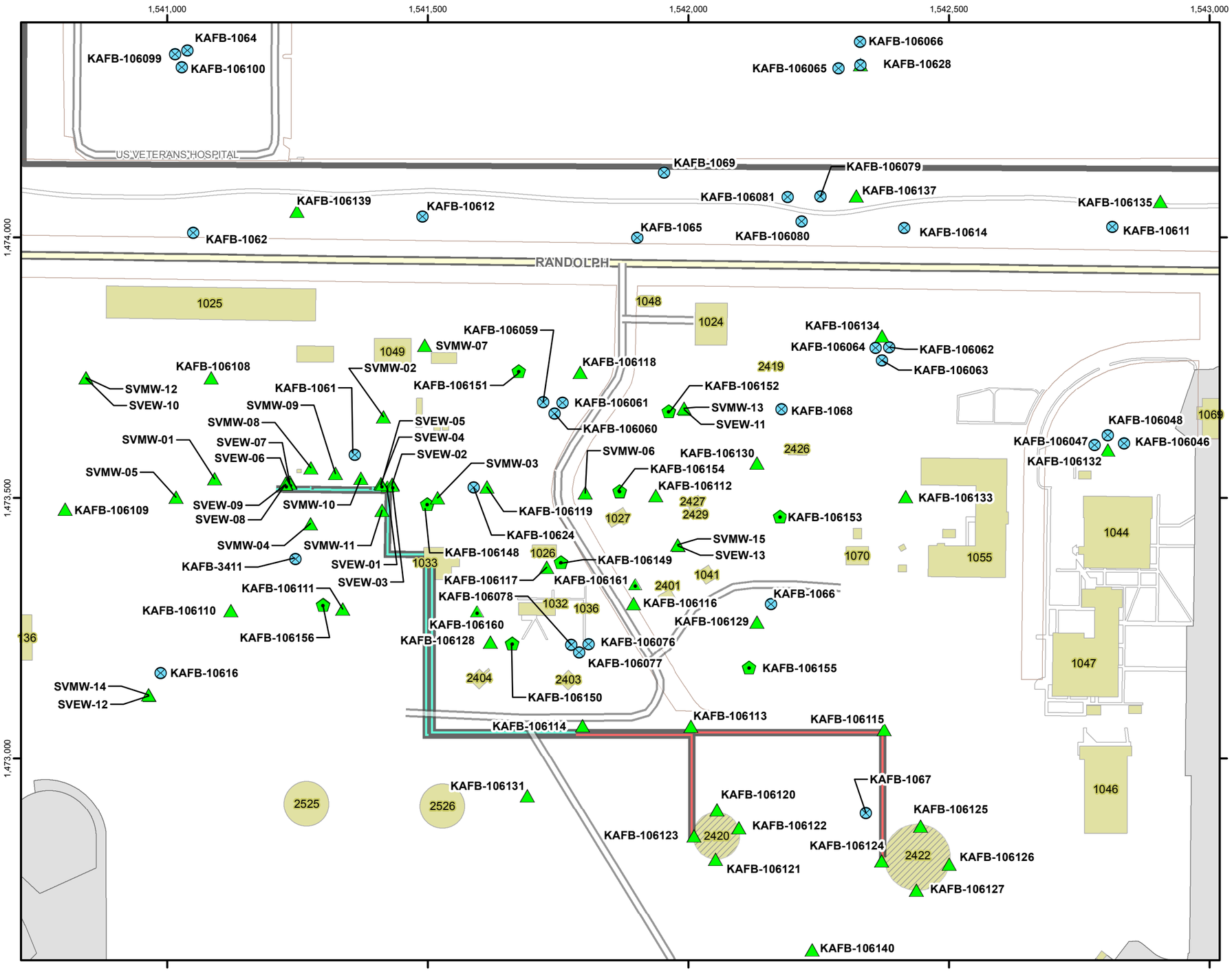
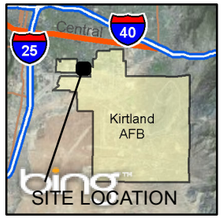


Legend

- Monitor Well
- Pneu Log
- SVE Extraction Well
- SVM Cluster



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N

0 100 200 400

Feet

1 inch = 200 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 2-1

LOCATION OF SOIL VAPOR MONITORING AND EXTRACTION WELLS, BULK FUELS FACILITY

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_039_SVE_detail.mxd 08/13/12

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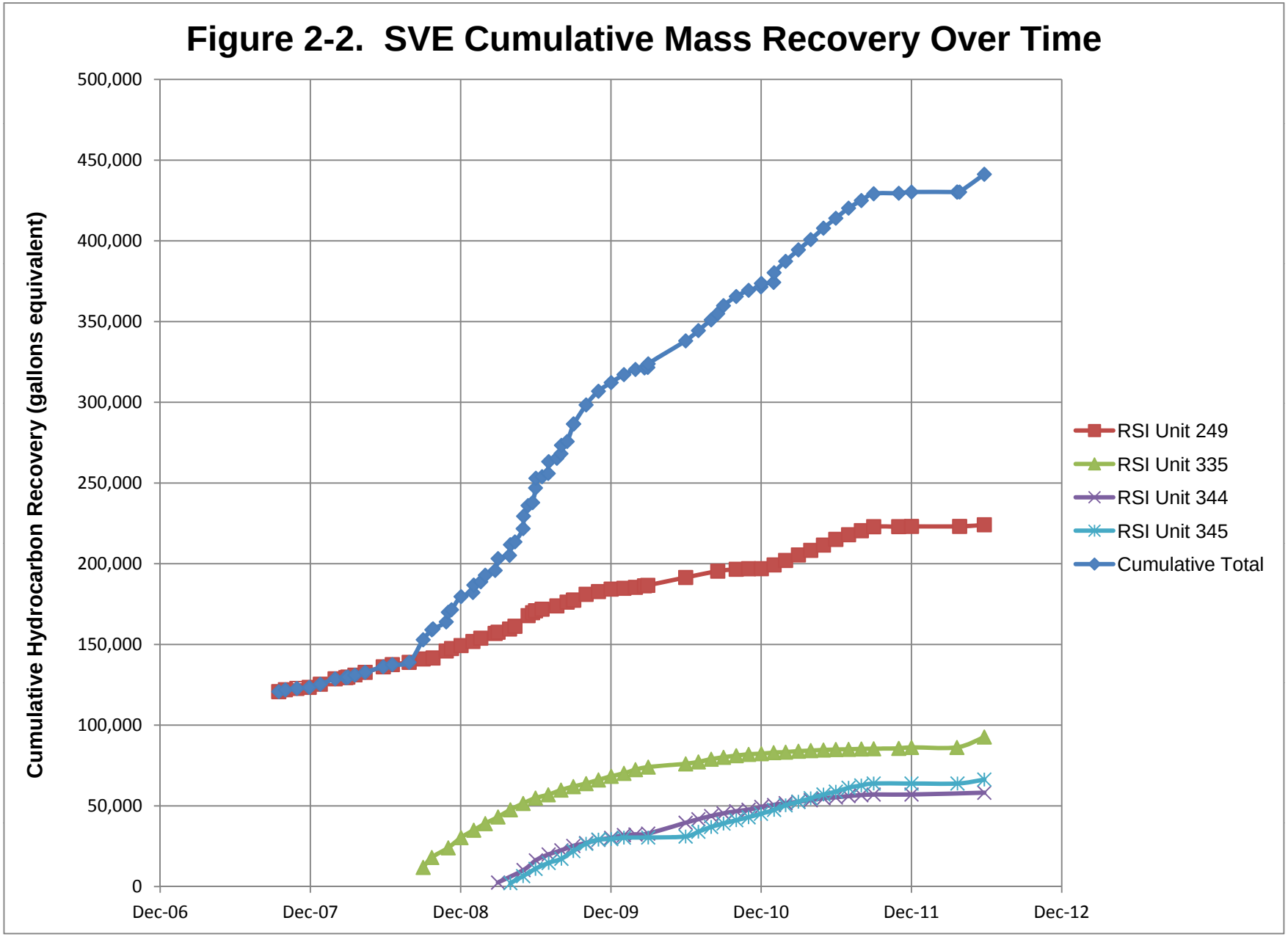
Figure 2-2. SVE Cumulative Mass Recovery Over Time
Cumulative Hydrocarbon Recovery (gallons equivalent)
500,000
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
RSI Unit 249
RSI Unit 335
RSI Unit 344
RSI Unit 345
Cumulative Total

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SECTION 3 FIGURES

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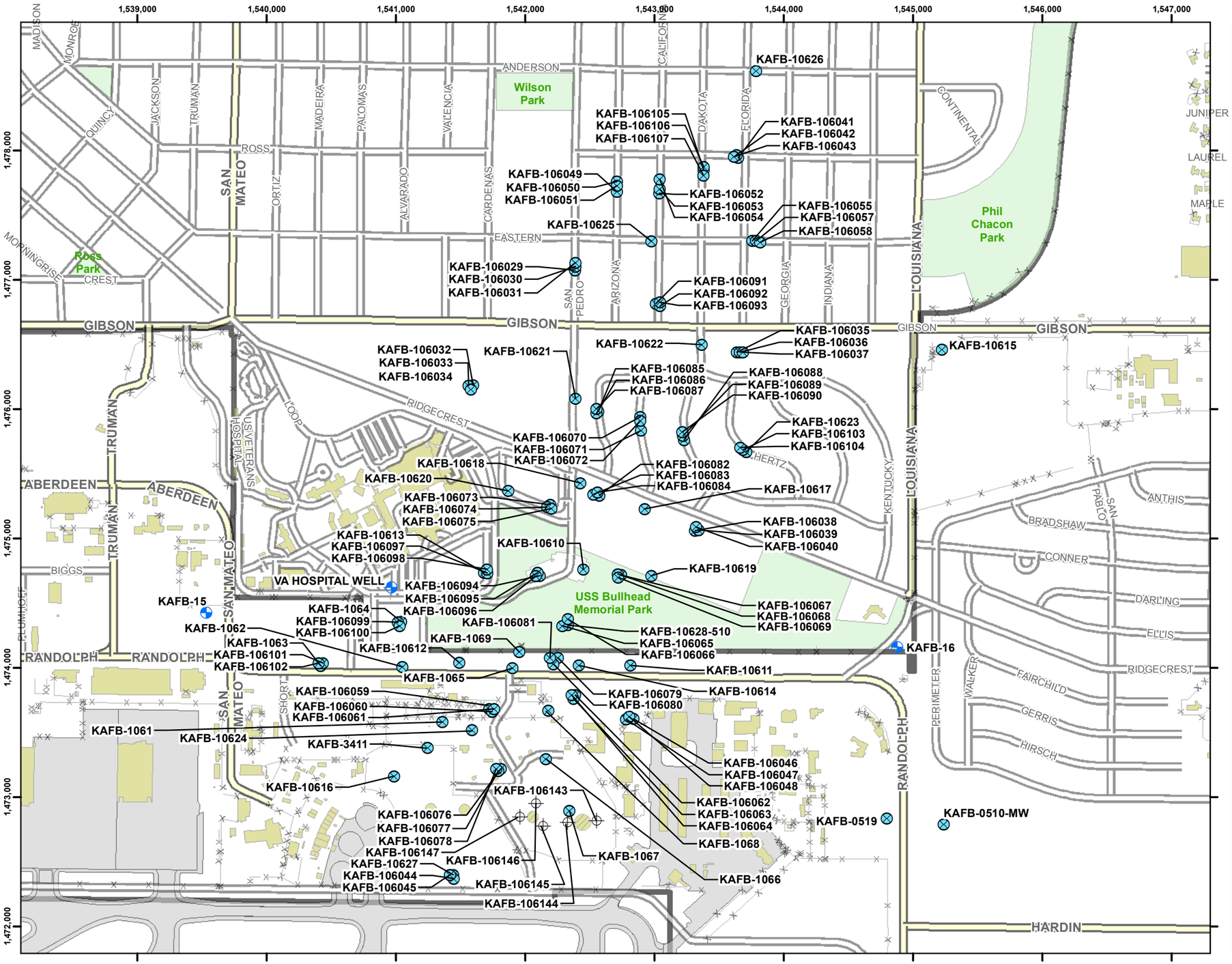
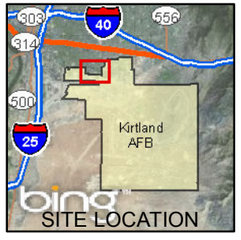


Legend

- Monitor Well
- Water Supply Well
- Borehole



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N

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0 400 800 1,600

Feet
1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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BULK FUELS FACILITY
KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 3-1

GROUNDWATER MONITORING WELL AND SOIL BORING LOCATIONS

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_040_GW_BH_locs.mxd 08/19/12

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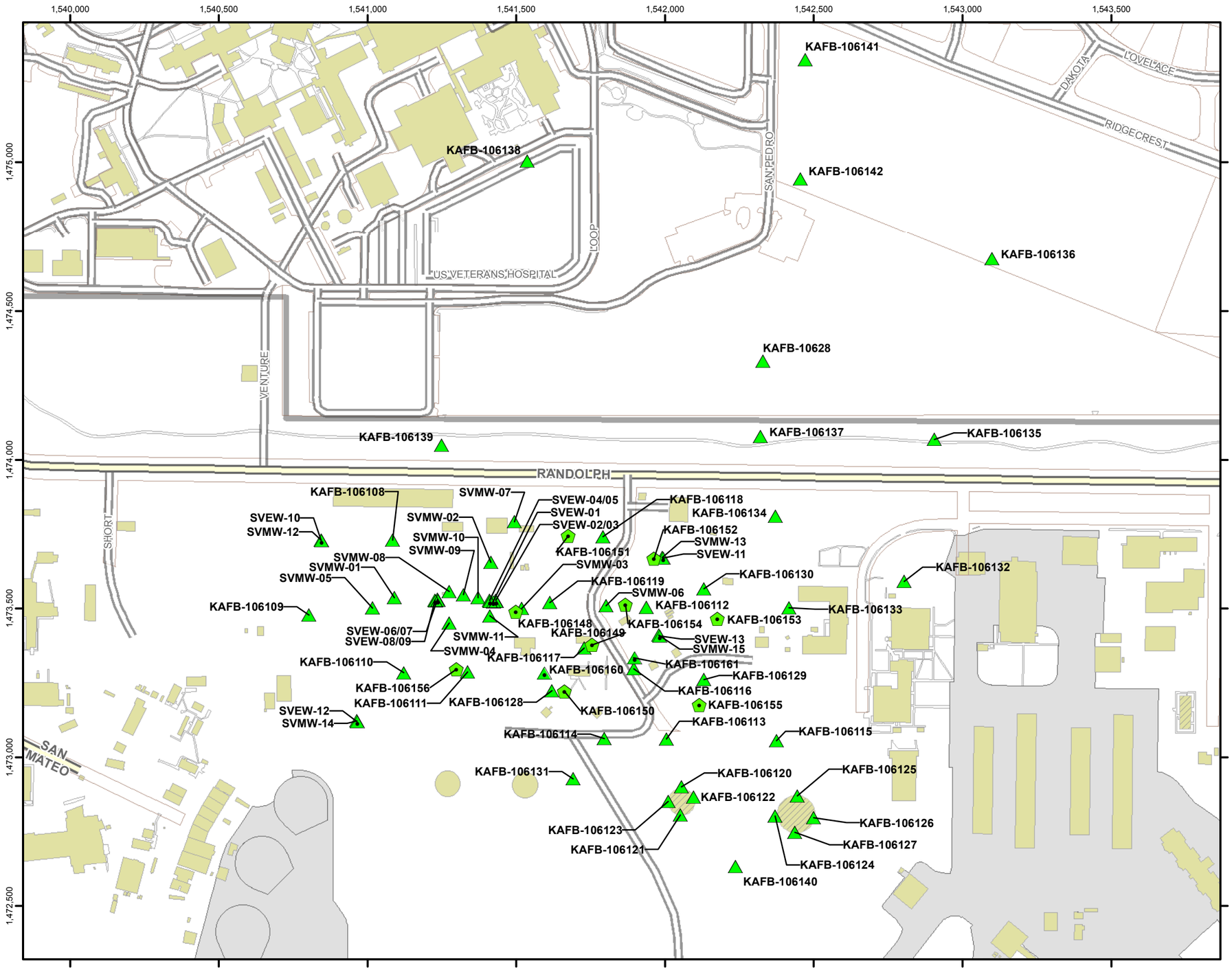
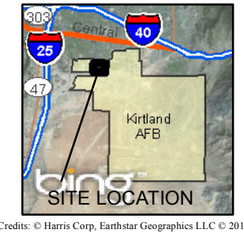


Legend

- Pneulog Cluster
- SVE Extraction Well
- SVM Cluster



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Revision Date: 08/19/12

N

0 175 350 700

Feet

1 inch = 350 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 3-2

SOIL VAPOR MONITORING LOCATIONS

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_043_SVE.mxd 08/19/12

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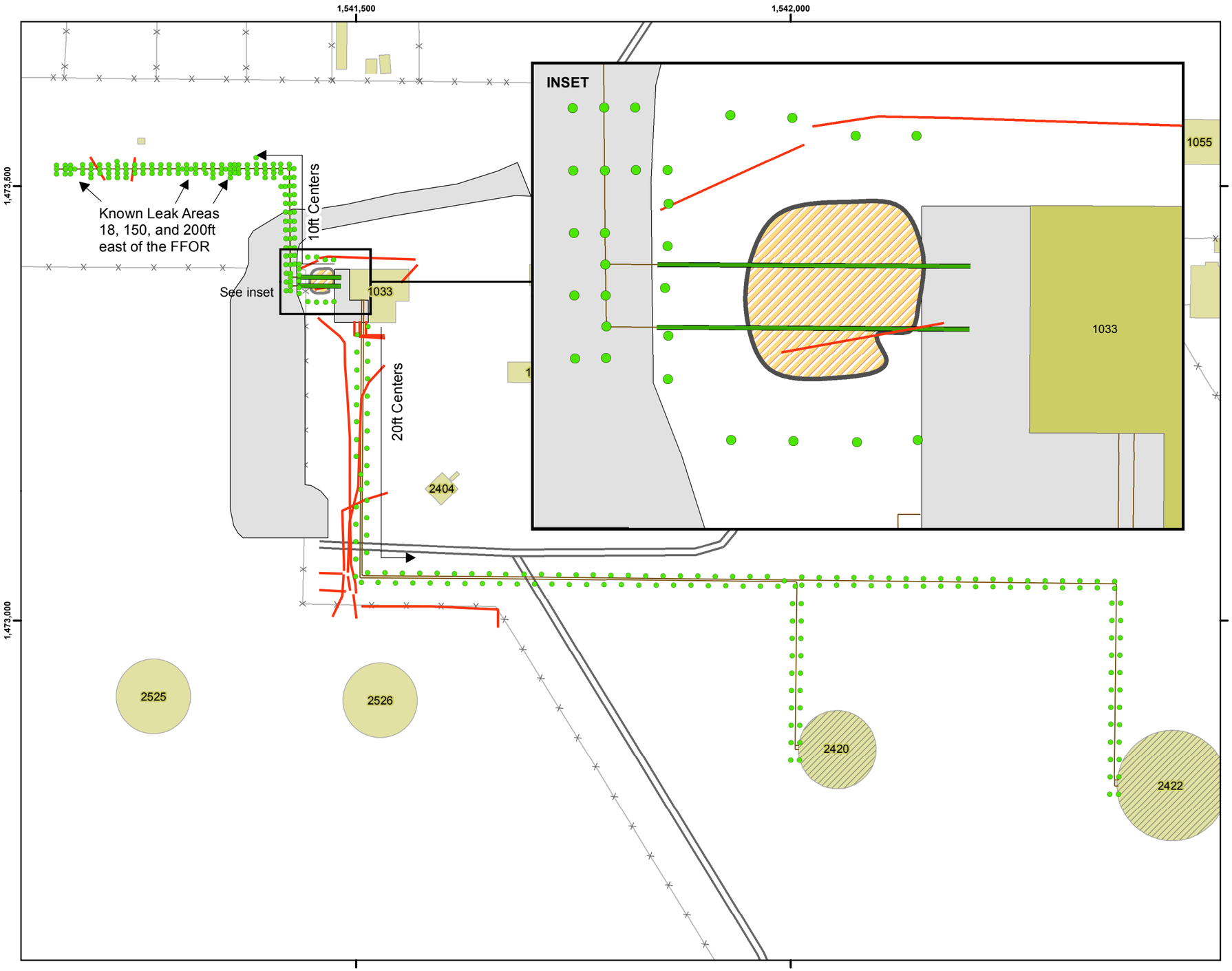
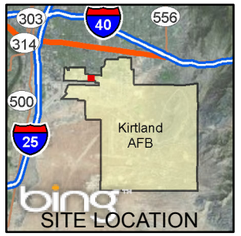


Legend

- Borehole
- Former Fuel Lines
- In-Place Fuel Lines
- Electric Utility Line
- Existing Excavation



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Revision Date: 08/29/12

N

0 60 120 240

Feet
1 inch = 120 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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BULK FUELS FACILITY
KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 3-3

FFOR BOREHOLE LOCATIONS

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_073_FFOR_locs.mxd 08/29/12

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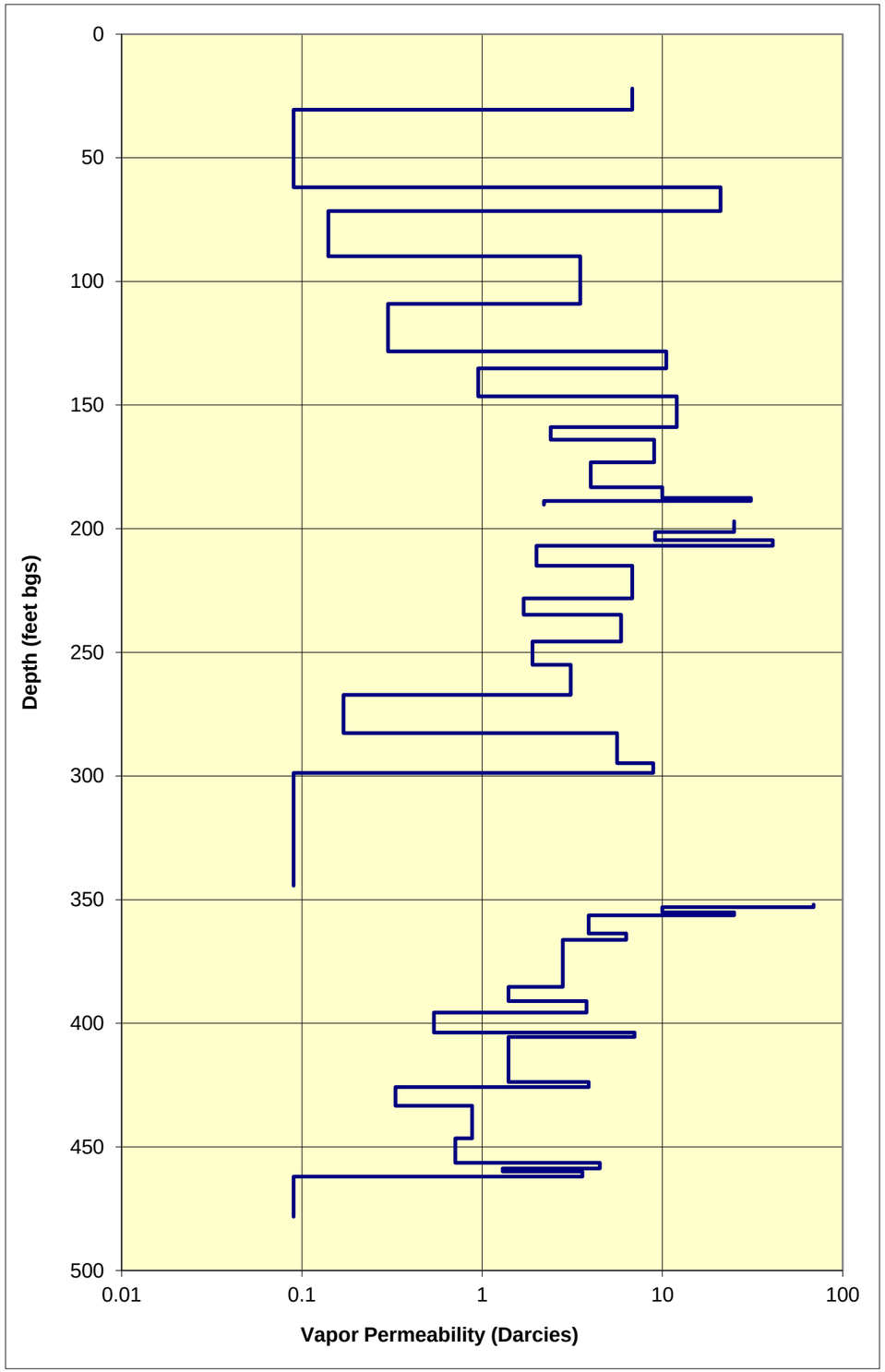

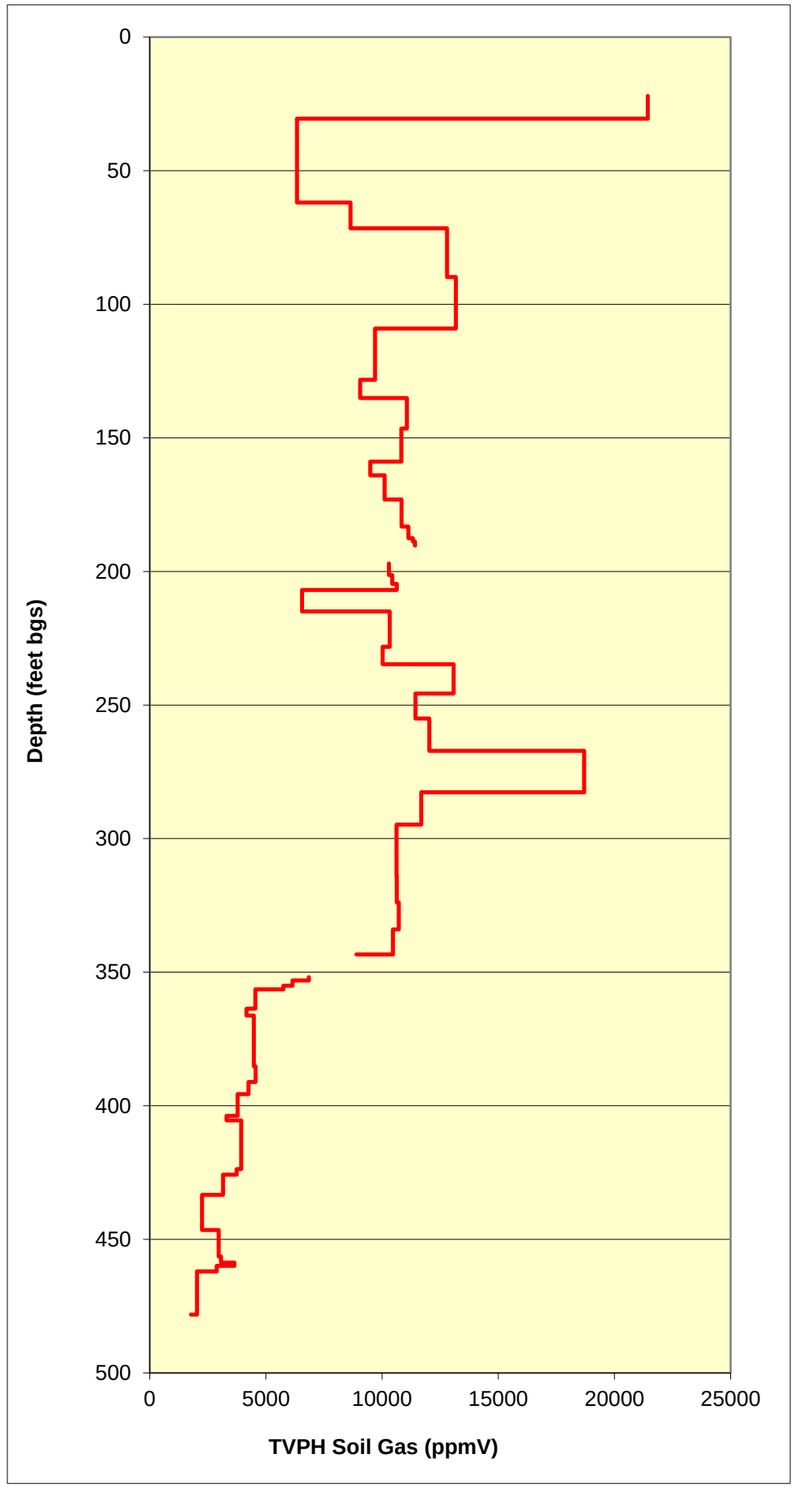

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BULK FUELS FACILITY
KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 3-4

COMPOSITE PNEULOG PROFILES
FROM BORING KAFB-106148

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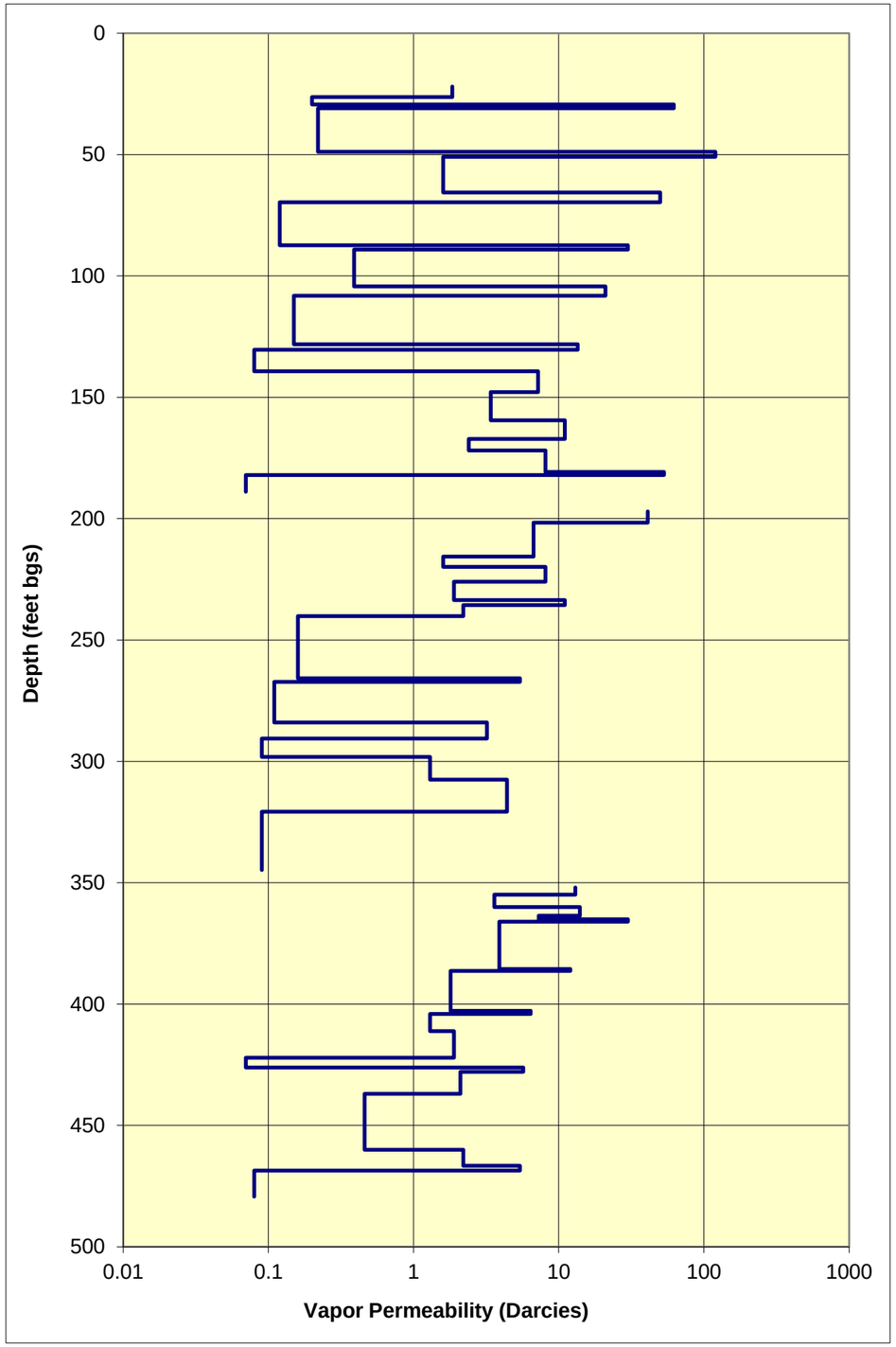

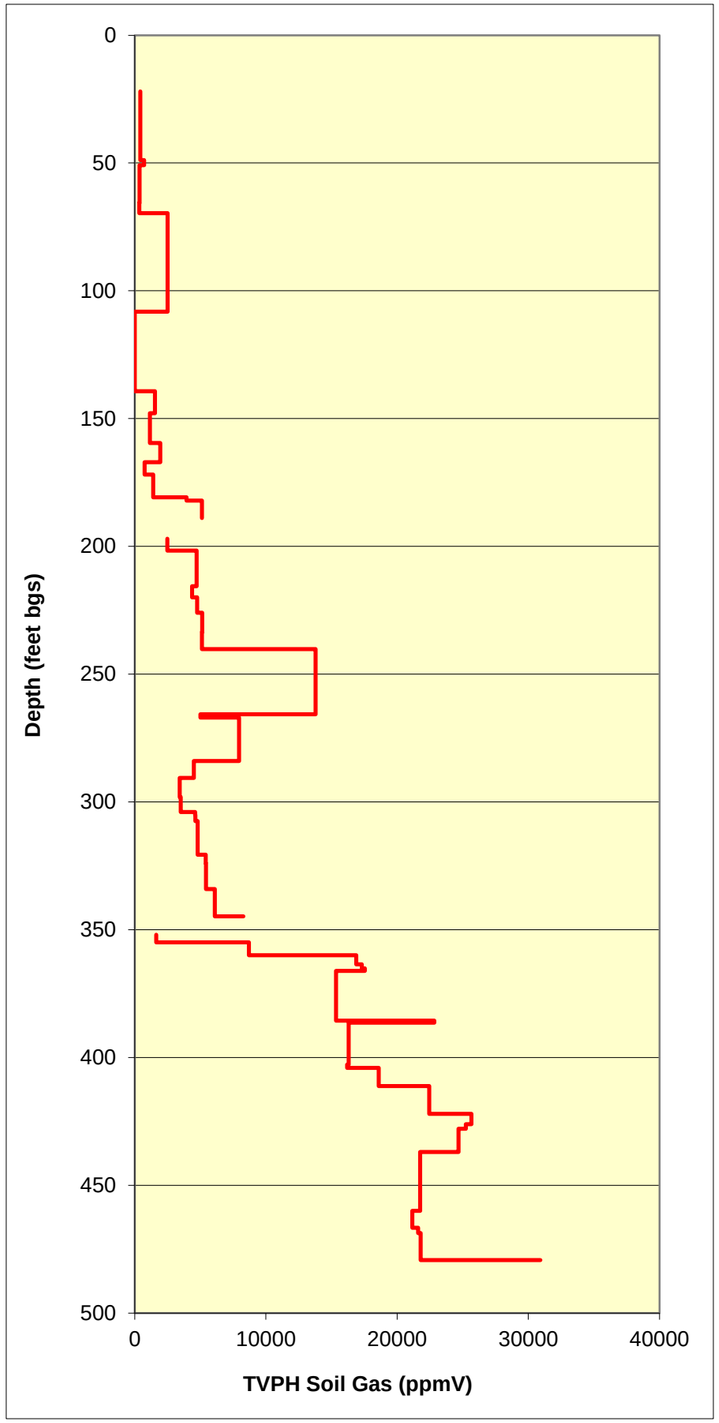

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BULK FUELS FACILITY
KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 3-5

COMPOSITE PNEULOG PROFILES
FROM BORING KAFB-106149

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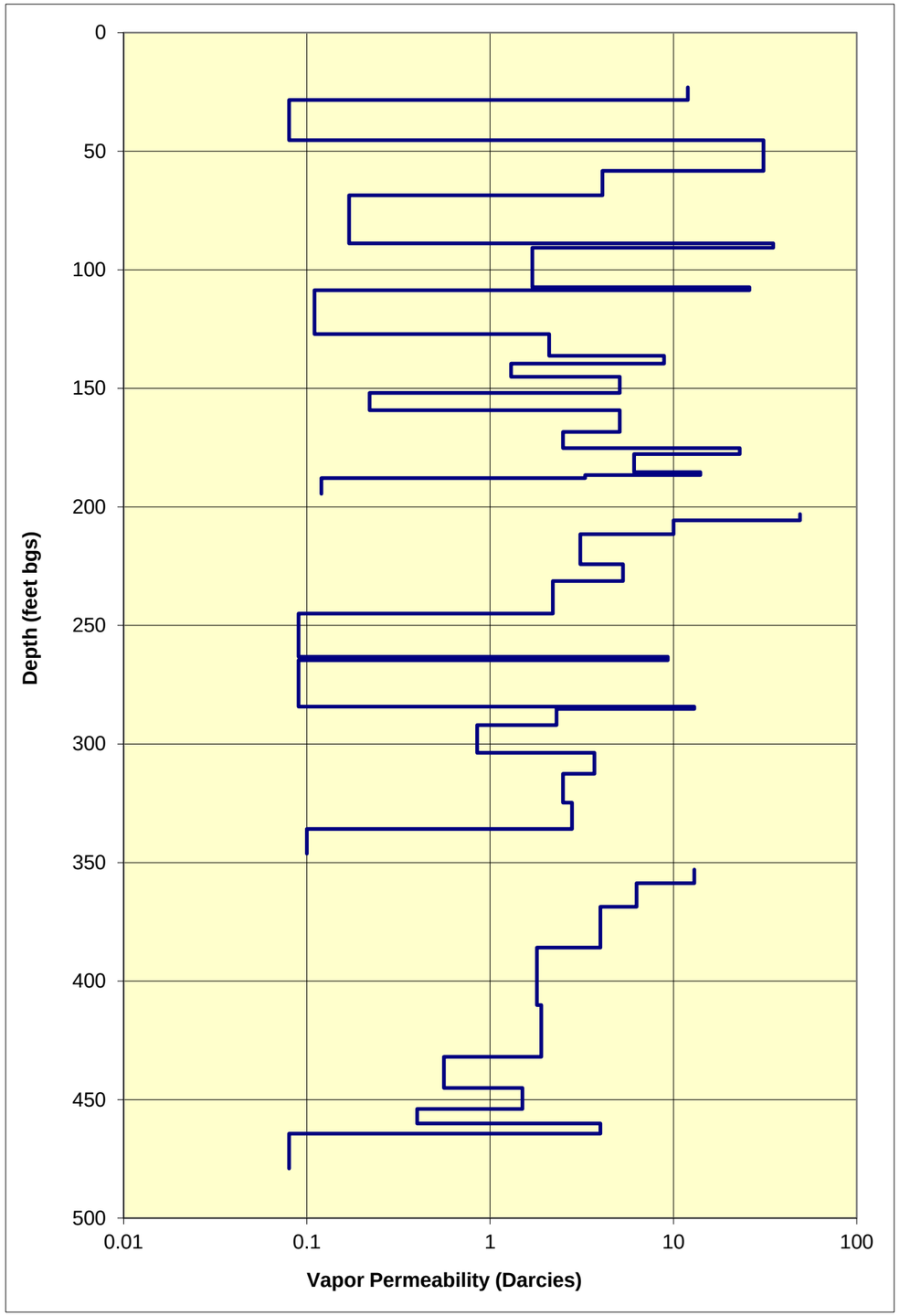

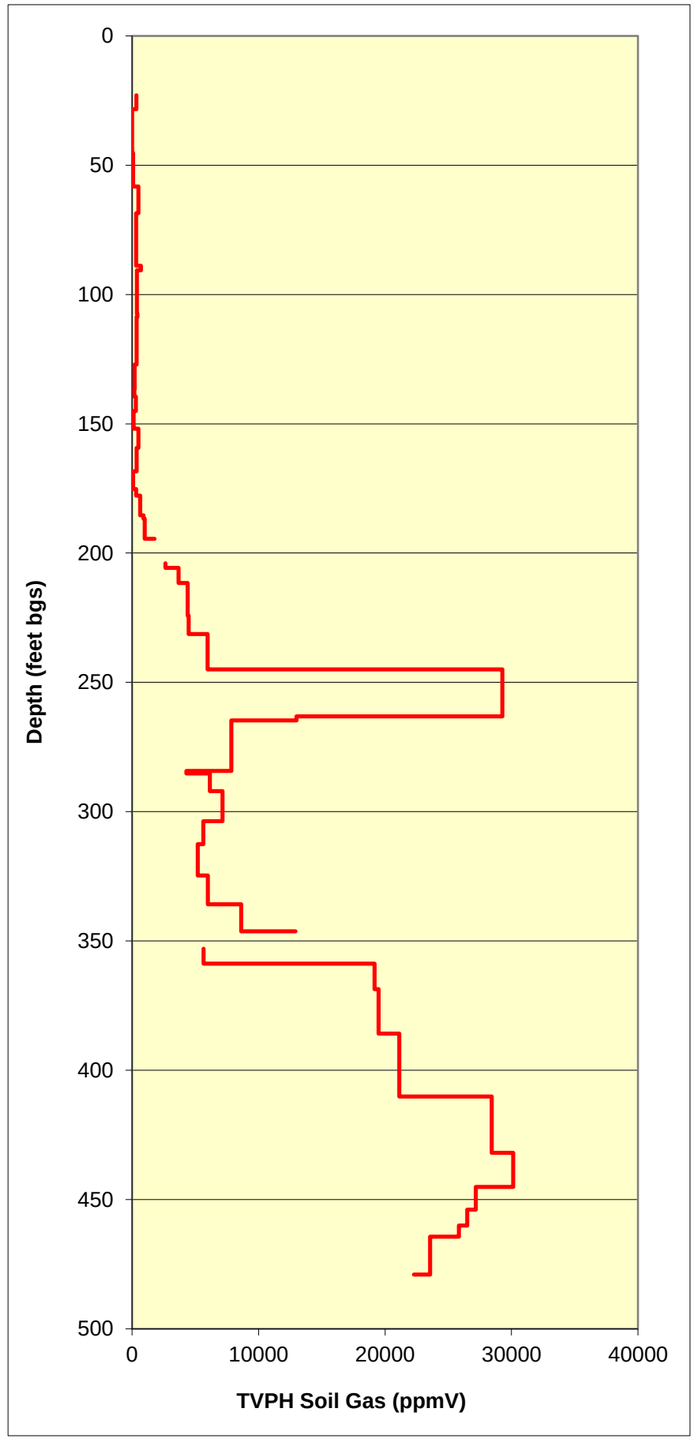

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BULK FUELS FACILITY
KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 3-6

COMPOSITE PNEULOG PROFILES
FROM BORING KAFB-106150

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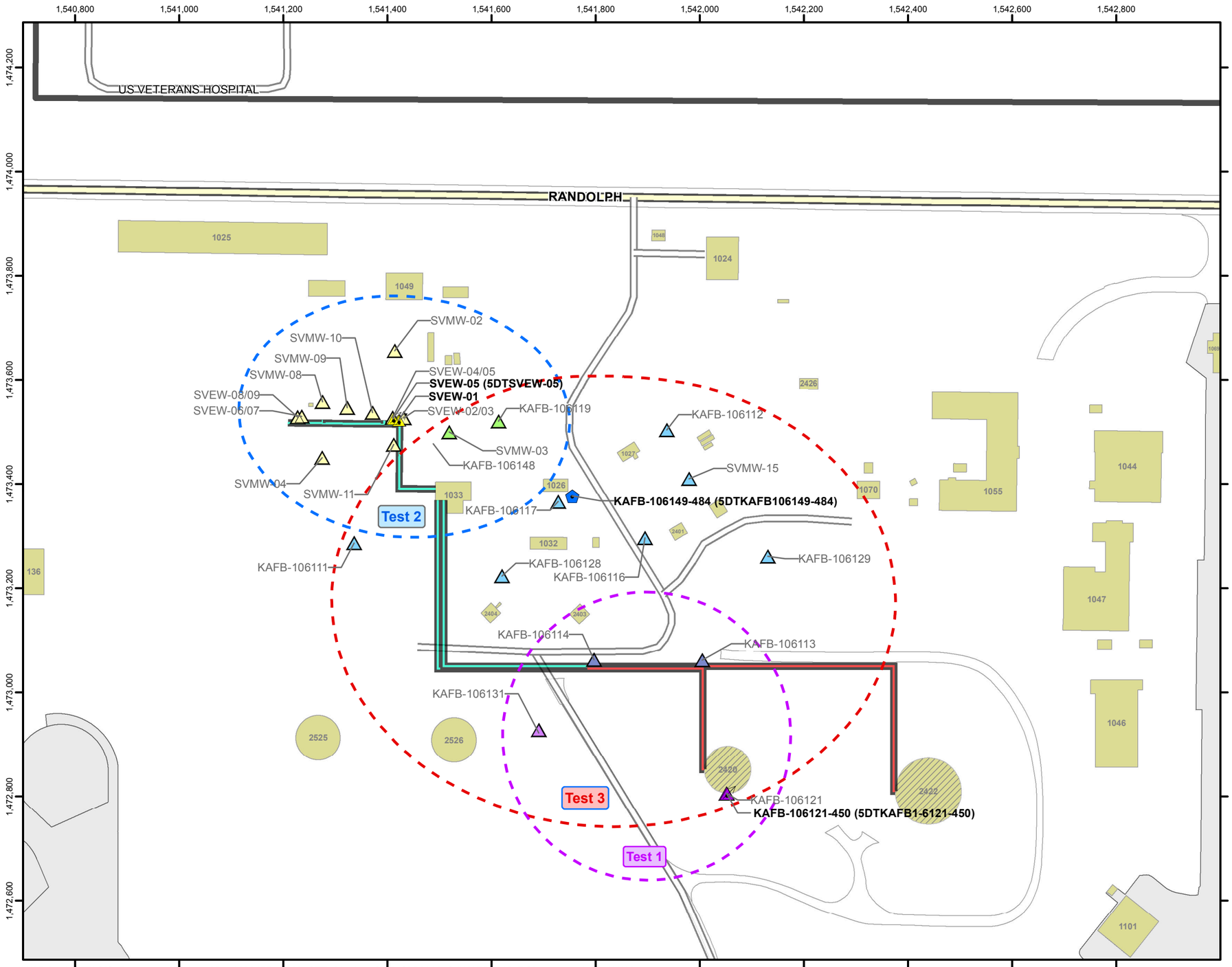
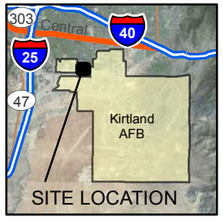


Legend

- Observation Well Cluster for ROI Test 1
- Extraction Well for ROI Test 1
- Observation Well Cluster for ROI Tests 1 and 3
- Observation Well Cluster for ROI Tests 2 and 3
- Extraction Well and Alternative for ROI Test 2
- Observation Pneulog Well for ROI Test 2
- Observation Well for ROI Test 2
- Extraction Well for ROI Test 3
- Observation Well Cluster for ROI Test 3
- Aboveground Fuel Transfer Lines
- Underground Fuel Transfer Lines
- Interstate
- Major Road
- Road
- Existing Structure
- Previously Existing Structure
- Runway
- Installation Boundary

Note:
Extraction wells for tests are labeled in **bold** font.
Observation wells for tests are labeled in regular font.



Revision Date: 03/16/11

N

0 100 200 400
Feet
1 inch = 200 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 3-7

RADIUS OF INFLUENCE TEST WELLS

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q1\KAFB_016_ROI_tests.mxd 04/11/12

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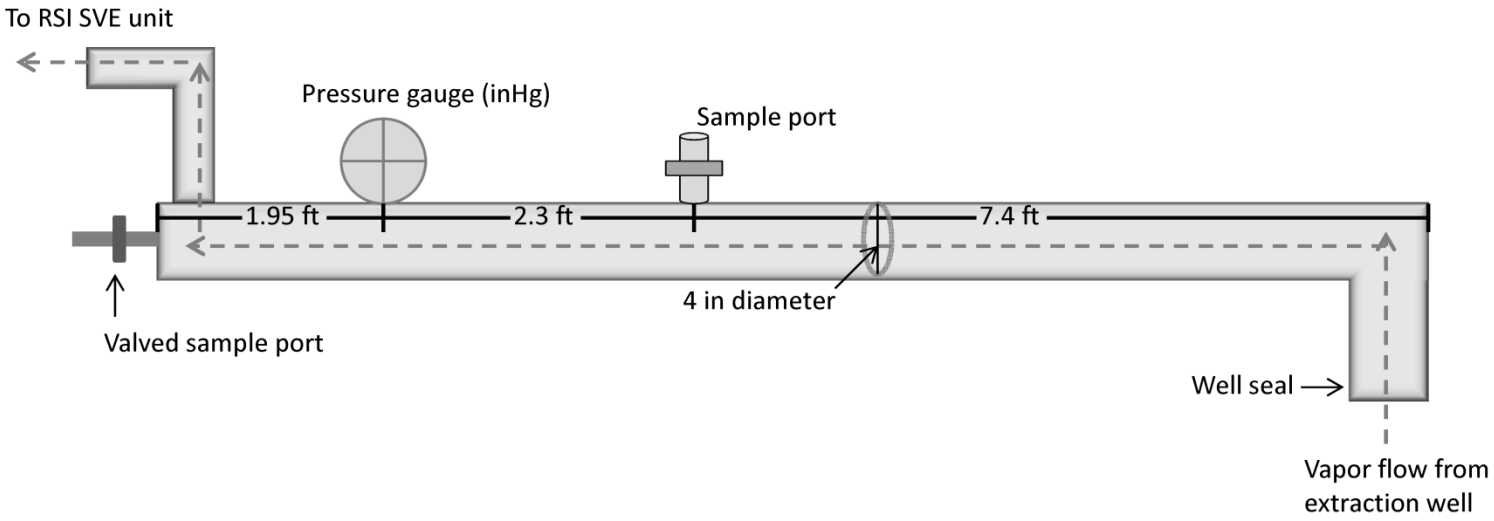

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FIGURE 3-8

TEST WELLHEAD SETUP
FOR USE WITH
RSI SVE UNIT 249

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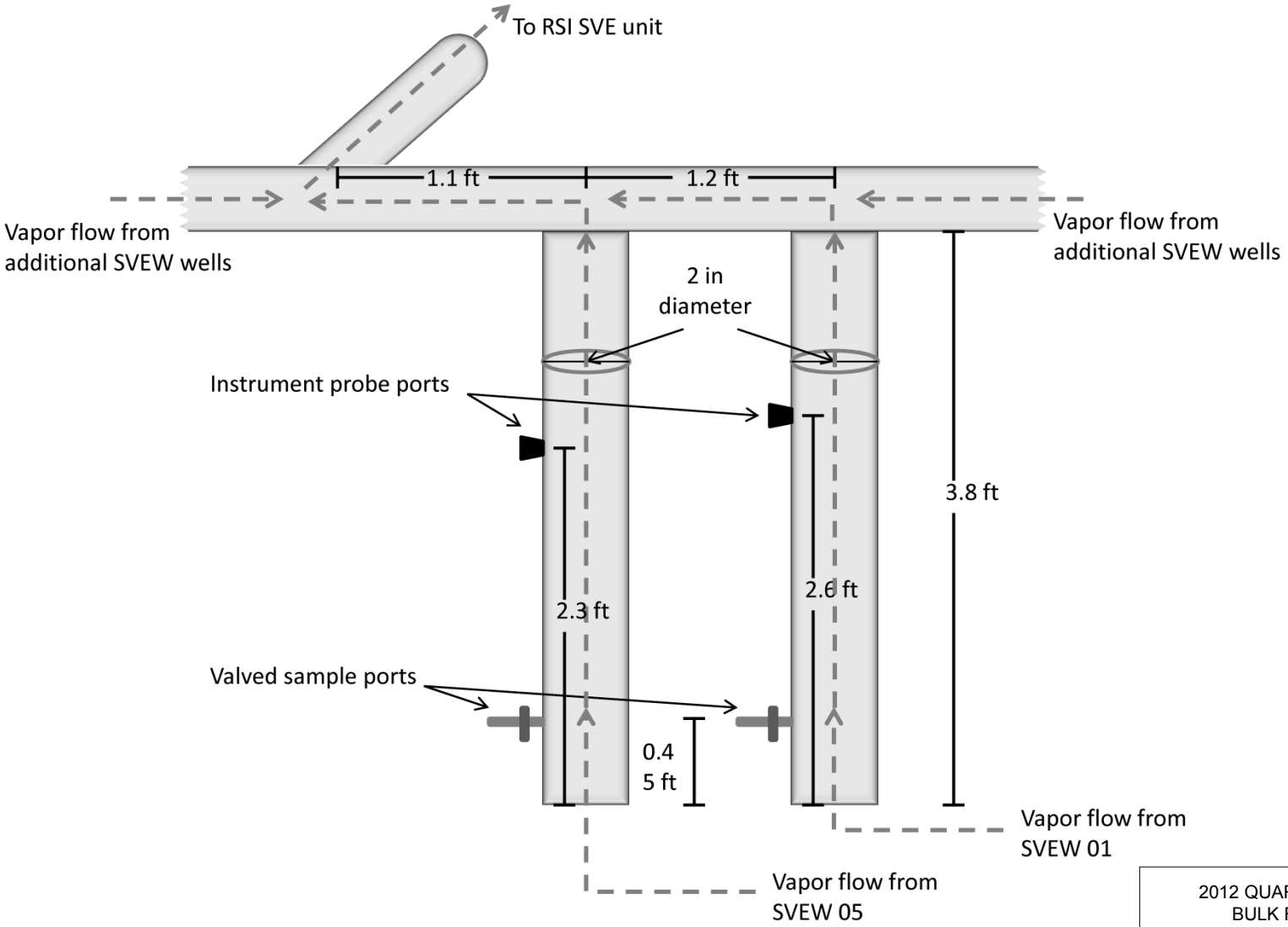

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FIGURE 3-9

WELLHEAD SETUP CONNECTED TO
WELLS SVEW-01
THROUGH SVEW-09

KAFB_052_well_const.ppt

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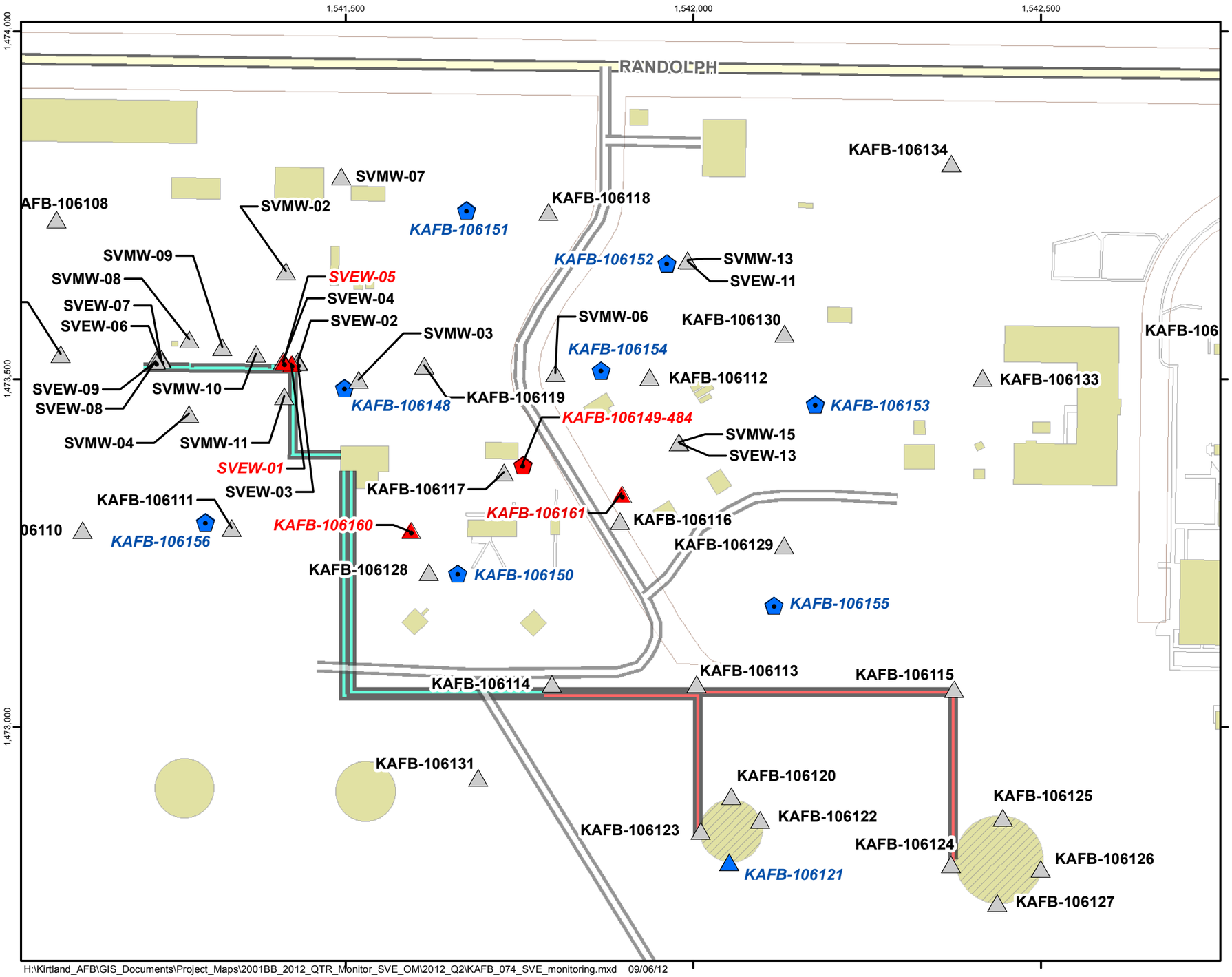
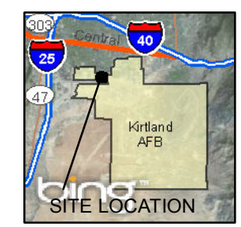


H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_074_SVE_monitoring.mxd 09/06/12

Legend

- Pneu Log Well Used as Extraction Well
- Active SVE Extraction Well
- Primary SVM Cluster
- Pneu Log
- SVE Extraction Well
- SVM Cluster

Note: Pneulog well KAFB-106149-484 is being used as an extraction well.



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Revision Date: 09/06/12

N

0 75 150 300

Feet

1 inch = 150 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 3-10

SVE REMEDIATION
MONITORING SYSTEM

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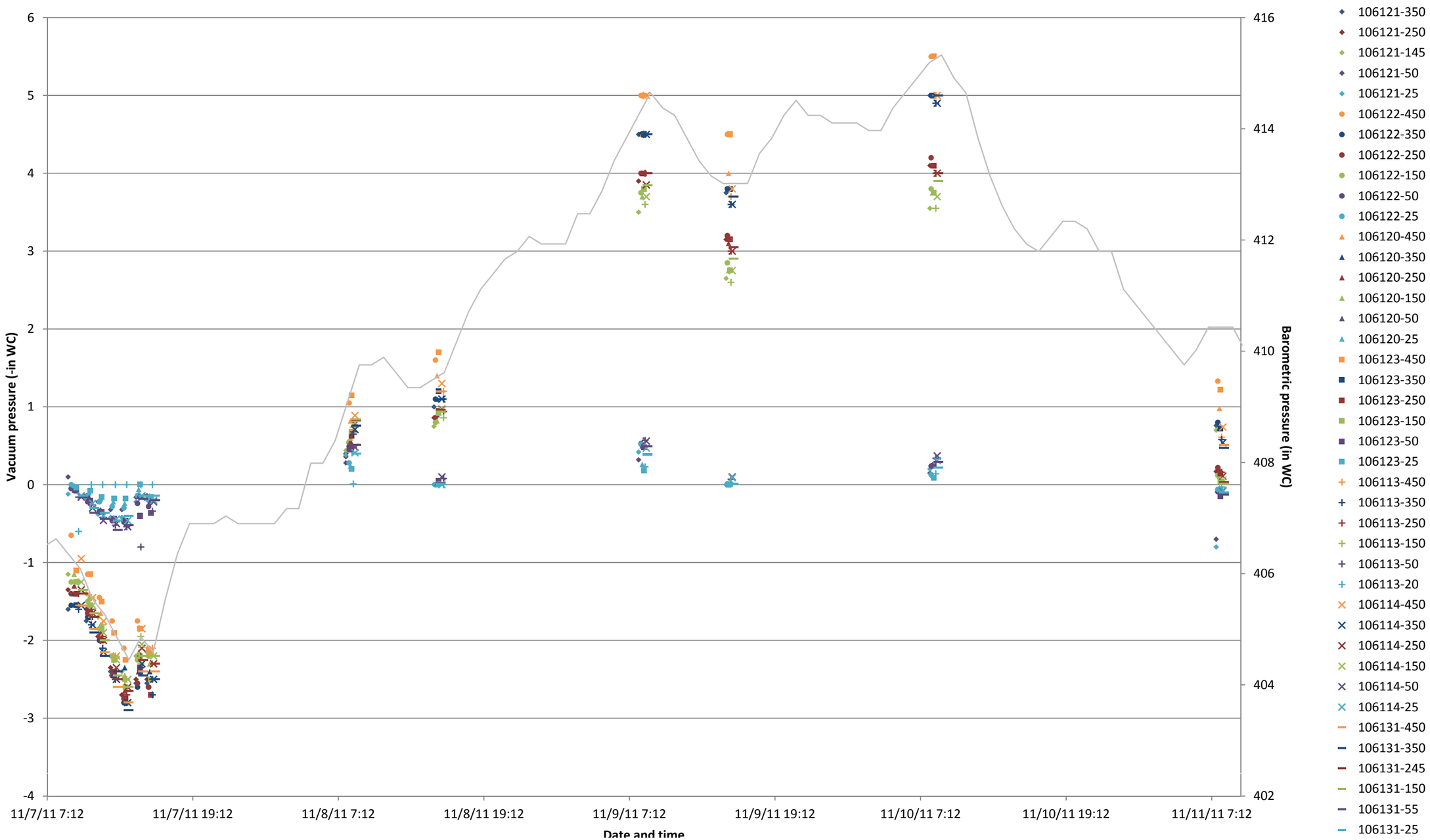
Figure 3-11: Vacuum Pressure in Monitoring Wells for Test 5DTKAFB106121-450



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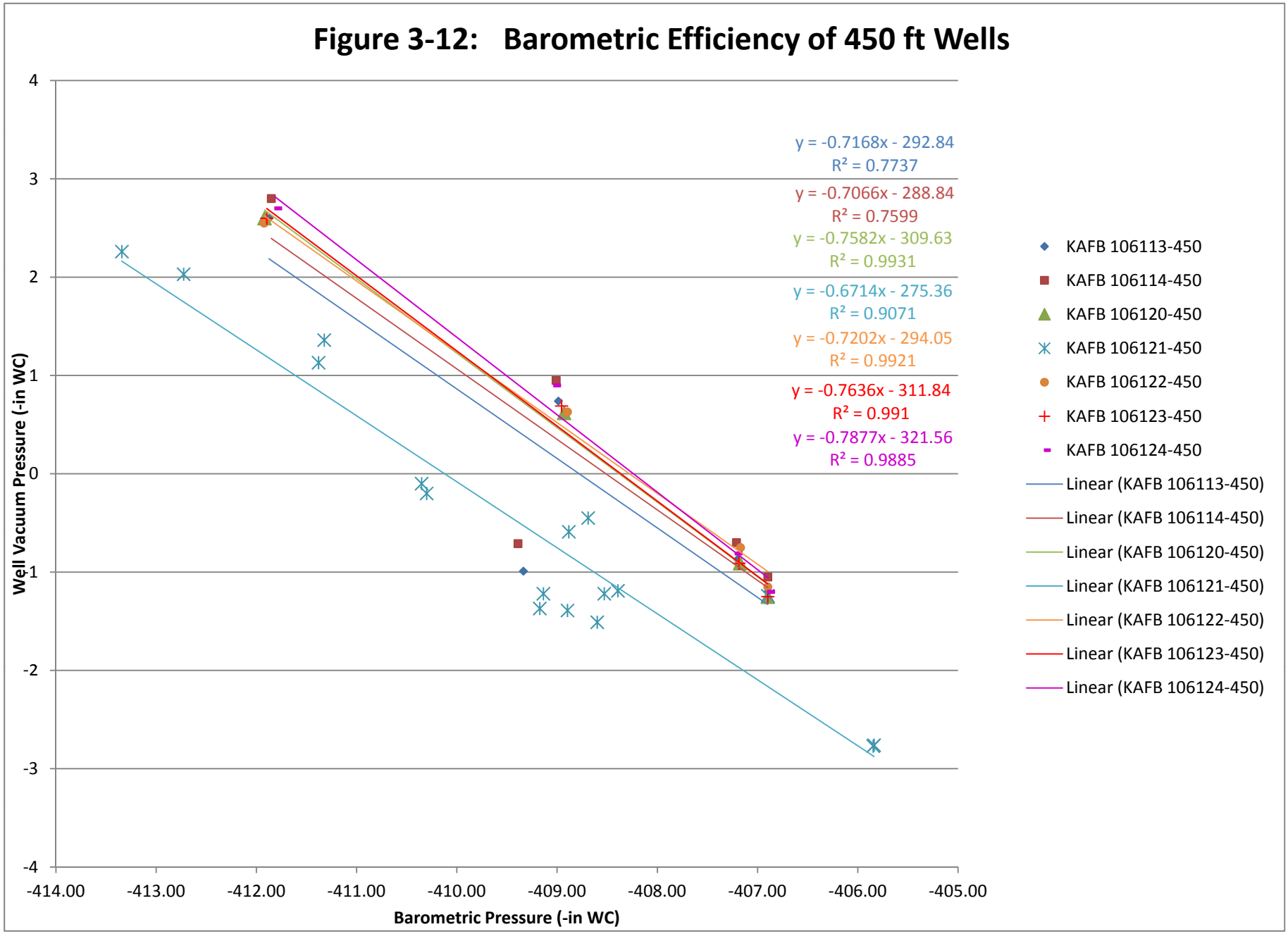
Figure 3-12: Barometric Efficiency of 450 ft Wells
y = -0.7168x - 292.84
R² = 0.7737
y = -0.7066x - 288.84
R² = 0.7599
y = -0.7582x - 309.63
R² = 0.9931
y = -0.6714x - 275.36
R² = 0.9071
y = -0.7202x - 294.05
R² = 0.9921
y = -0.7636x - 311.84
R² = 0.991
y = -0.7877x - 321.56
R² = 0.9885
KAFB 106113-450
KAFB 106114-450
KAFB 106120-450
KAFB 106121-450
KAFB 106122-450
KAFB 106123-450
KAFB 106124-450
Linear (KAFB 106113-450)
Linear (KAFB 106114-450)
Linear (KAFB 106120-450)
Linear (KAFB 106121-450)
Linear (KAFB 106122-450)
Linear (KAFB 106123-450)
Linear (KAFB 106124-450)
Well Vacuum Pressure (-in WC)
Barometric Pressure (-in WC)
4
3
2
1
0
-1
-2
-3
-4
-414.00
-413.00
-412.00
-411.00
-410.00
-409.00
-408.00
-407.00
-406.00
-405.00

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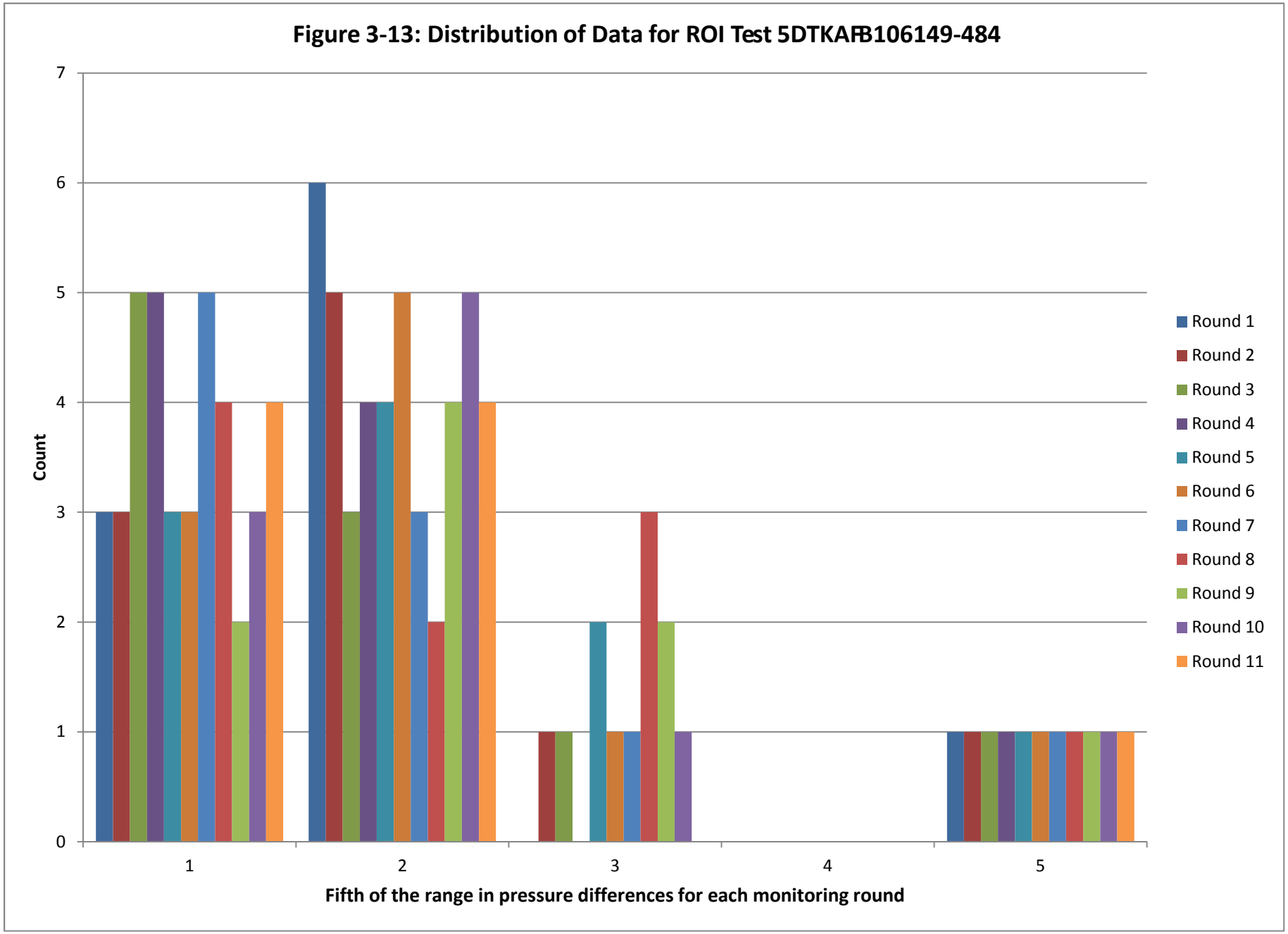
Figure 3-13: Distribution of Data for ROI Test 5DTKAFB106149-484
Count
0
1
2
3
4
5
6
7
1
2
3
4
5
Fifth of the range in pressure differences for each monitoring round
Round 1
Round 2
Round 3
Round 4
Round 5
Round 6
Round 7
Round 8
Round 9
Round 10
Round 11

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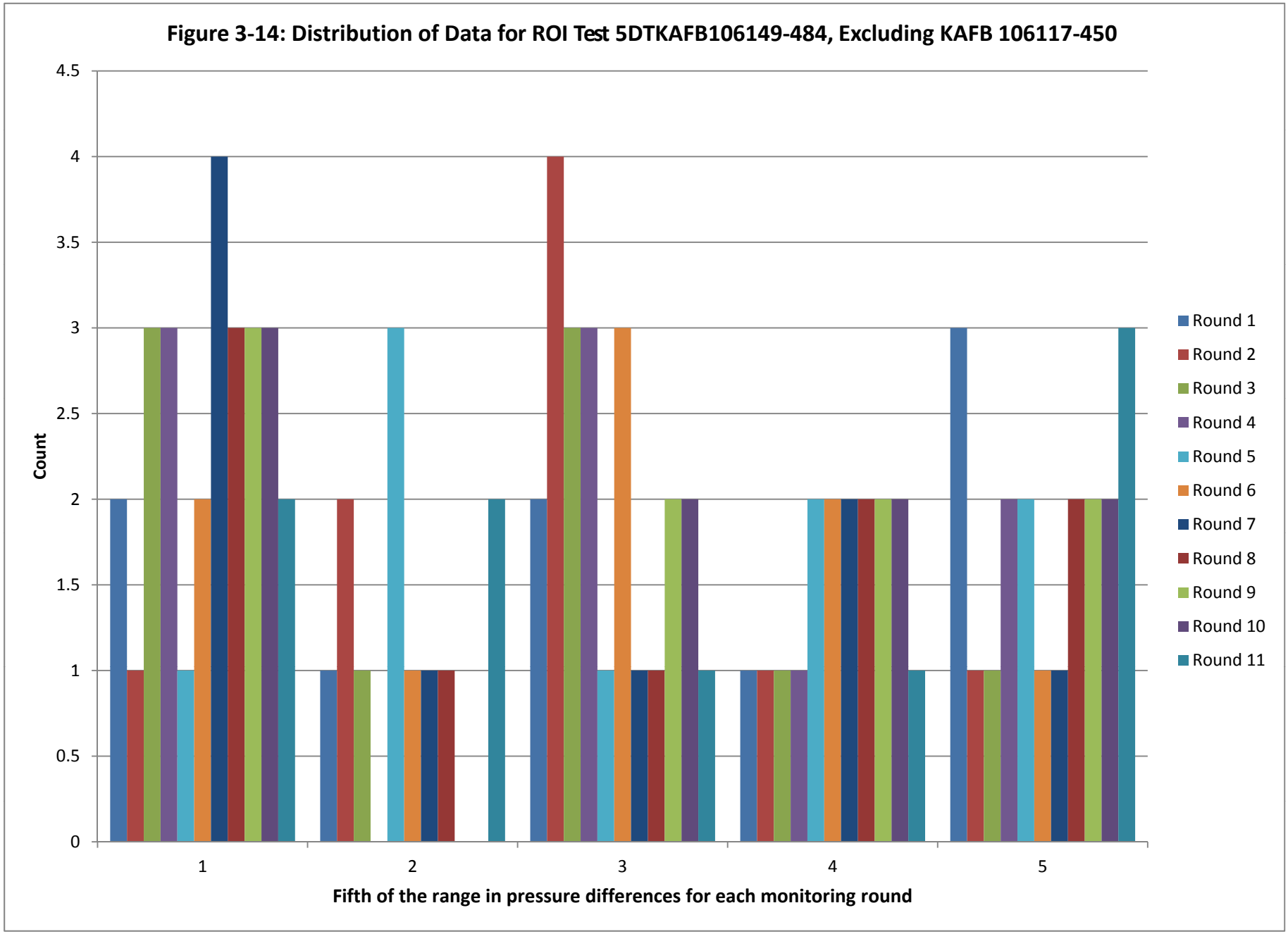
Figure 3-14: Distribution of Data for ROI Test 5DTKAFB106149-484, Excluding KAFB 106117-450
Count
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
1
2
3
4
5
Fifth of the range in pressure differences for each monitoring round
Round 1
Round 2
Round 3
Round 4
Round 5
Round 6
Round 7
Round 8
Round 9
Round 10
Round 11

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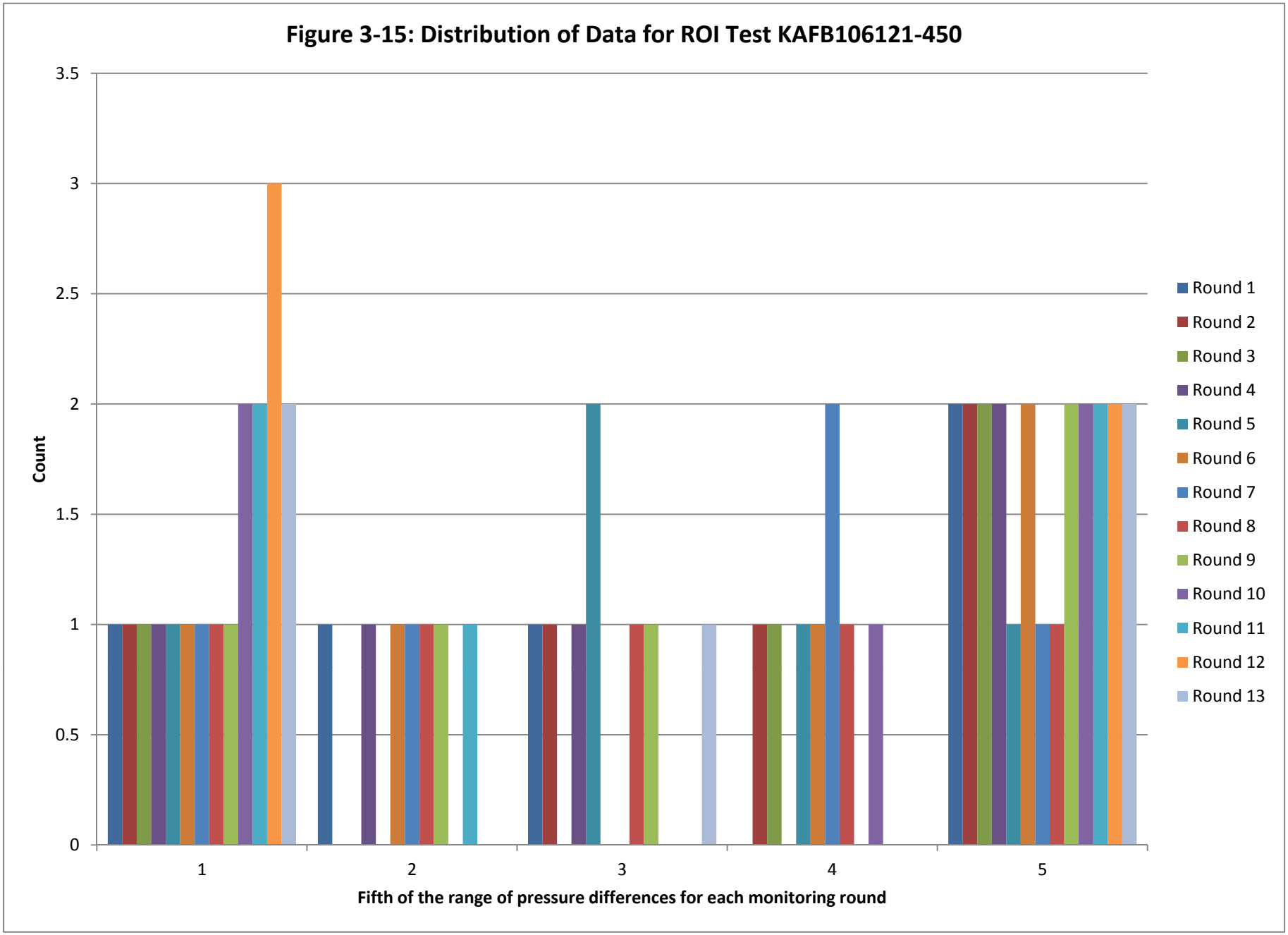
Figure 3-15: Distribution of Data for ROI Test KAFB106121-450
3.5
3
2.5
2
1.5
1
0.5
0
Count
1
2
3
4
5
Fifth of the range of pressure differences for each monitoring round
Round 1
Round 2
Round 3
Round 4
Round 5
Round 6
Round 7
Round 8
Round 9
Round 10
Round 11
Round 12
Round 13

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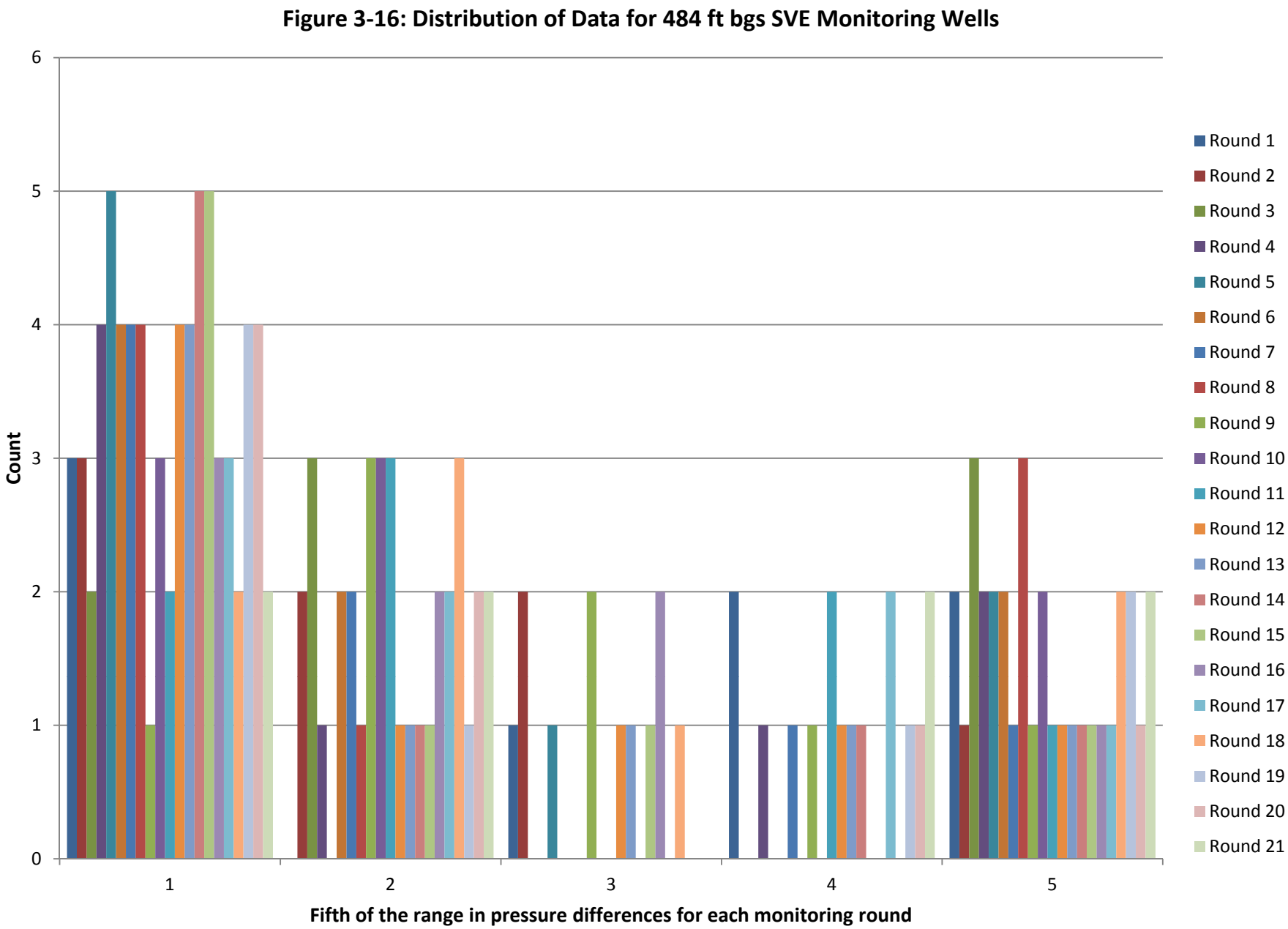
Figure 3-16: Distribution of Data for 484 ft bgs SVE Monitoring Wells
Count
0
1
2
3
4
5
6
1
2
3
4
5
Fifth of the range in pressure differences for each monitoring round
Round 1
Round 2
Round 3
Round 4
Round 5
Round 6
Round 7
Round 8
Round 9
Round 10
Round 11
Round 12
Round 13
Round 14
Round 15
Round 16
Round 17
Round 18
Round 19
Round 20
Round 21

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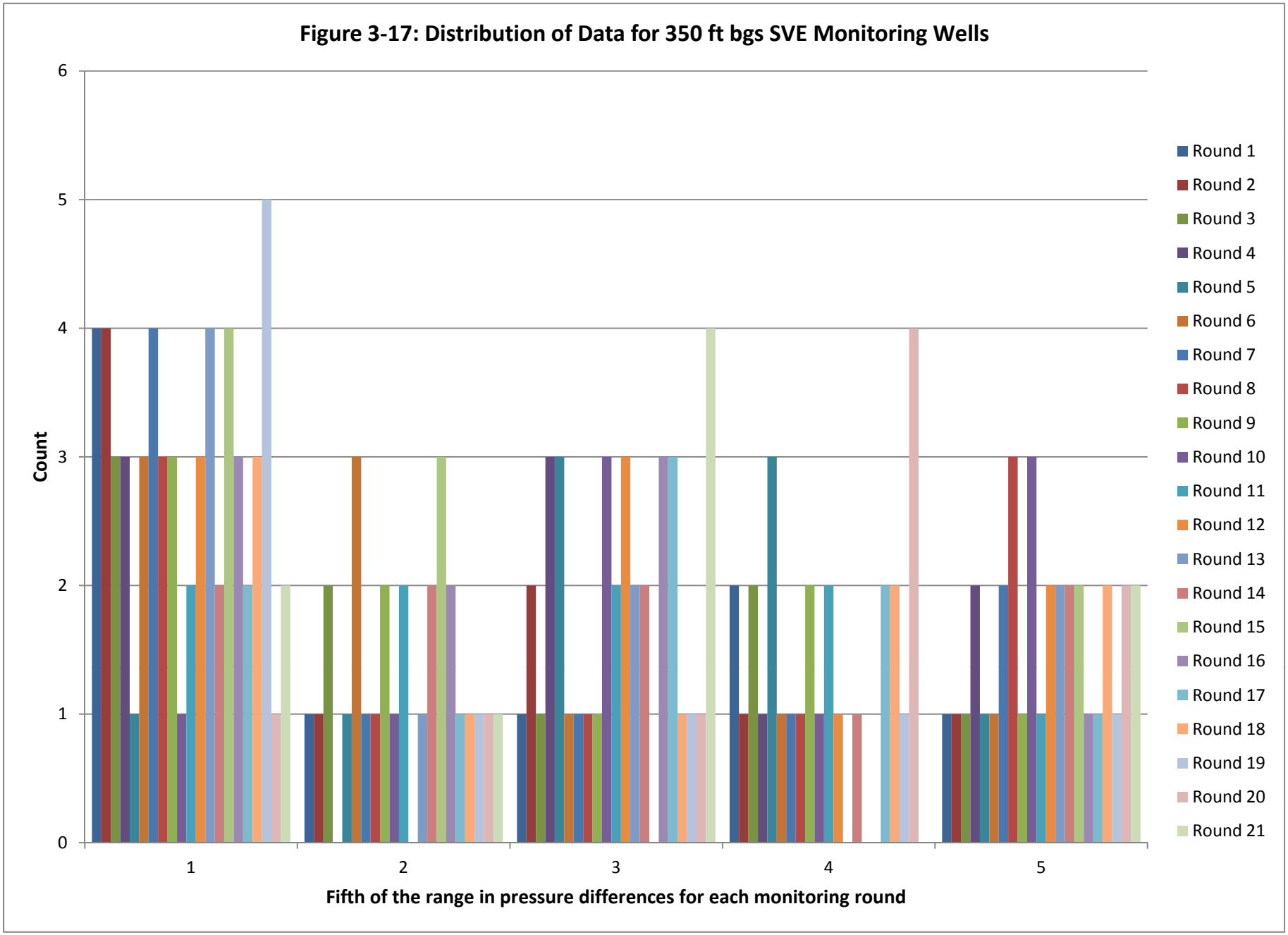
Figure 3-17: Distribution of Data for 350 ft bgs SVE Monitoring Wells
Count
0
1
2
3
4
5
6
1
2
3
4
5
Fifth of the range in pressure differences for each monitoring round
Round 1
Round 2
Round 3
Round 4
Round 5
Round 6
Round 7
Round 8
Round 9
Round 10
Round 11
Round 12
Round 13
Round 14
Round 15
Round 16
Round 17
Round 18
Round 19
Round 20
Round 21

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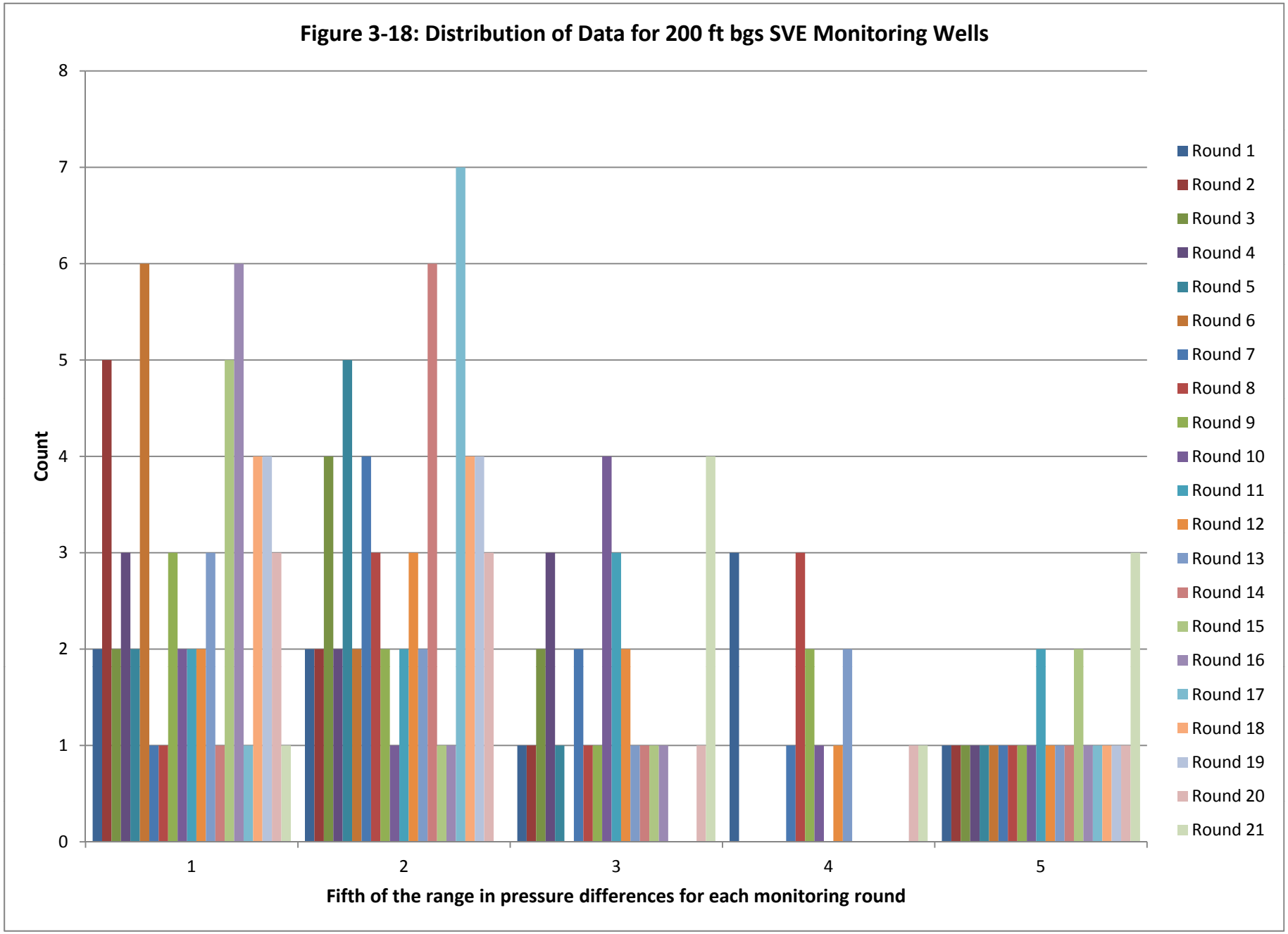
Figure 3-18: Distribution of Data for 200 ft bgs SVE Monitoring Wells
Count
0
1
2
3
4
5
6
7
8
1
2
3
4
5
Fifth of the range in pressure differences for each monitoring round
Round 1
Round 2
Round 3
Round 4
Round 5
Round 6
Round 7
Round 8
Round 9
Round 10
Round 11
Round 12
Round 13
Round 14
Round 15
Round 16
Round 17
Round 18
Round 19
Round 20
Round 21

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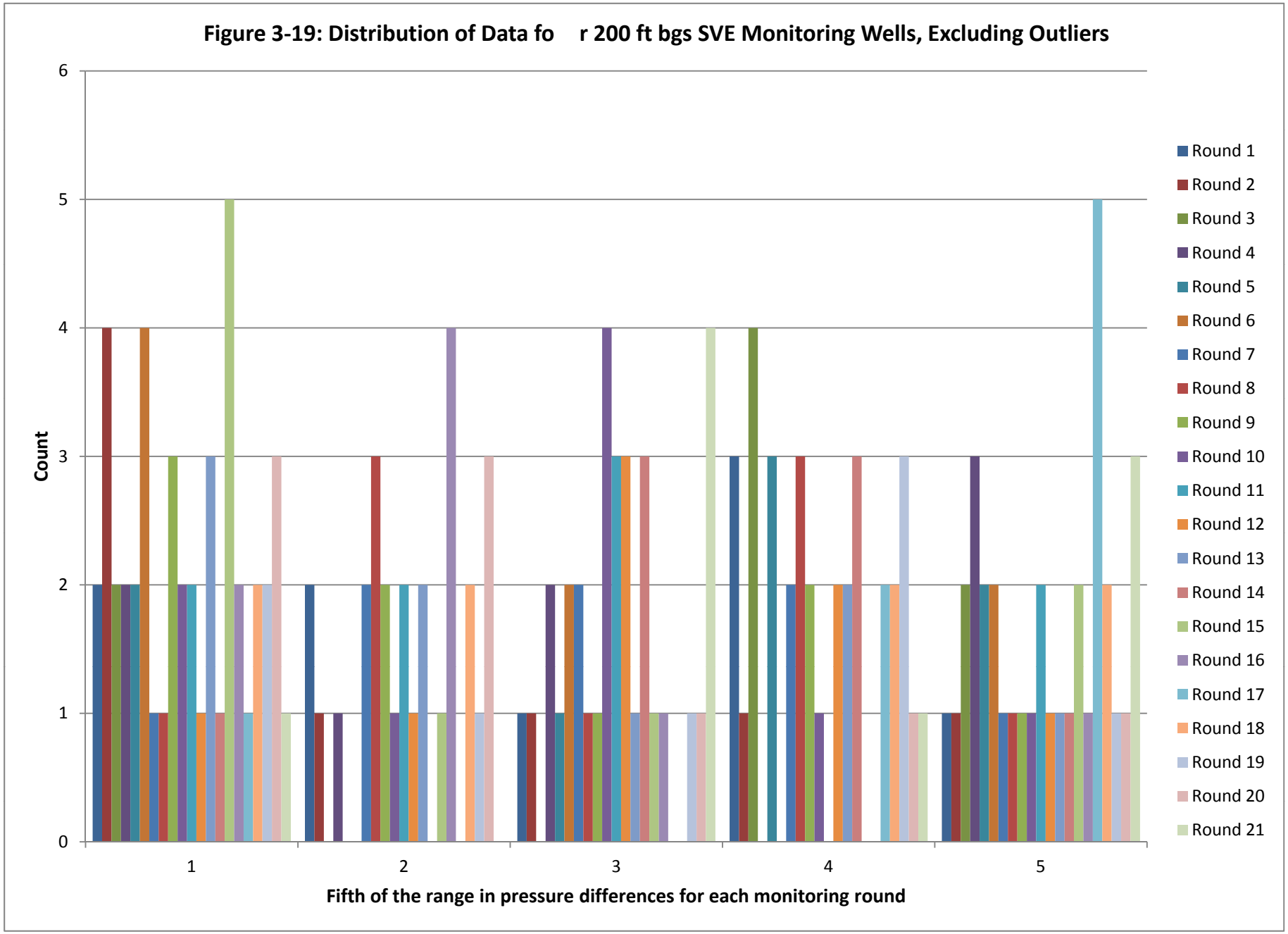
Figure 3-19: Distribution of Data fo r 200 ft bgs SVE Monitoring Wells, Excluding Outliers
Count
0
1
2
3
4
5
6
1
2
3
4
5
Fifth of the range in pressure differences for each monitoring round
Round 1
Round 2
Round 3
Round 4
Round 5
Round 6
Round 7
Round 8
Round 9
Round 10
Round 11
Round 12
Round 13
Round 14
Round 15
Round 16
Round 17
Round 18
Round 19
Round 20
Round 21

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SECTION 4 FIGURES

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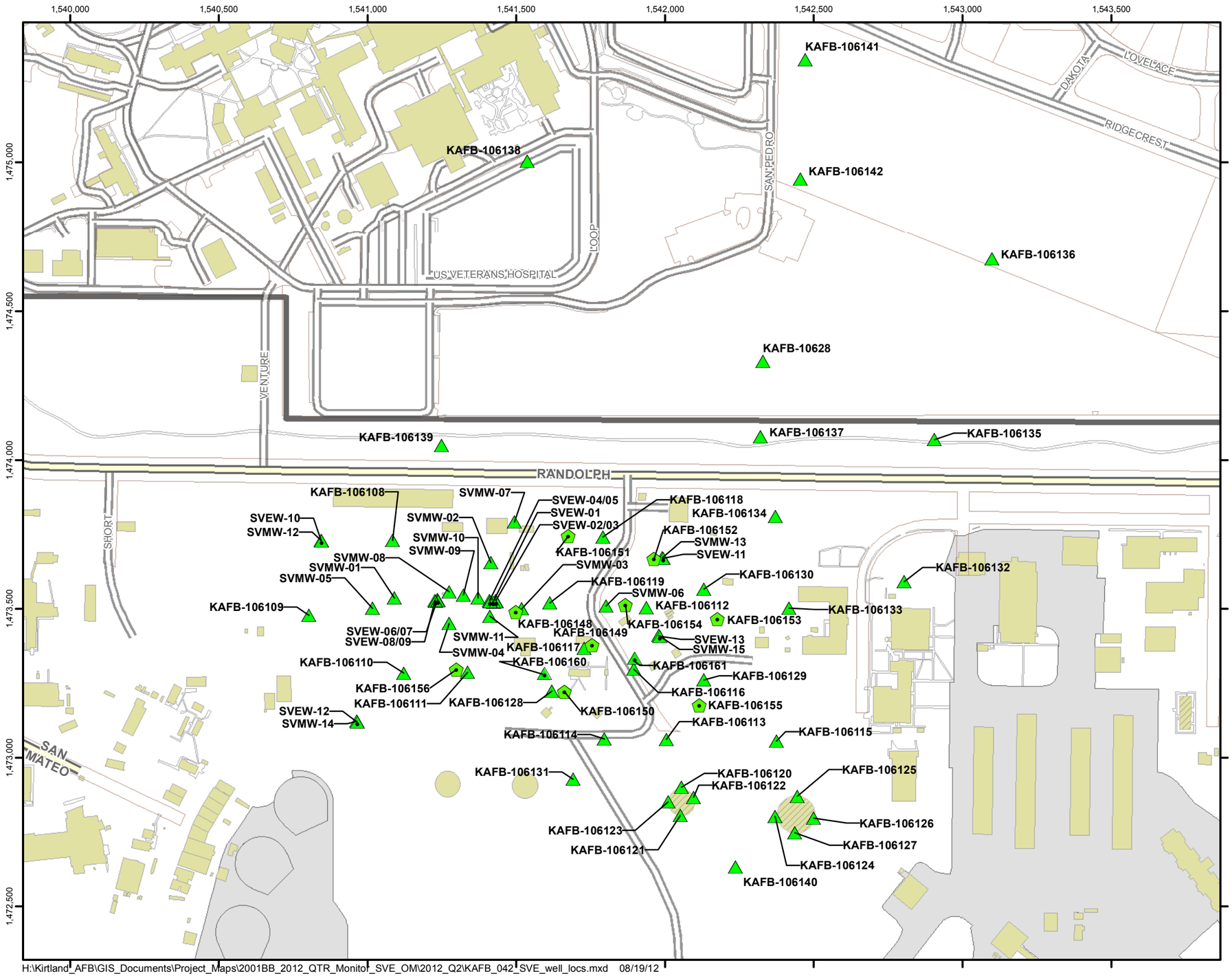
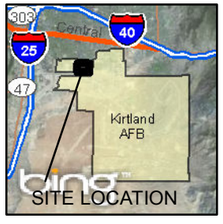


H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_042_SVE_well_locs.mxd 08/19/12

Legend

- Pneulog Cluster
- SVE Extraction Well
- SVM Cluster



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N

0 175 350 700

Feet

1 inch = 350 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 4-1

SVE AND SVM
WELL LOCATIONS

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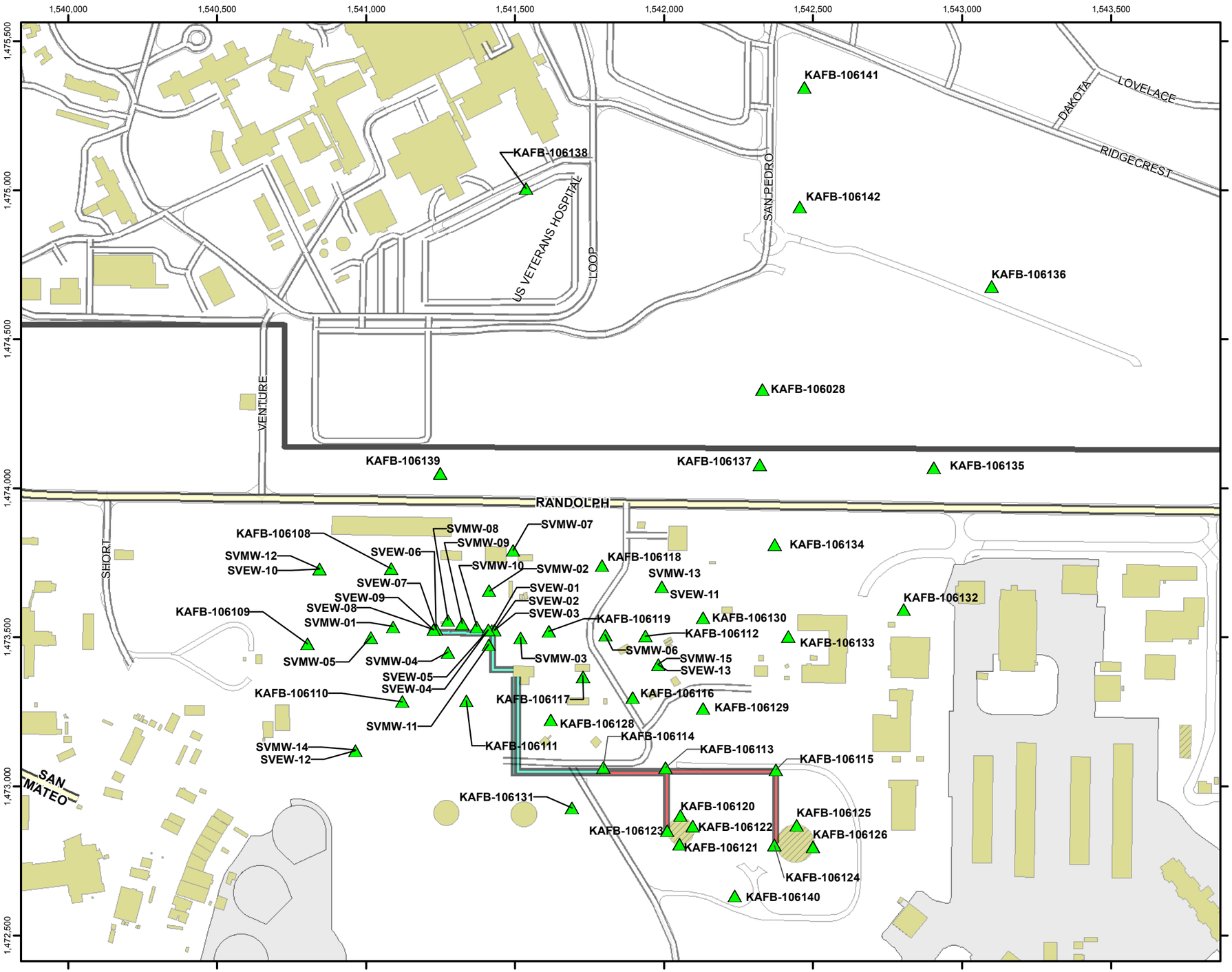
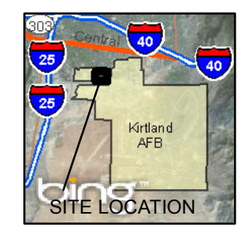


Legend

SVE/SVM Well



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N

0 175 350 700

Feet

1 inch = 350 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 4-2

VOC VAPOR
SAMPLE LOCATIONS

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_044_VOC_vapor_locs.mxd 08/19/12

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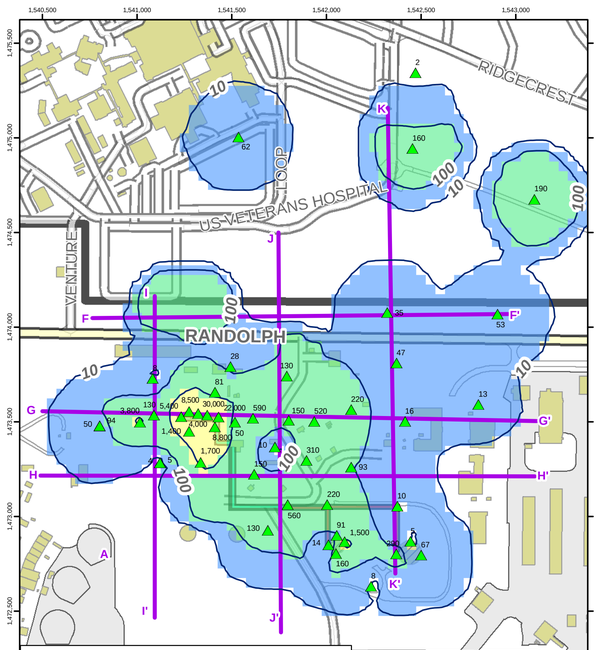
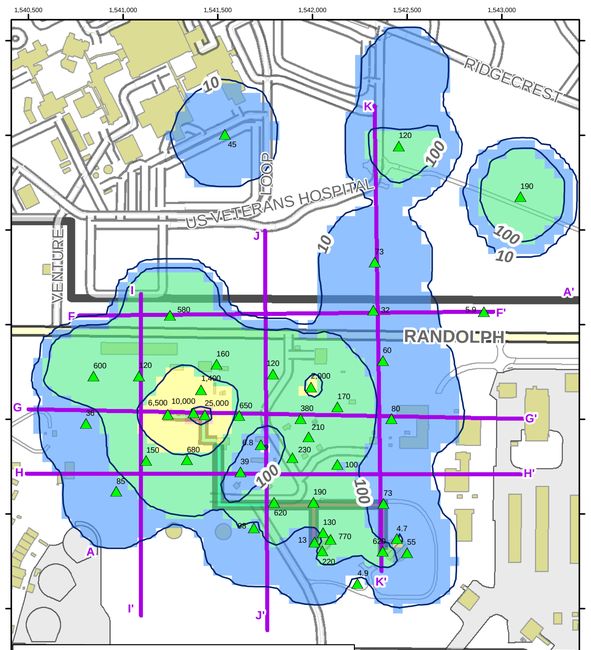
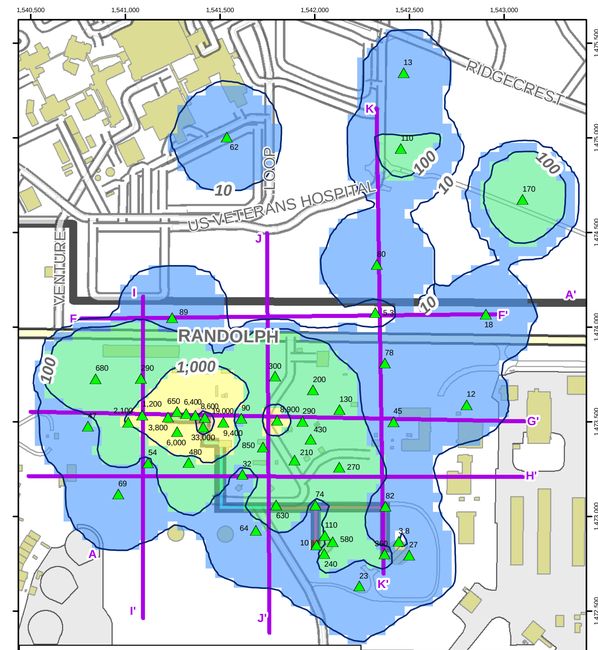


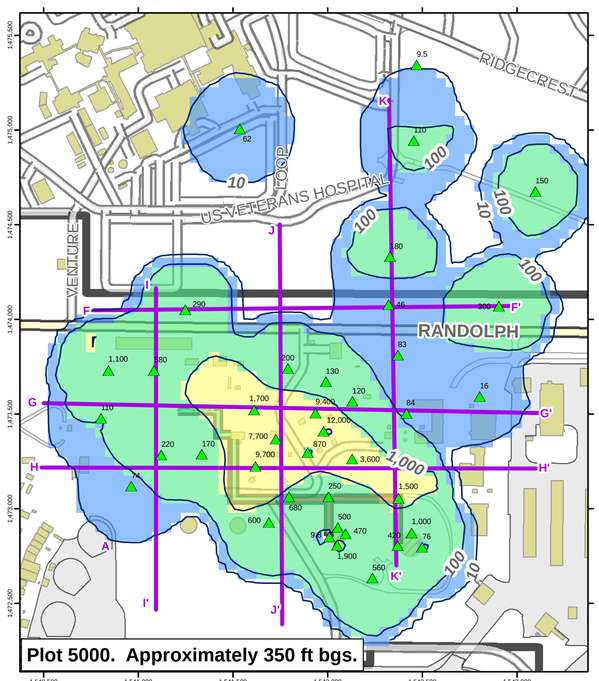
Plot 5300. Approximately 50 ft bgs.



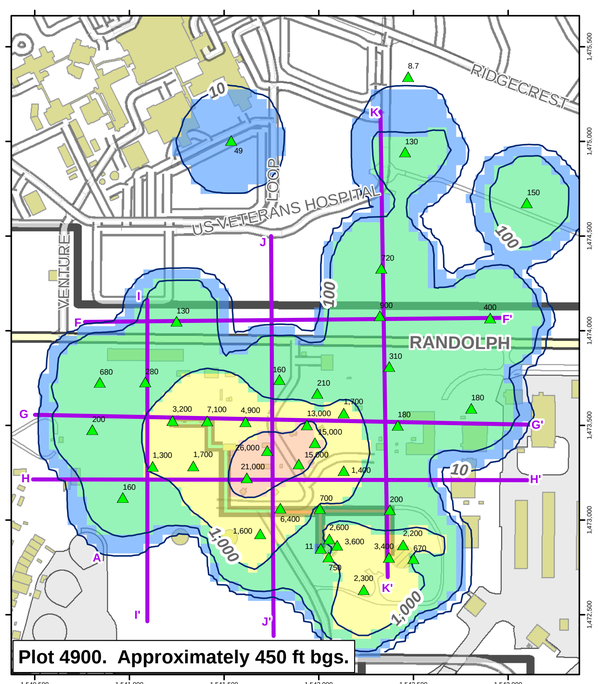
Plot 5200. Approximately 150 ft bgs.



Plot 5100. Approximately 250 ft bgs.



Plot 5000. Approximately 350 ft bgs.



Plot 4900. Approximately 450 ft bgs.

Note:
The vadose zone VOC plume was gridded in three dimensions using inverse distance weighting in RockWorks and then concentration plan-view maps were "cut" at respective elevations. Ground elevations range from 5314 to 5364 ft above mean sea level across the ST-106/SS-111 investigation area.

SVE well locations are presented with the total vapor VOC concentration in ppmv for each elevation. Sample results within 25 ft of the elevation are posted. For example, plot 5000 includes sample results within the 5025 to 4075 ft interval. Locations are not shown at elevations where there is no sample result for the elevation interval.

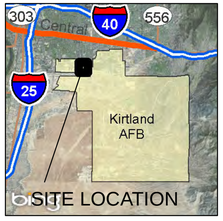
See Figure 4-2 for SVE well locations with ID numbers.

Legend

- SVE/SVM Well with Vapor VOC Concentration (ppmv)
- VOC Concentration Contours (ppmv)

VOC Concentration (ppmv)

- 1 - 10
- 11 - 100
- 110 - 1,000
- 1,100 - 10,000
- 11,000 - 41,000
- Cross-Section Line



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N

0 400 800 1,600

Feet

1 inch = 400 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 4-3

TOTAL VOC VAPOR PLUME FOOTPRINTS BY ELEVATION
JUNE 2012

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_058_Lab_VOC_plan_Dsize.mxd 08/24/12

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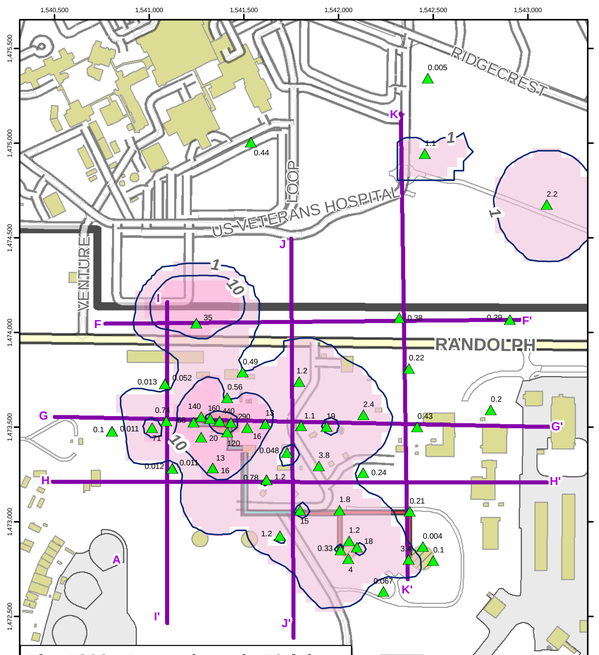
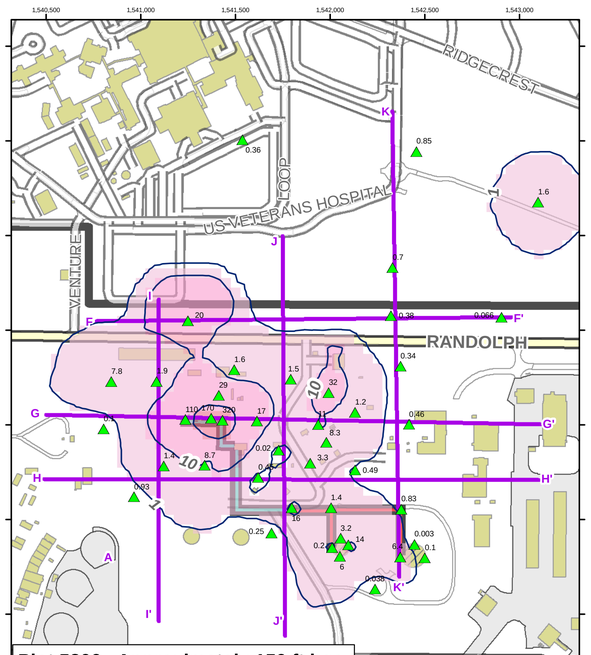
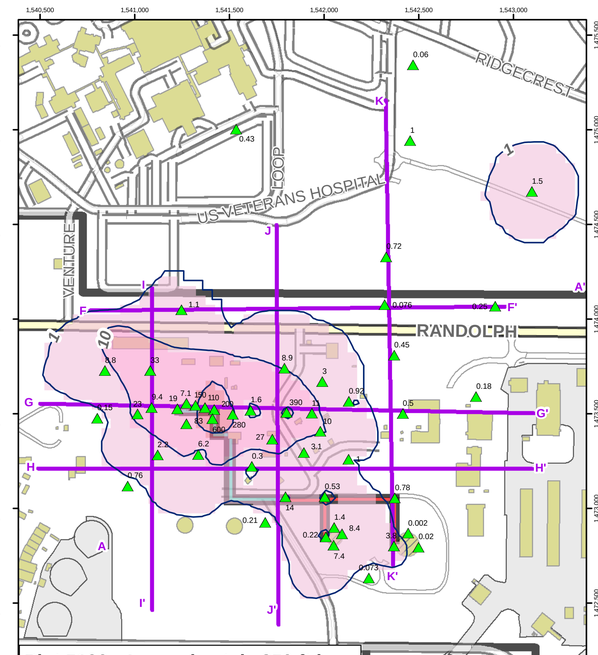


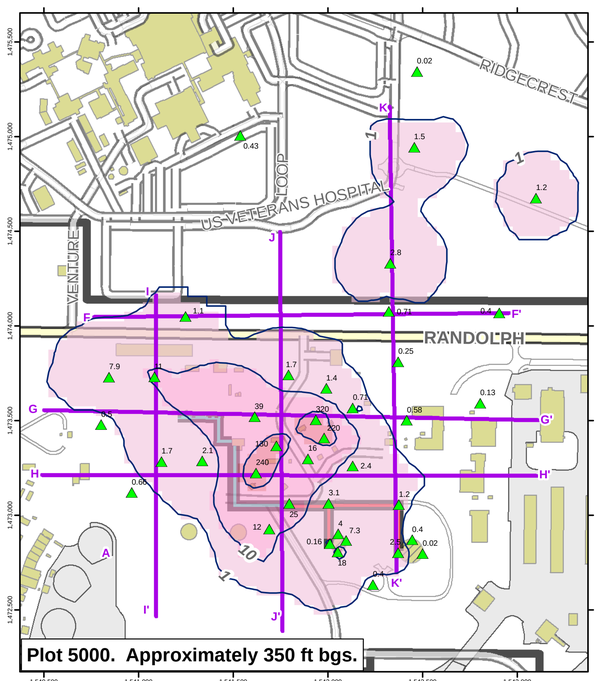
Plot 5300. Approximately 50 ft bgs.



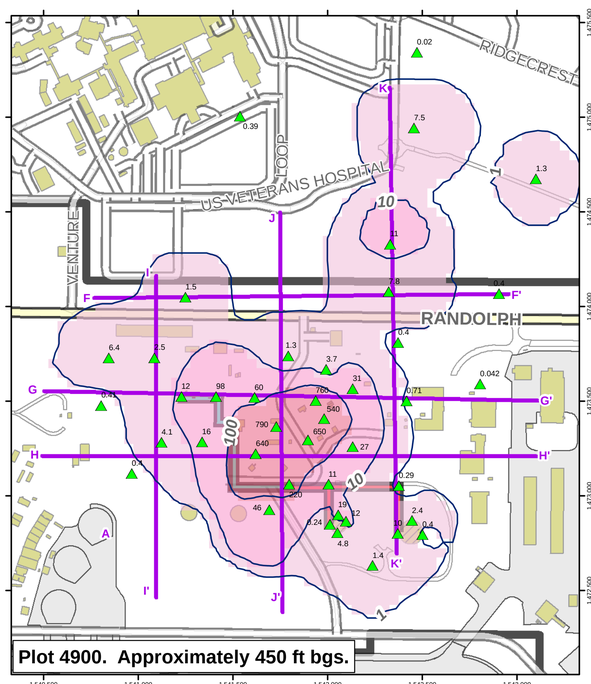
Plot 5200. Approximately 150 ft bgs.



Plot 5100. Approximately 250 ft bgs.



Plot 5000. Approximately 350 ft bgs.



Plot 4900. Approximately 450 ft bgs.

Note:
The vadose zone benzene plume was gridded in three dimensions using inverse distance weighting in RockWorks and then concentration plan-view maps were "cut" at respective elevations. Ground elevations range from 5314 to 5364 ft above mean sea level across the ST-106/SS-111 investigation area.

SVE well locations are presented with the benzene concentration in ppmv for each elevation. Sample results within 25 ft of the elevation are posted (except plot 5300 shows results within 30 ft of the elevation). For example, plot 5000 includes sample results within the 5025 to 4075 ft interval. Locations are not shown at elevations where there is no sample result for the elevation interval.

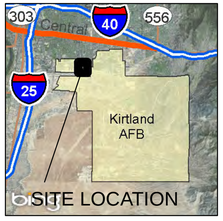
See Figure 4-2 for SVE well locations with ID numbers.

Legend

- SVE Well with Benzene Vapor Concentration (ppmv)
- Benzene Vapor Concentration Contours (ppmv)

Benzene Concentration (ppmv)

- 0 - 1
- 1.1 - 10
- 11 - 100
- 110 - 790
- Cross-Section Line



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N

0 400 800 1,600

Feet

1 inch = 400 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 4-4

BENZENE VAPOR PLUME FOOTPRINTS BY ELEVATION
JUNE 2012

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_047_BZ_vapor_plan_Dsize.mxd 08/24/12

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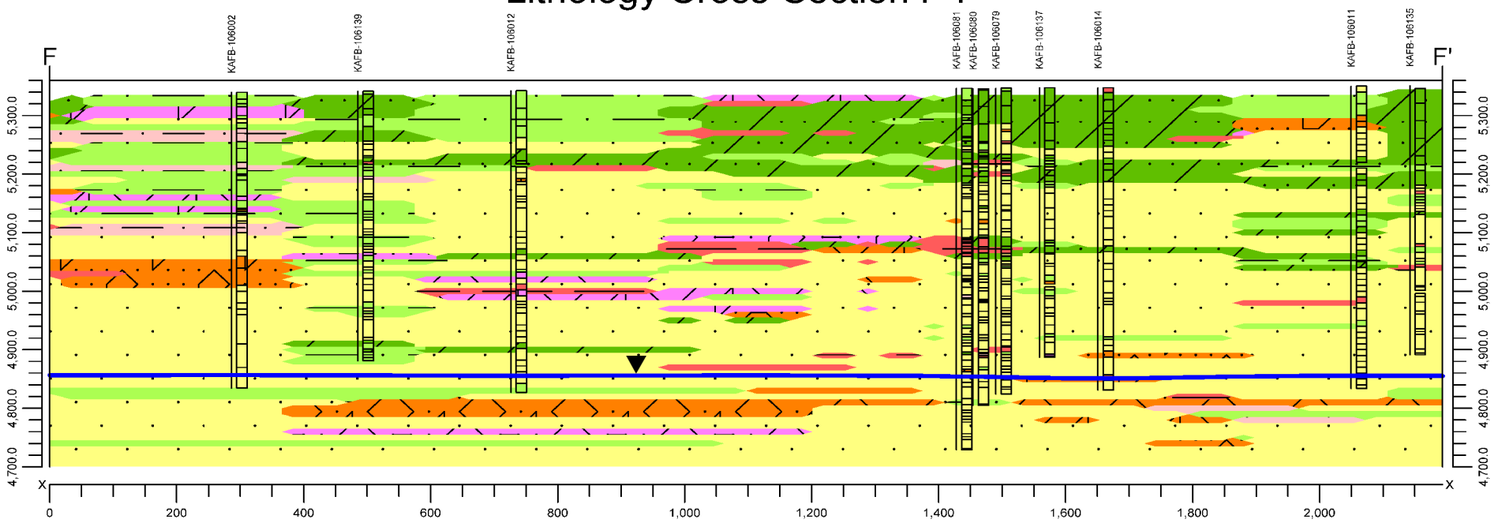
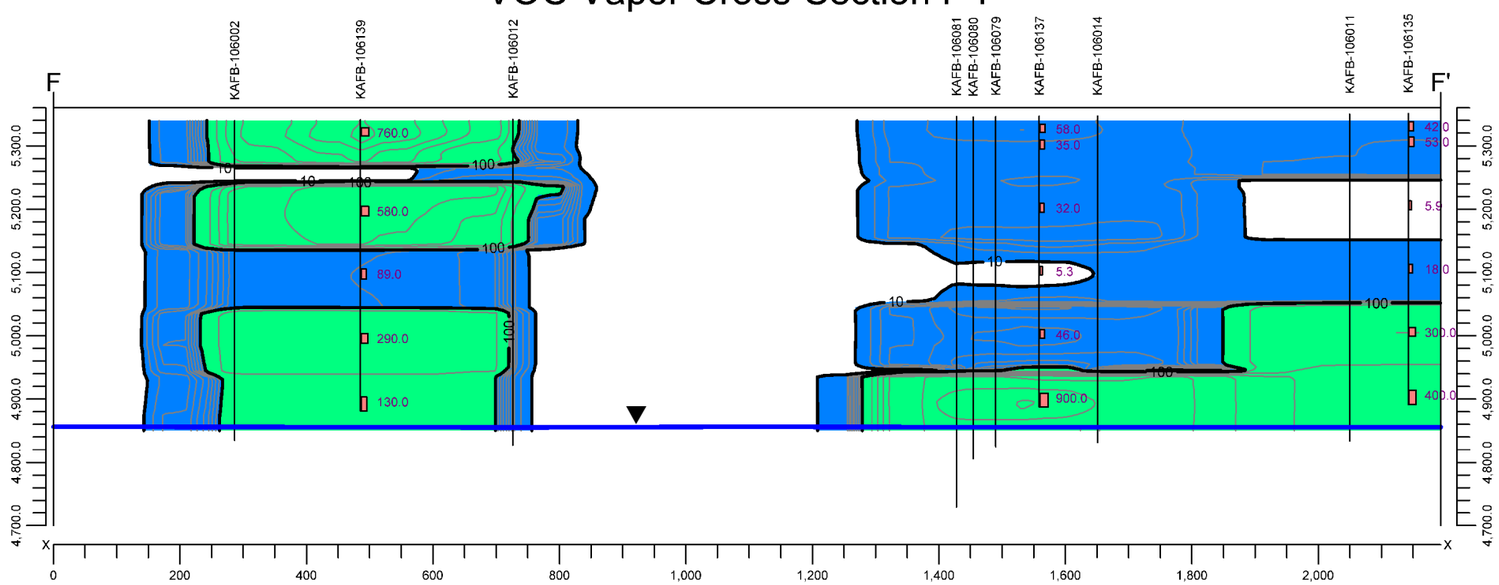
Lithology Cross-Section F-F'



VOC Vapor Cross-Section F-F'

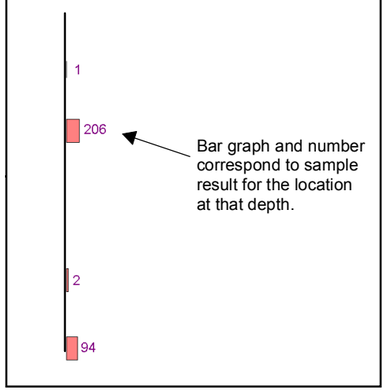


Lithology Index
Clay
Clayey sand
Gravel
Sand
Silt
Silty Gravel
Silty Sand

Lab TPH Vapor Concentration (ppmv)
0.0 - 10.0
10.0 - 100.0
100.0 - 1,000.0
1,000.0 - 10,000.0
10,000.0 - 100,000.0

Water Table

Borehole Detail



Note: No vertical exaggeration.
See Figure 4-3 for cross-section location map.

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FIGURE 4-5

LITHOLOGY AND TOTAL VOC VAPOR CROSS-SECTIONS F-F'

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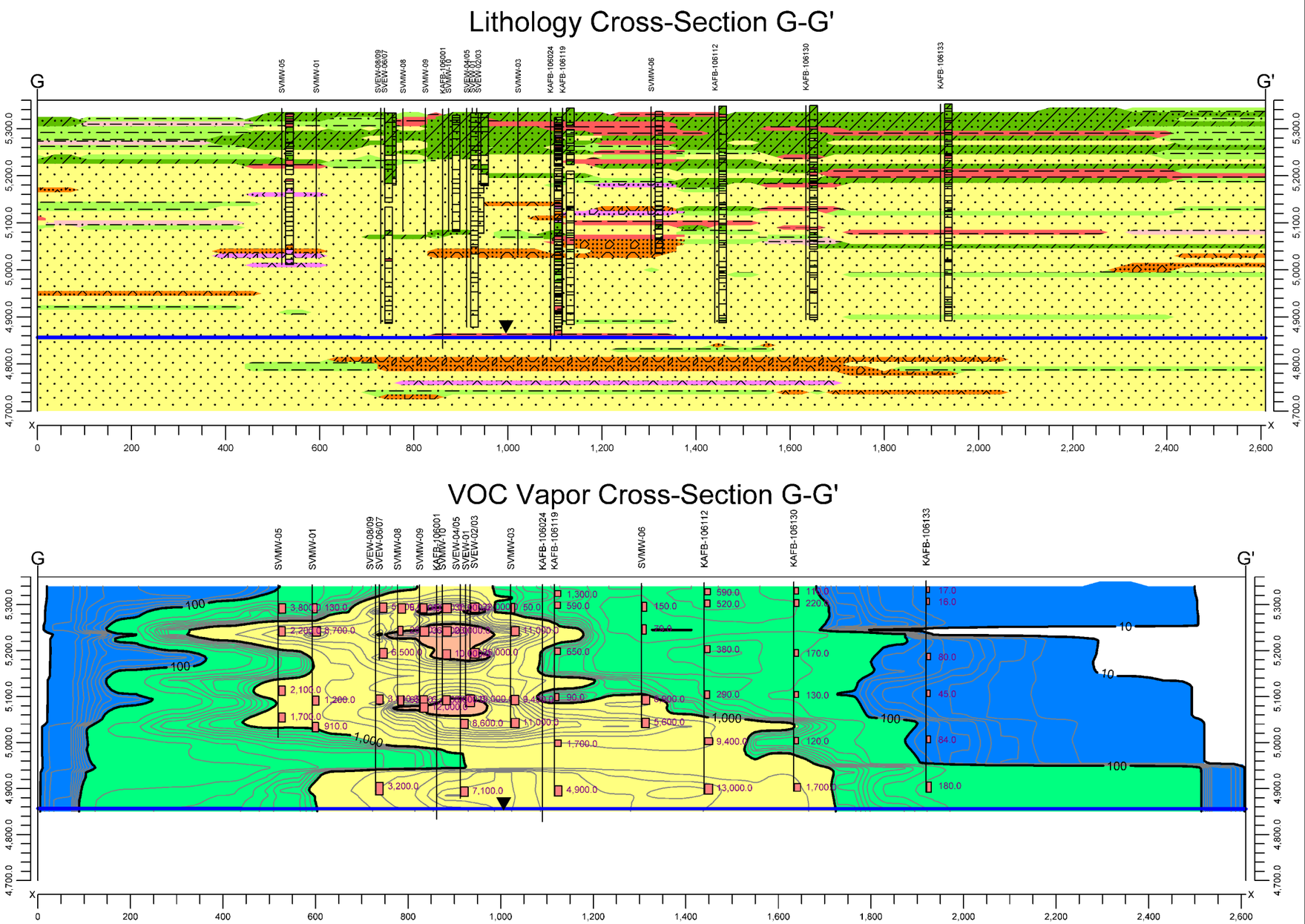


Lithology Index

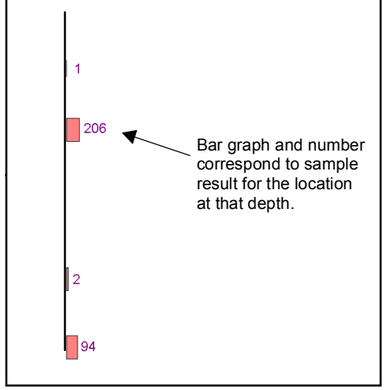
- Clay
- Clayey sand
- Gravel
- Sand
- Silt
- Silty Gravel
- Silty Sand

Lab TPH Vapor Concentration (ppmv)

- 0.0 - 10.0
- 10.0 - 100.0
- 100.0 - 1,000.0
- 1,000.0 - 10,000.0
- 10,000.0 - 100,000.0

Water Table

Borehole Detail



Note: No vertical exaggeration.
See Figure 4-3 for cross-section location map.

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FIGURE 4-6

LITHOLOGY AND TOTAL VOC VAPOR CROSS-SECTIONS G-G'

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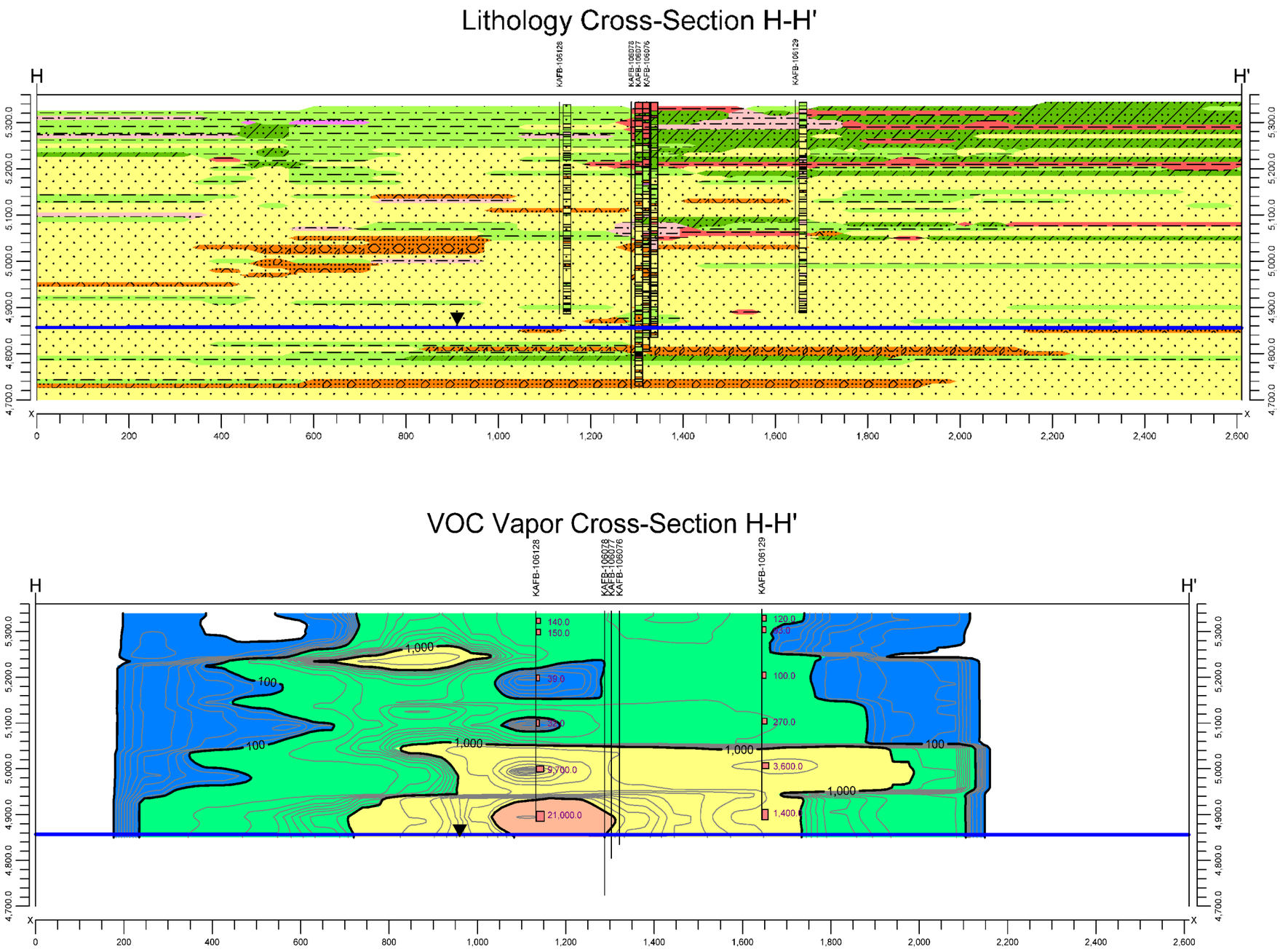


Lithology Index

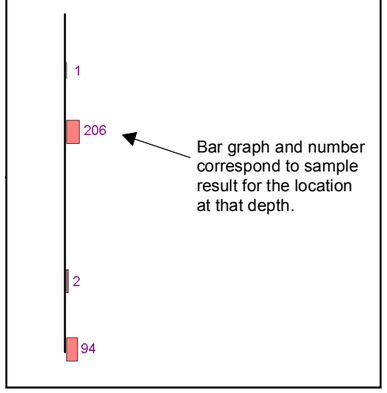
- Clay
- Clayey sand
- Gravel
- Sand
- Silt
- Silty Gravel
- Silty Sand

Lab TPH Vapor Concentration (ppmv)

- 0.0 - 10.0
- 10.0 - 100.0
- 100.0 - 1,000.0
- 1,000.0 - 10,000.0
- 10,000.0 - 100,000.0

Water Table

Borehole Detail



Note: No vertical exaggeration.
See Figure 4-3 for cross-section location map.

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FIGURE 4-7

LITHOLOGY AND TOTAL VOC VAPOR CROSS-SECTIONS H-H'

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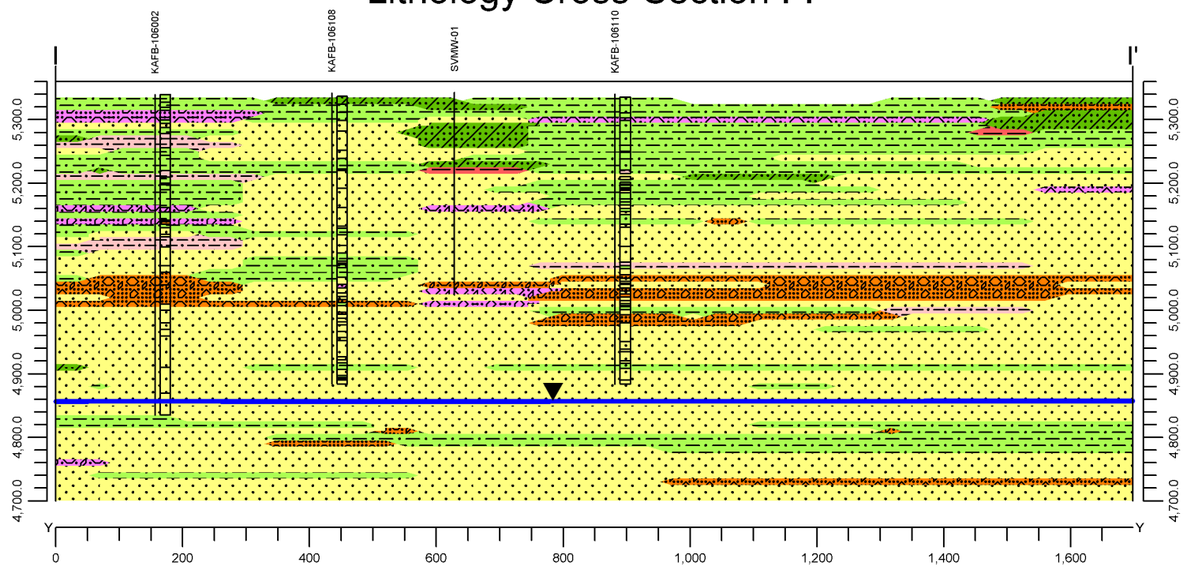
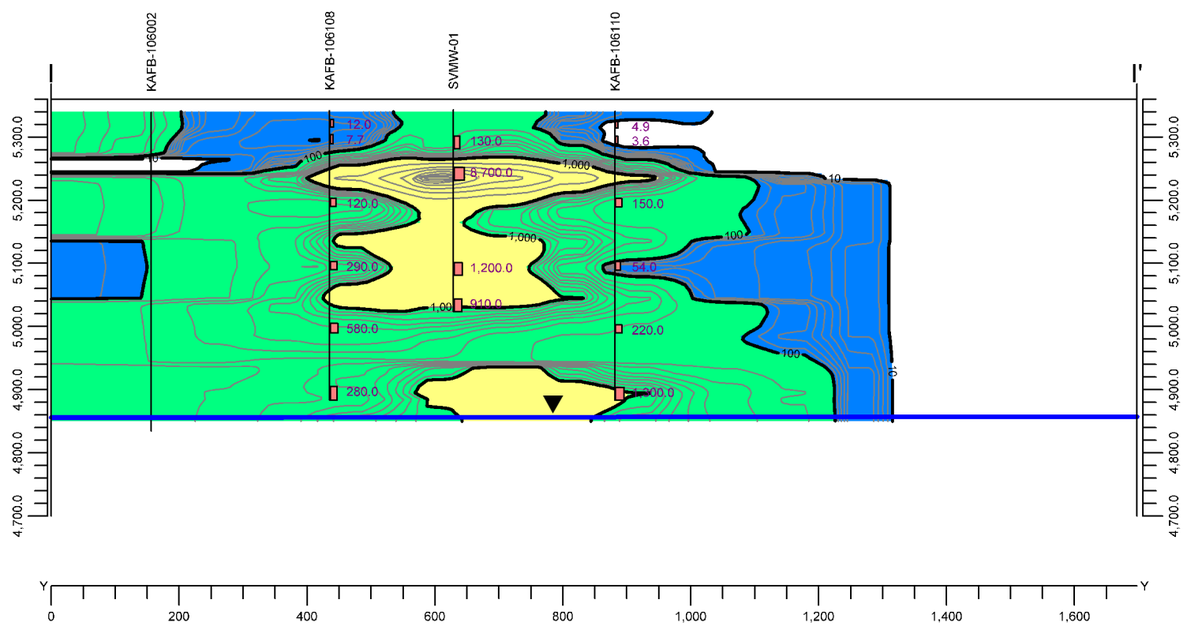
Lithology Cross-Section I-I'



VOC Vapor Cross-Section I-I'



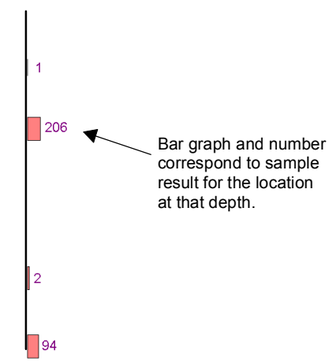
Lithology Index
Clay
Clayey sand
Gravel
Sand
Silt
Silty Gravel
Silty Sand

Lab TPH Vapor Concentration (ppmv)

- 0.0 - 10.0
- 10.0 - 100.0
- 100.0 - 1,000.0
- 1,000.0 - 10,000.0
- 10,000.0 - 100,000.0

Water Table

Borehole Detail



Note: No vertical exaggeration.
See Figure 4-3 for cross-section location map.

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FIGURE 4-8

LITHOLOGY AND TOTAL VOC VAPOR CROSS-SECTIONS I-I'

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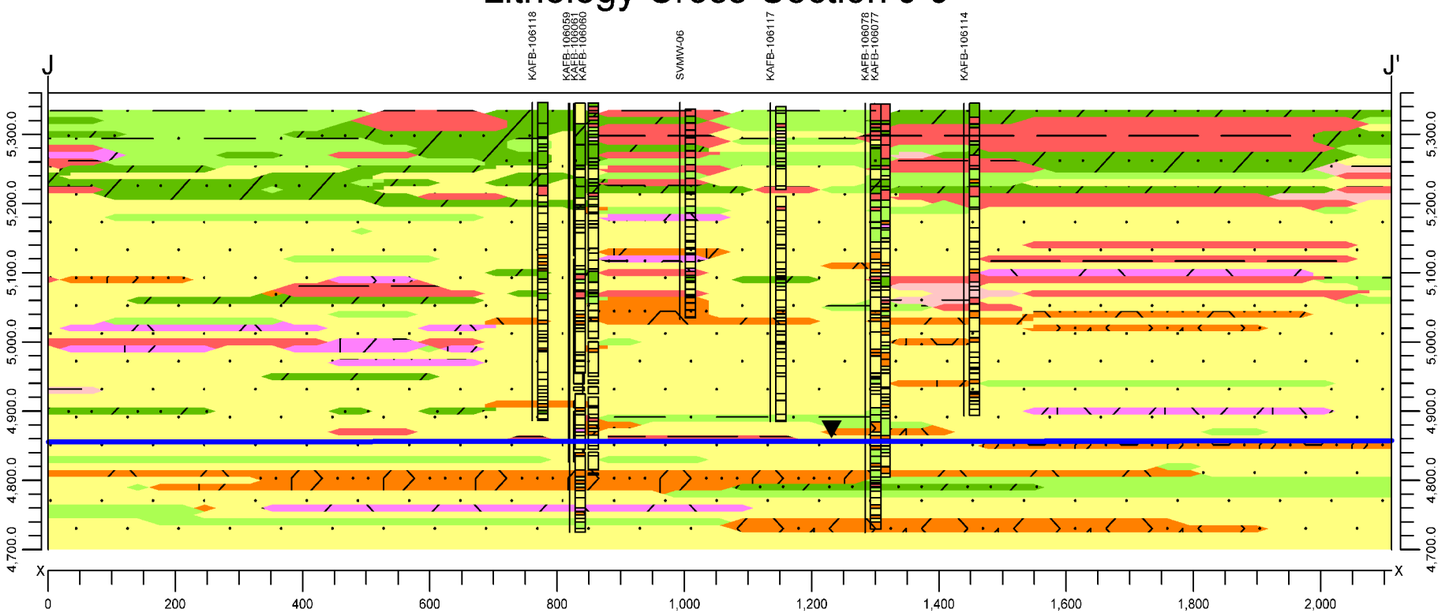
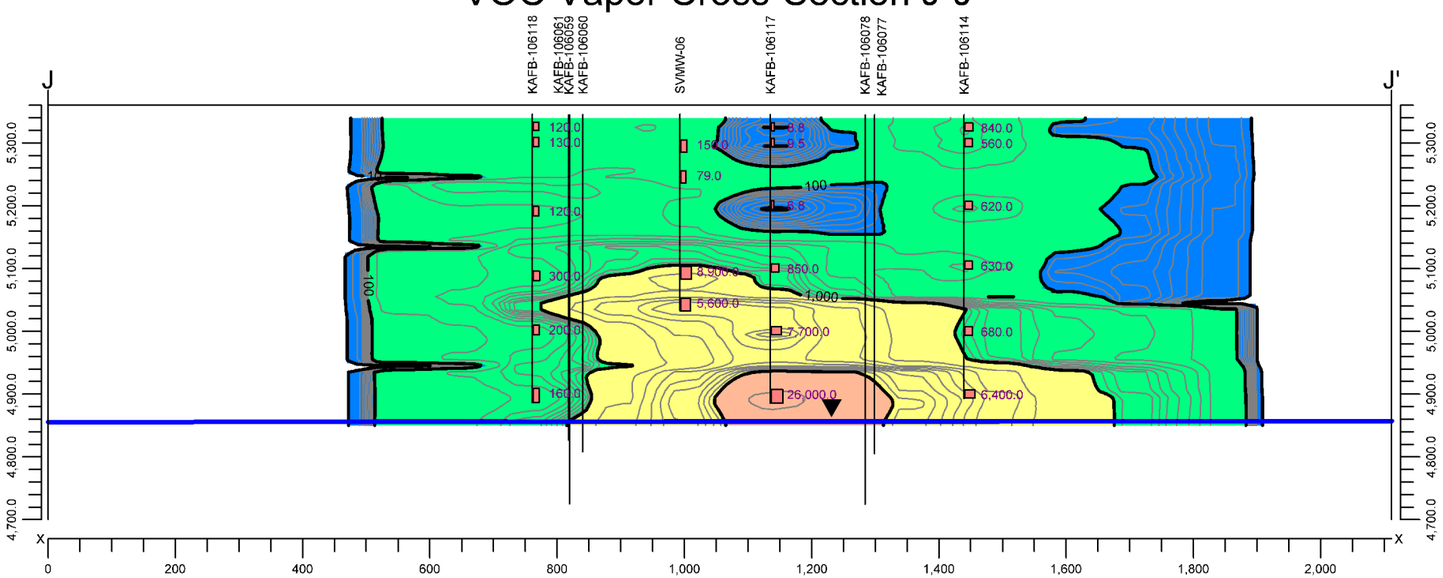
Lithology Cross-Section J-J'



VOC Vapor Cross-Section J-J'



Lithology Index

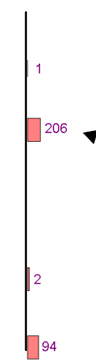
- Clay
- Clayey sand
- Gravel
- Sand
- Silt
- Silty Gravel
- Silty Sand

Lab TPH Vapor Concentration (ppmv)

- 0.0 - 10.0
- 10.0 - 100.0
- 100.0 - 1,000.0
- 1,000.0 - 10,000.0
- 10,000.0 - 100,000.0

Water Table

Borehole Detail



Bar graph and number correspond to sample result for the location at that depth.

Note: No vertical exaggeration.
See Figure 4-3 for cross-section location map.

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FIGURE 4-9

LITHOLOGY AND TOTAL VOC VAPOR CROSS-SECTIONS J-J'

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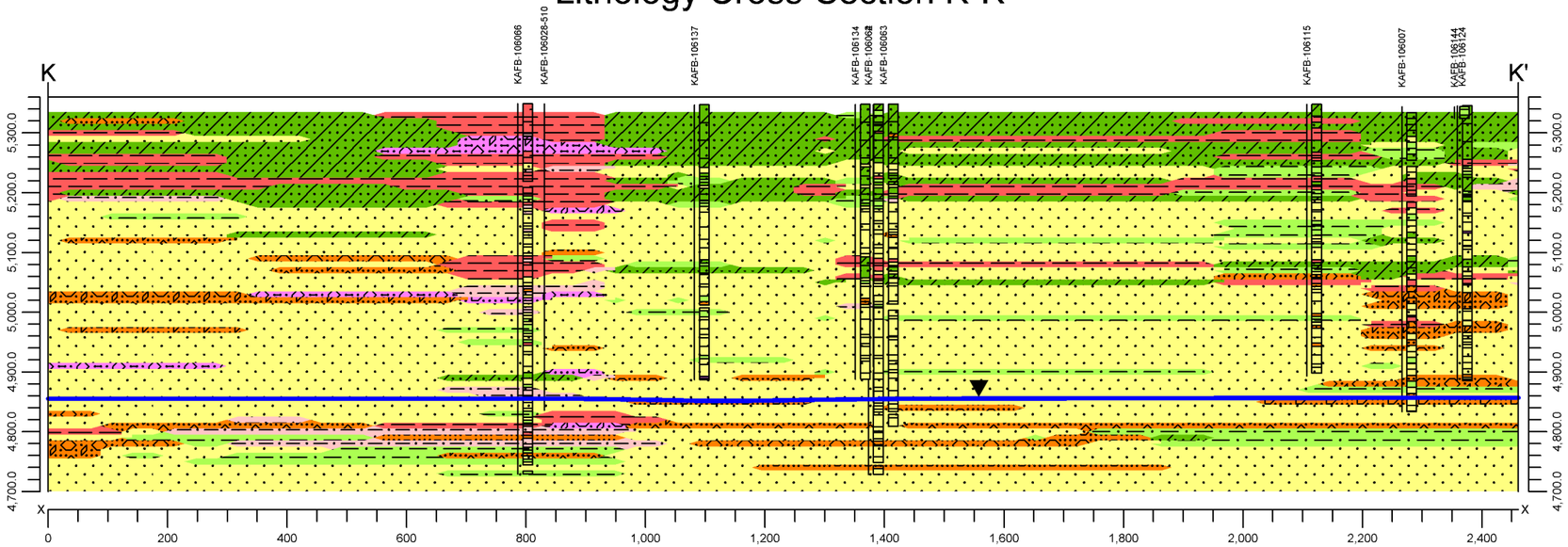
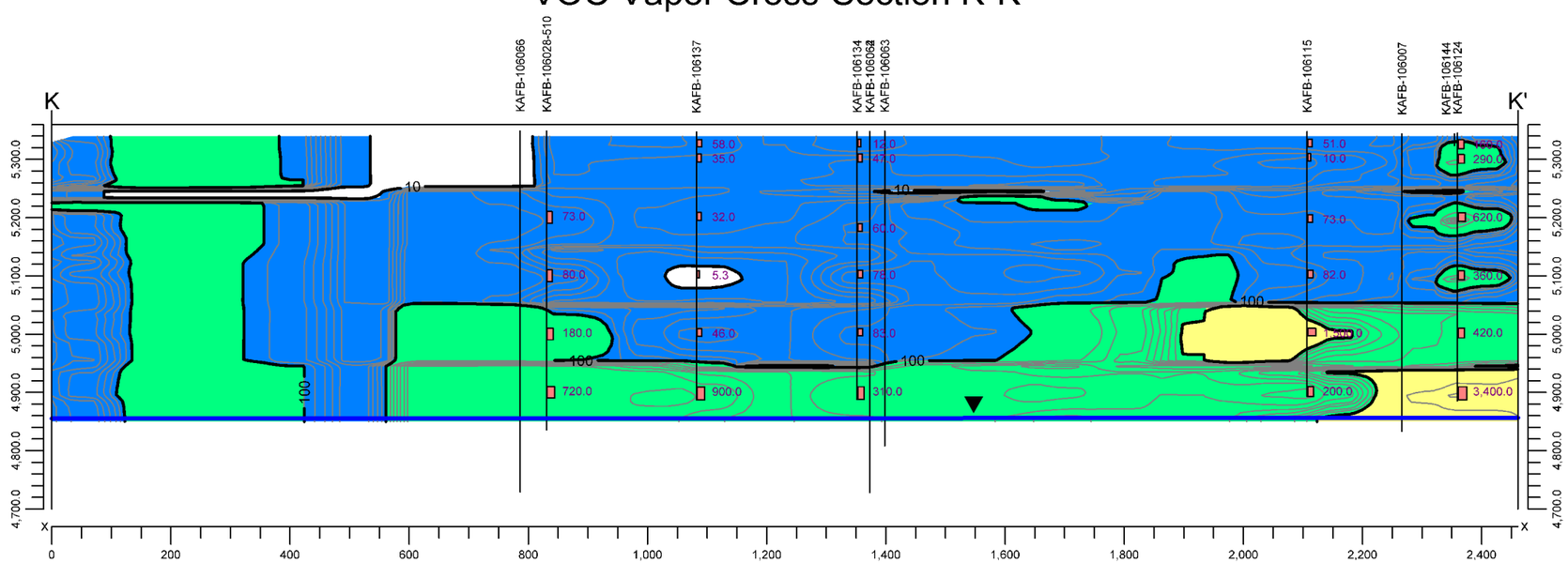
Lithology Cross-Section K-K'



VOC Vapor Cross-Section K-K'



Lithology Index

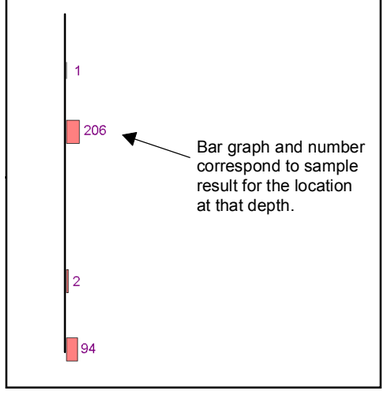
- Clay
- Clayey sand
- Gravel
- Sand
- Silt
- Silty Gravel
- Silty Sand

Lab TPH Vapor Concentration (ppmv)

- 0.0 - 10.0
- 10.0 - 100.0
- 100.0 - 1,000.0
- 1,000.0 - 10,000.0
- 10,000.0 - 100,000.0

Water Table

Borehole Detail



Note: No vertical exaggeration.
See Figure 4-3 for cross-section location map.

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FIGURE 4-10

LITHOLOGY AND TOTAL VOC VAPOR CROSS-SECTIONS K-K'

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_064_VOC_vapor_cross_section_KK.mxd 08/25/12

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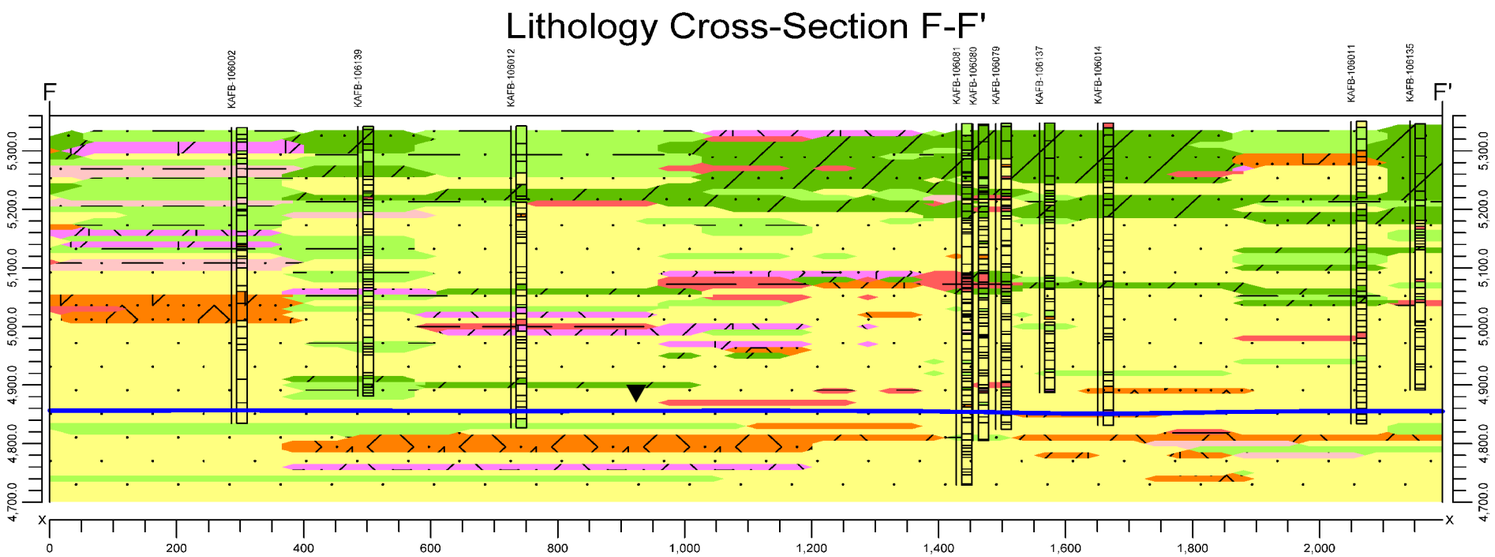
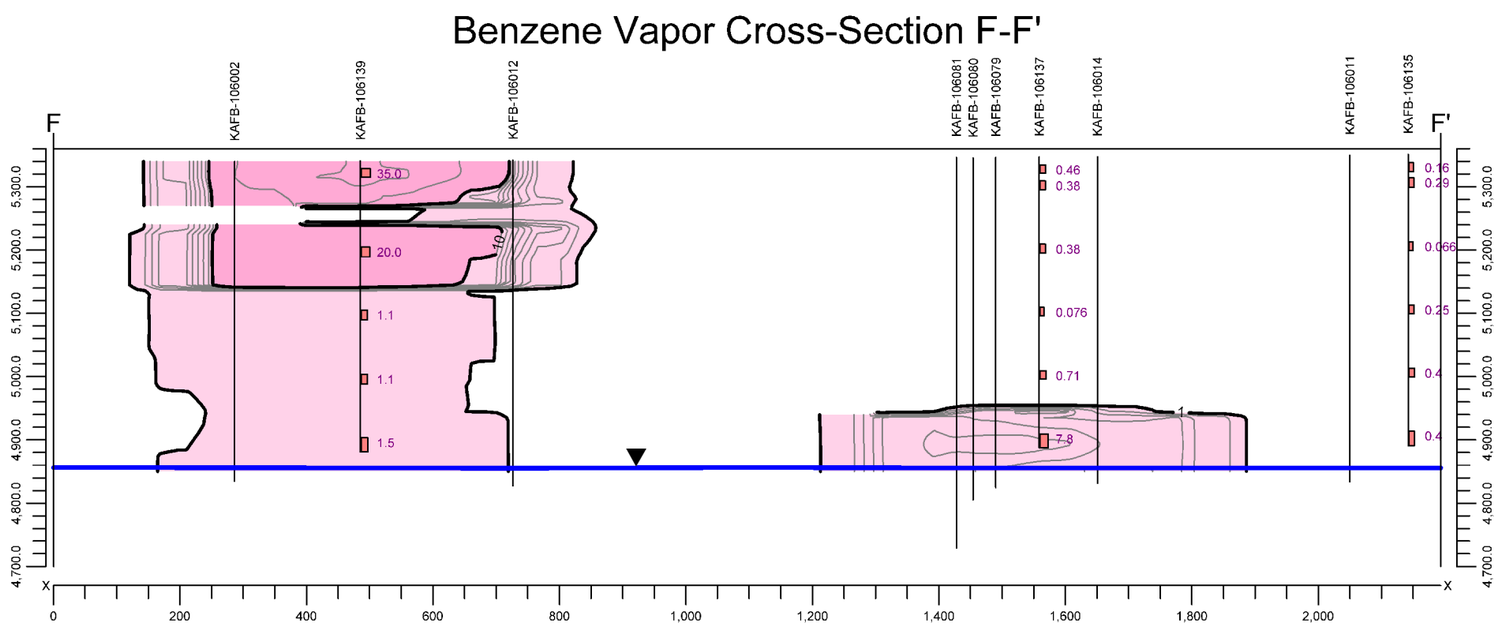




Lithology Index

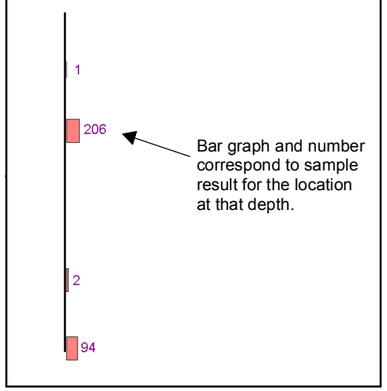
- Clay
- Clayey sand
- Gravel
- Sand
- Silt
- Silty Gravel
- Silty Sand

Benzene Vapor Concentration (ppmv)

- 1.0 - 10.0
- 10.0 - 100.0
- 100.0 - 1,000.0

Water Table

Borehole Detail



Note: No vertical exaggeration.
See Figure 4-4 for cross-section location map.

Revision Date: 08/25/12

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FIGURE 4-11

LITHOLOGY AND BENZENE VAPOR CROSS-SECTIONS F-F'

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_065_BZ_vapor_cross_section_FF.mxd 08/25/12

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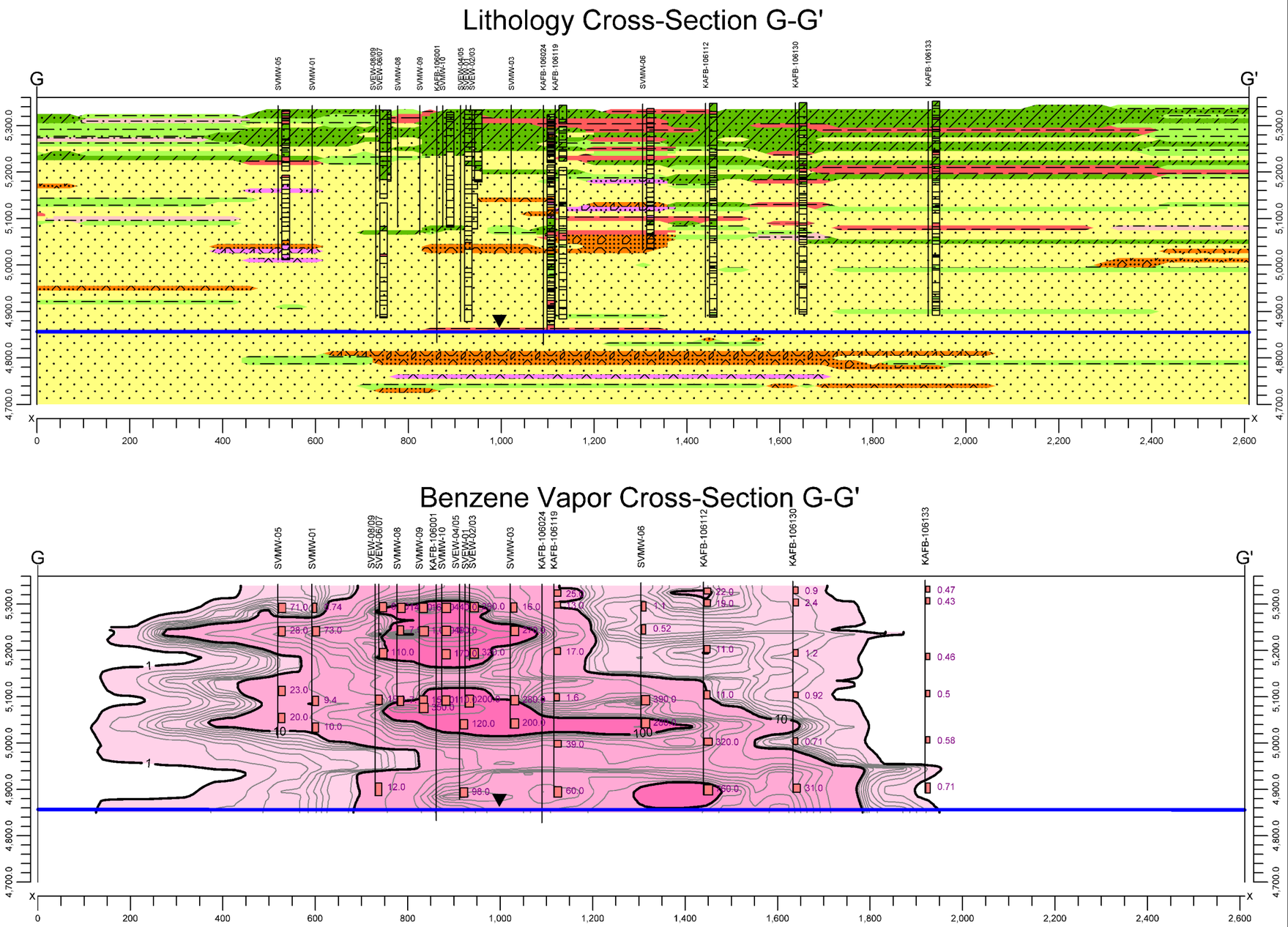


Lithology Index

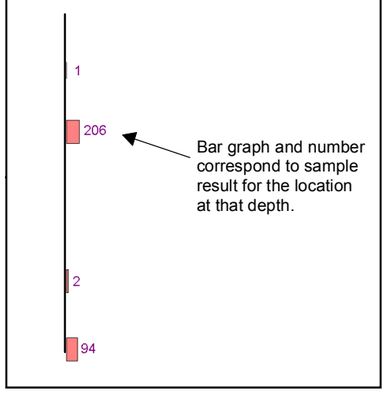
- Clay
- Clayey sand
- Gravel
- Sand
- Silt
- Silty Gravel
- Silty Sand

Benzene Vapor Concentration (ppmv)

- 1.0 - 10.0
- 10.0 - 100.0
- 100.0 - 1,000.0

Water Table

Borehole Detail



Note: No vertical exaggeration.
See Figure 4-4 for cross-section location map.

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FIGURE 4-12

LITHOLOGY AND BENZENE VAPOR CROSS-SECTIONS G-G'

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_066_BZ_vapor_cross_section_GG.mxd 08/25/12

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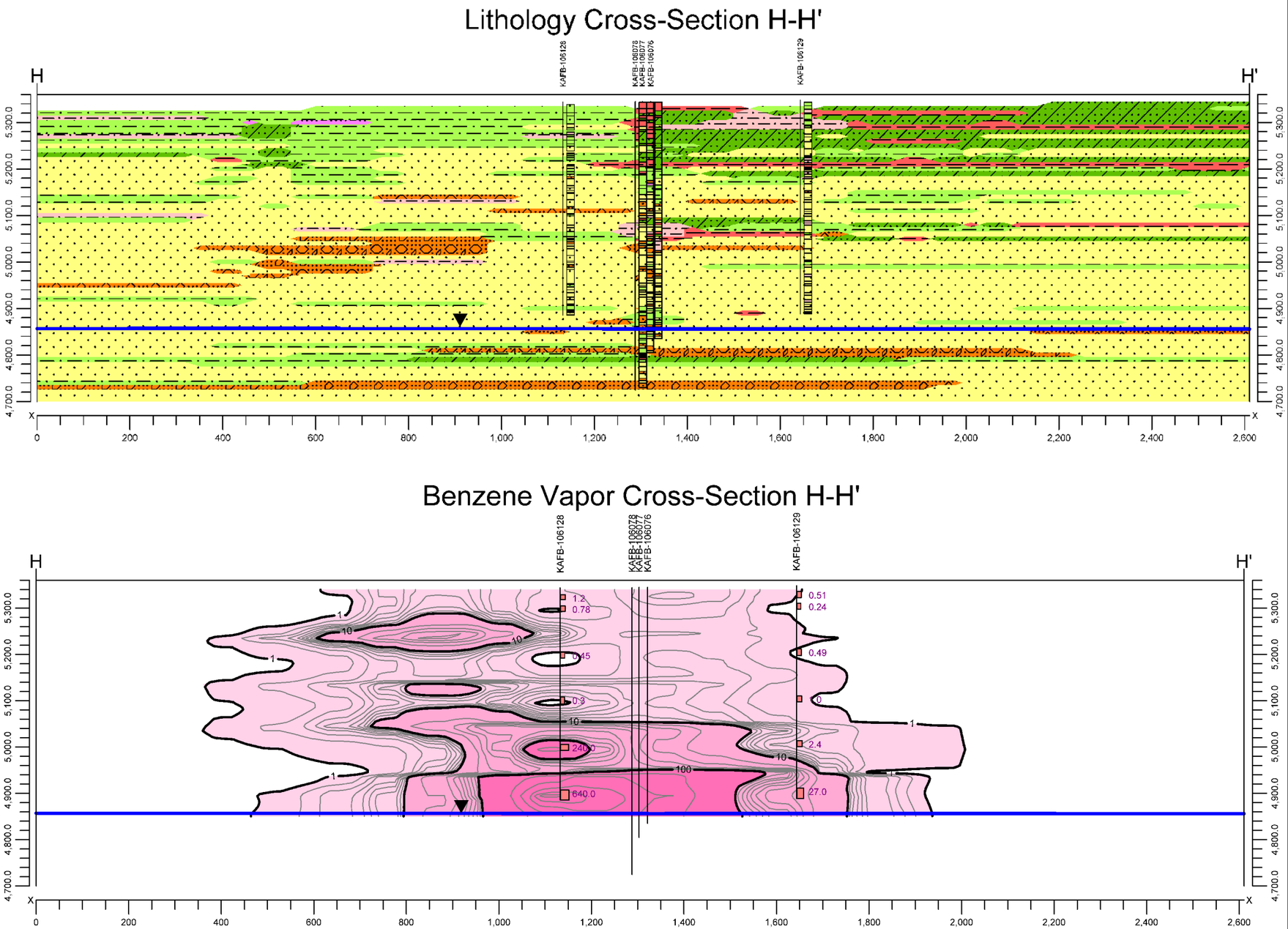


Lithology Index

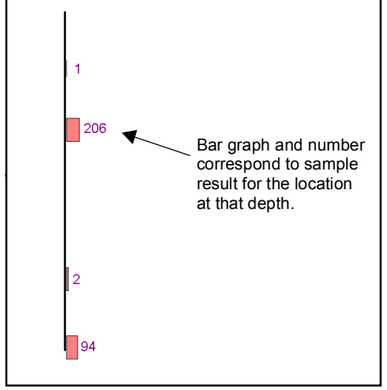
- Clay
- Clayey sand
- Gravel
- Sand
- Silt
- Silty Gravel
- Silty Sand

Benzene Vapor Concentration (ppmv)

- 1.0 - 10.0
- 10.0 - 100.0
- 100.0 - 1,000.0

Water Table

Borehole Detail



Note: No vertical exaggeration.
See Figure 4-4 for cross-section location map.

Revision Date: 08/25/12

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FIGURE 4-13

LITHOLOGY AND BENZENE VAPOR CROSS-SECTIONS H-H'

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_067_BZ_vapor_cross_section_HH.mxd 08/25/12

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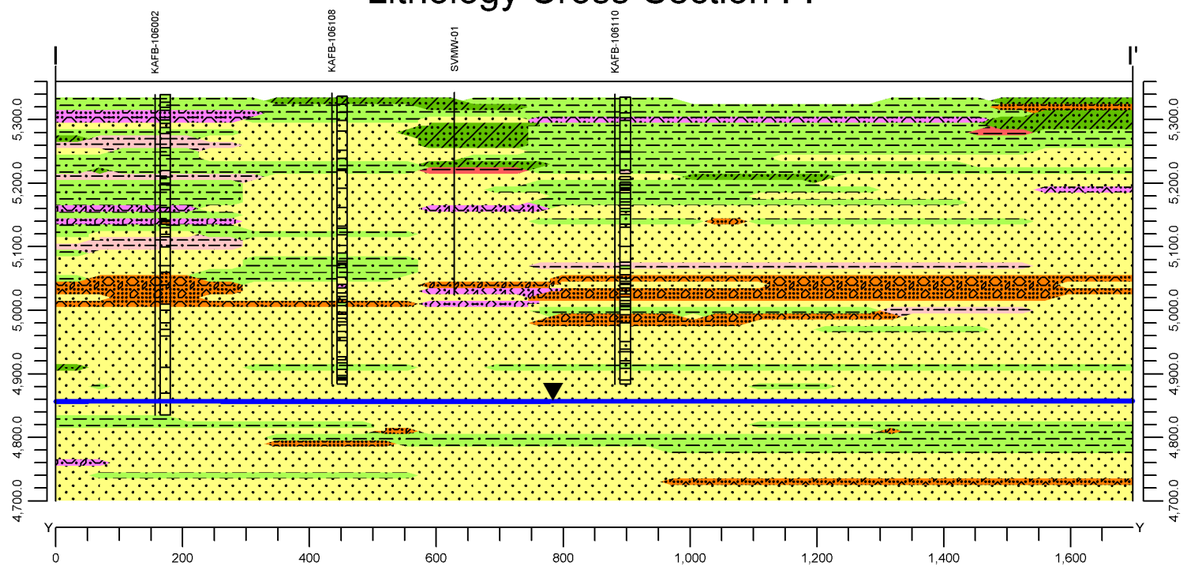
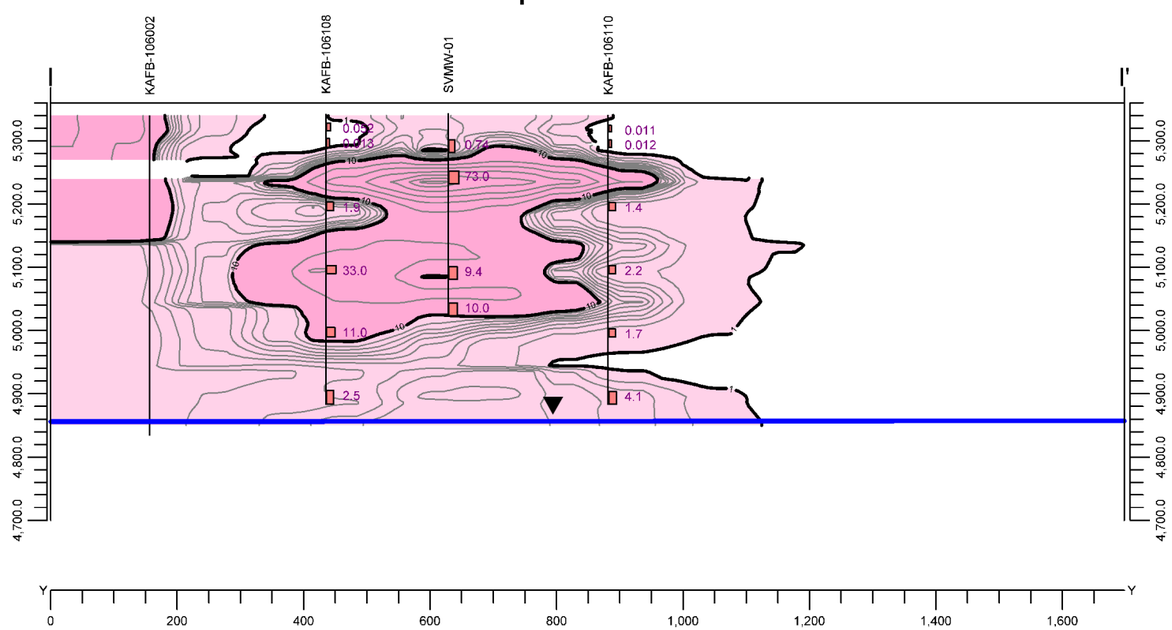
Lithology Cross-Section I-I'



Benzene Vapor Cross-Section I-I'



Lithology Index

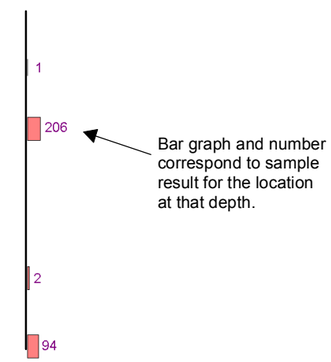
- Clay
- Clayey sand
- Gravel
- Sand
- Silt
- Silty Gravel
- Silty Sand

Benzene Vapor Concentration (ppmv)

- 1.0 - 10.0
- 10.0 - 100.0
- 100.0 - 1,000.0

Water Table

Borehole Detail



Bar graph and number correspond to sample result for the location at that depth.

Note: No vertical exaggeration.
See Figure 4-4 for cross-section location map.

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FIGURE 4-14

LITHOLOGY AND BENZENE VAPOR CROSS-SECTIONS I-I'

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_068_BZ_vapor_cross_section_II.mxd 08/25/12

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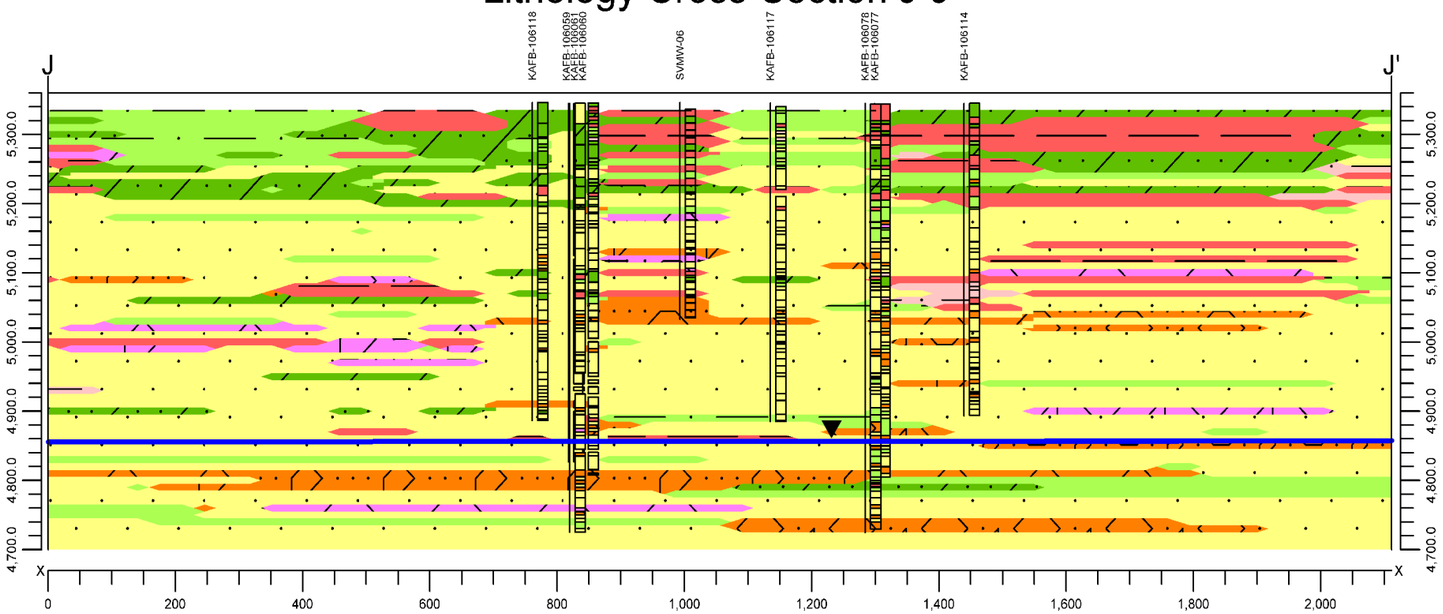
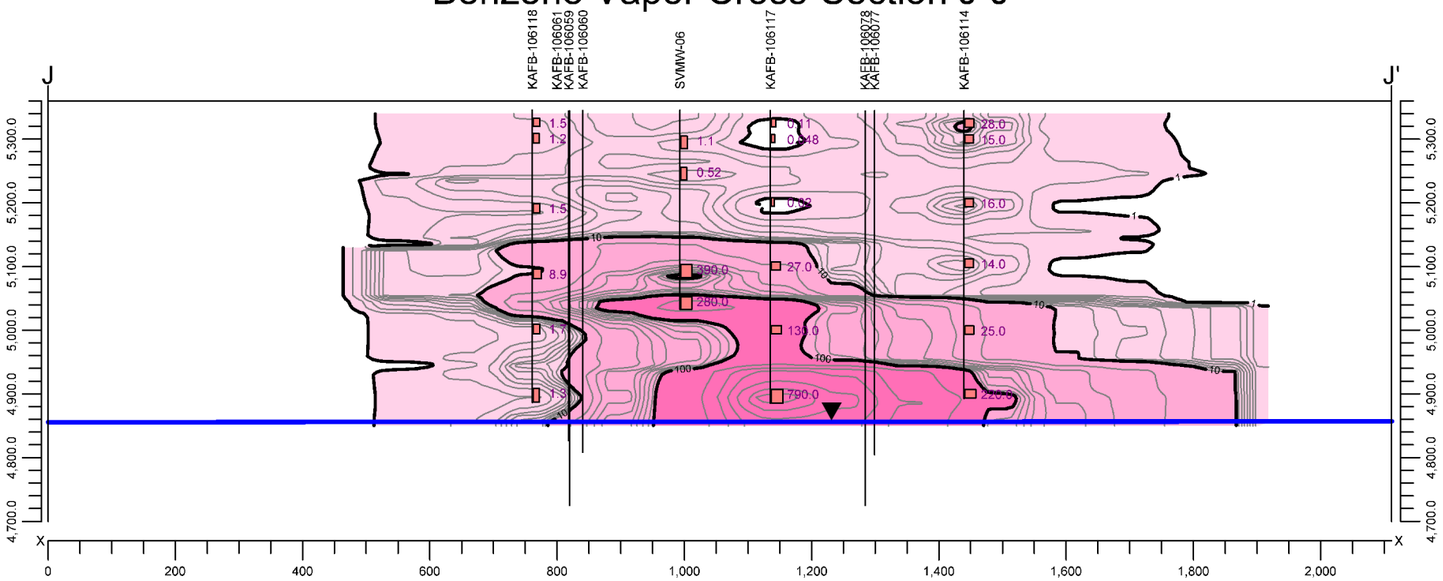
Lithology Cross-Section J-J'



Benzene Vapor Cross-Section J-J'



Lithology Index

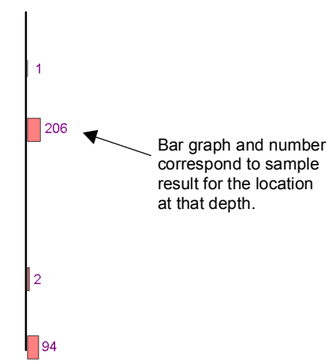
- Clay
- Clayey sand
- Gravel
- Sand
- Silt
- Silty Gravel
- Silty Sand

Benzene Vapor Concentration (ppmv)

- 1.0 - 10.0
- 10.0 - 100.0
- 100.0 - 1,000.0

Water Table

Borehole Detail



Bar graph and number correspond to sample result for the location at that depth.

Note: No vertical exaggeration.
See Figure 4-4 for cross-section location map.

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FIGURE 4-15

LITHOLOGY AND BENZENE VAPOR CROSS-SECTIONS J-J'

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_069_BZ_vapor_cross_section_JJ.mxd 08/25/12

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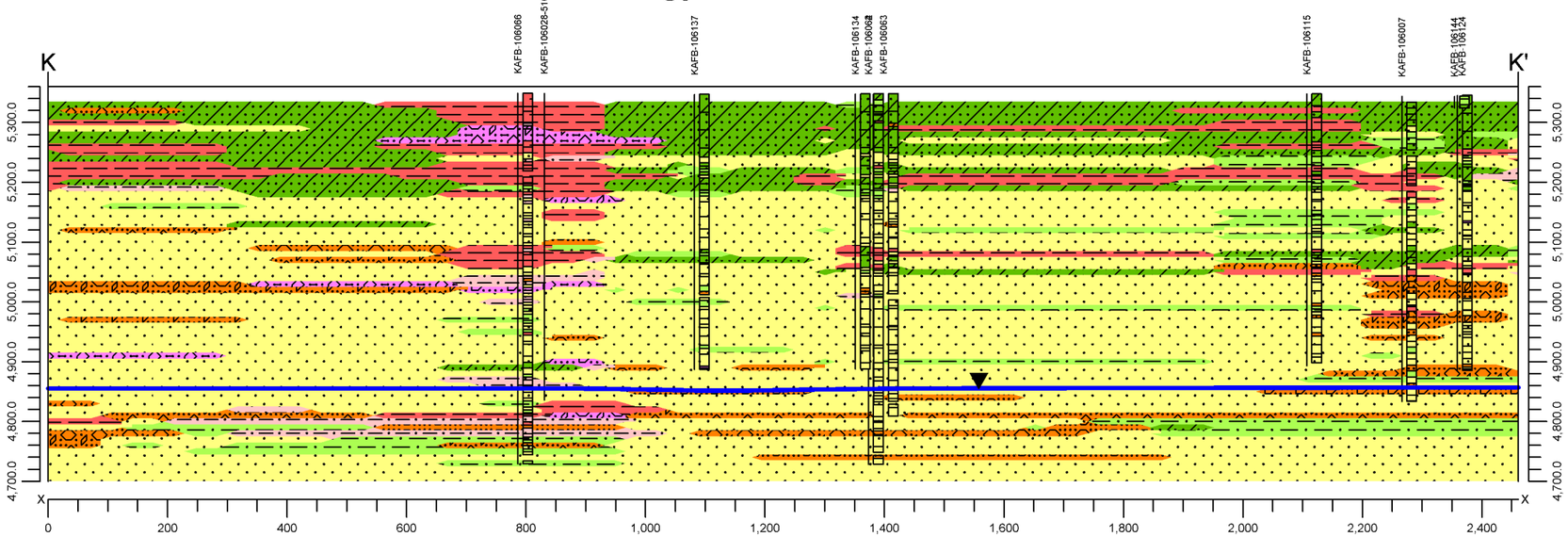
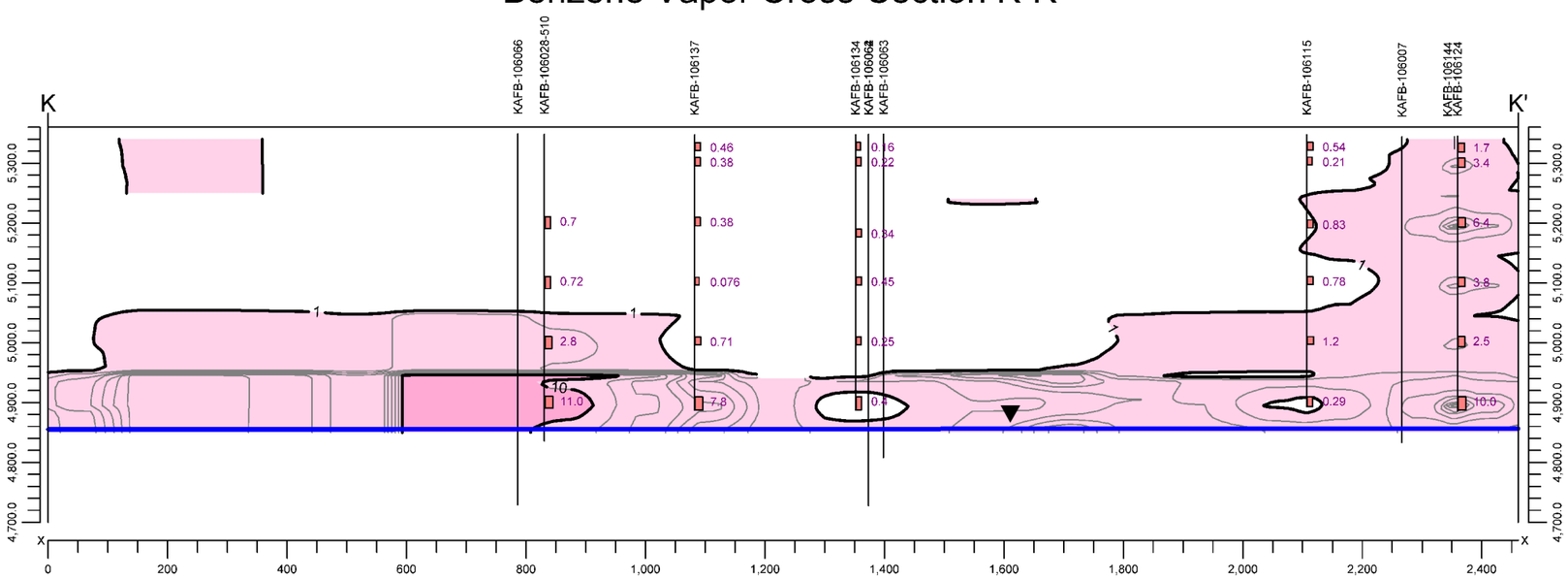
Lithology Cross-Section K-K'



Benzene Vapor Cross-Section K-K'



Lithology Index

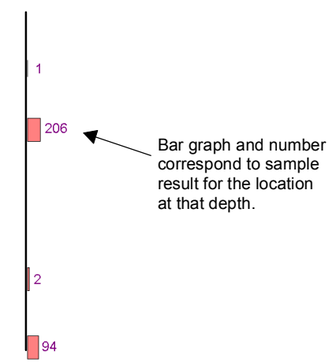
- Clay
- Clayey sand
- Gravel
- Sand
- Silt
- Silty Gravel
- Silty Sand

Benzene Vapor Concentration (ppmv)

- 1.0 - 10.0
- 10.0 - 100.0
- 100.0 - 1,000.0

Water Table

Borehole Detail



Bar graph and number correspond to sample result for the location at that depth.

Note: No vertical exaggeration.
See Figure 4-61 for cross-section location map.

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FIGURE 4-16

LITHOLOGY AND BENZENE VAPOR
NORTH-SOUTH CROSS-SECTIONS K-K'

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_070_BZ_vapor_cross_section_KK.mxd 08/25/12

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SECTION 5 FIGURES

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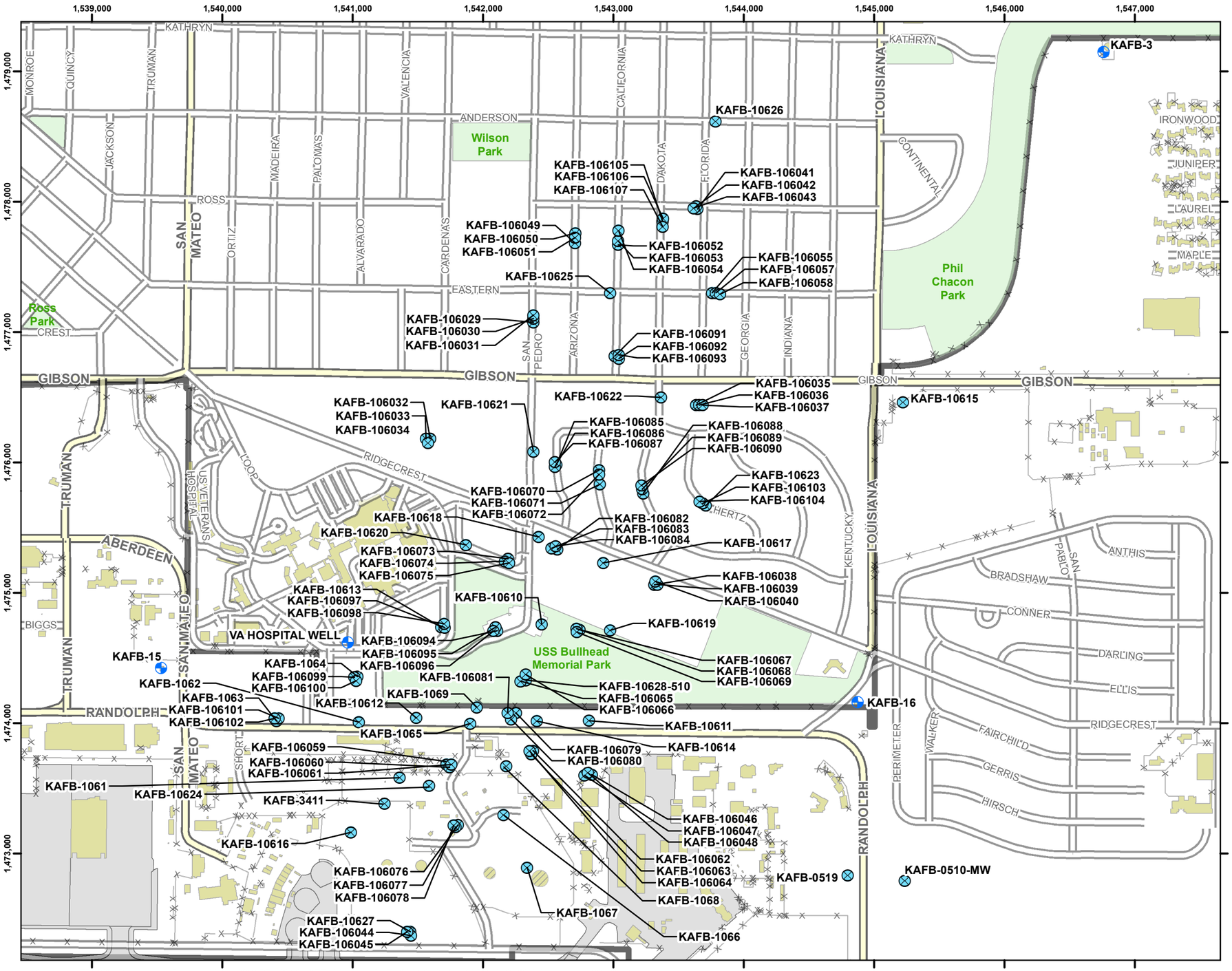
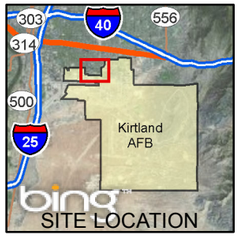


Legend

- Monitor Well
- Water Supply Well



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Revision Date: 08/19/12

0 400 800 1,600

Feet

1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 5-1

MONITORING WELL LOCATIONS

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q1\KAFB_019_GW_locs.mxd 08/19/12

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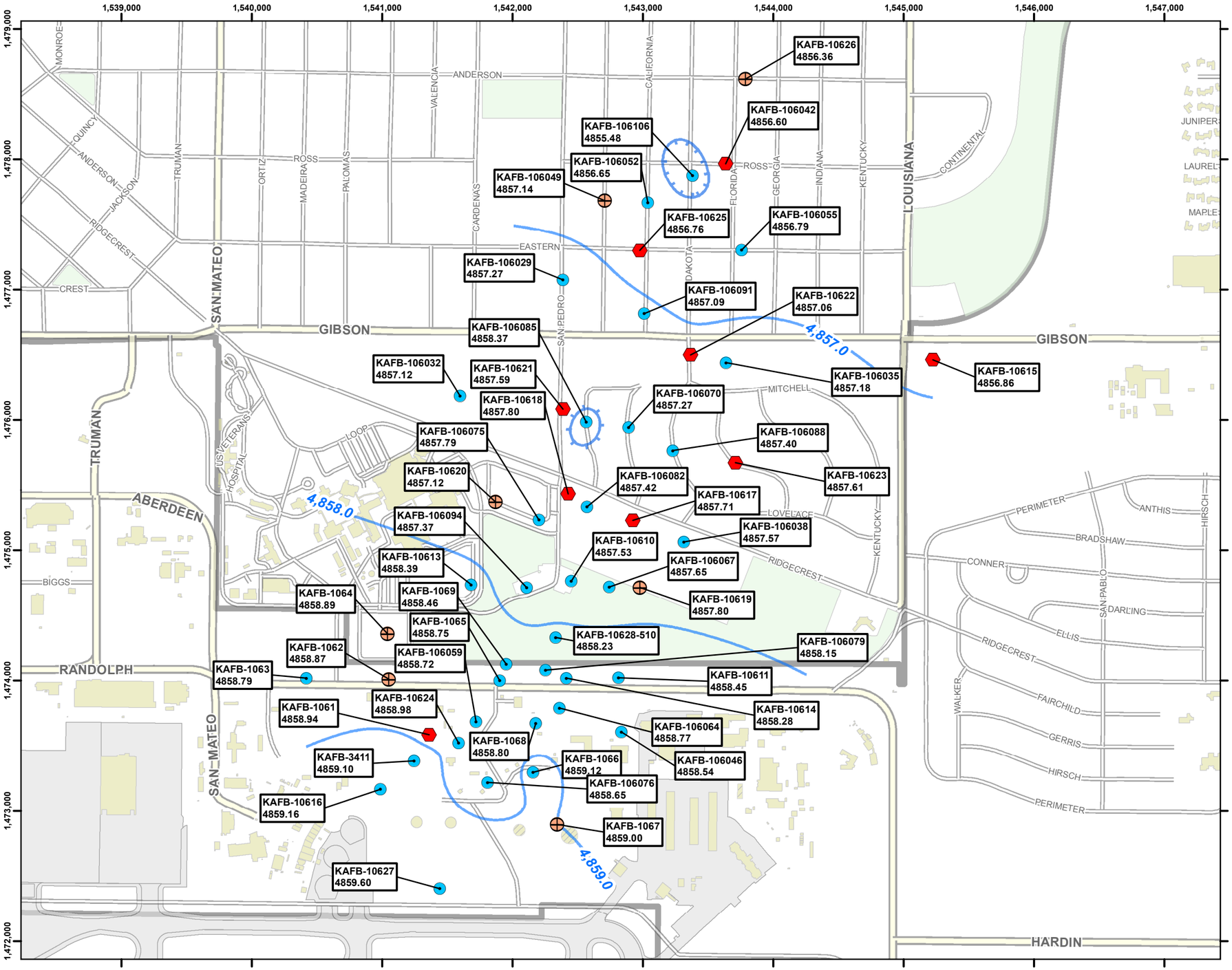
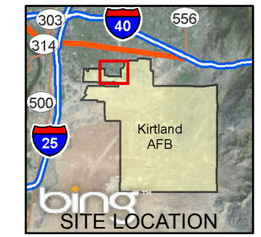


H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_034_SWL_Contour_Shallow_2012_April.mxd 08/27/12

Legend

- Monitor Well with April 2012 Groundwater Elevation > Top of Screen
- Monitor Well with April 2012 Groundwater Elevation within 2 ft Below Top of Screen
- Monitor Well with April 2012 Groundwater Elevation > 2 ft from Top of Screen
- Groundwater Level Contour (ft msl)
- Groundwater High
- Groundwater Depression

Note: Groundwater level contours were interpolated using ordinary kriging with a range of 7900 ft using a spherical variogram and a nugget of zero.



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Revision Date: 08/27/12

0 400 800 1,600

Feet

1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-2

SHALLOW GROUNDWATER CONTOURS CORRECTED FOR NAPL THICKNESS APRIL 2012

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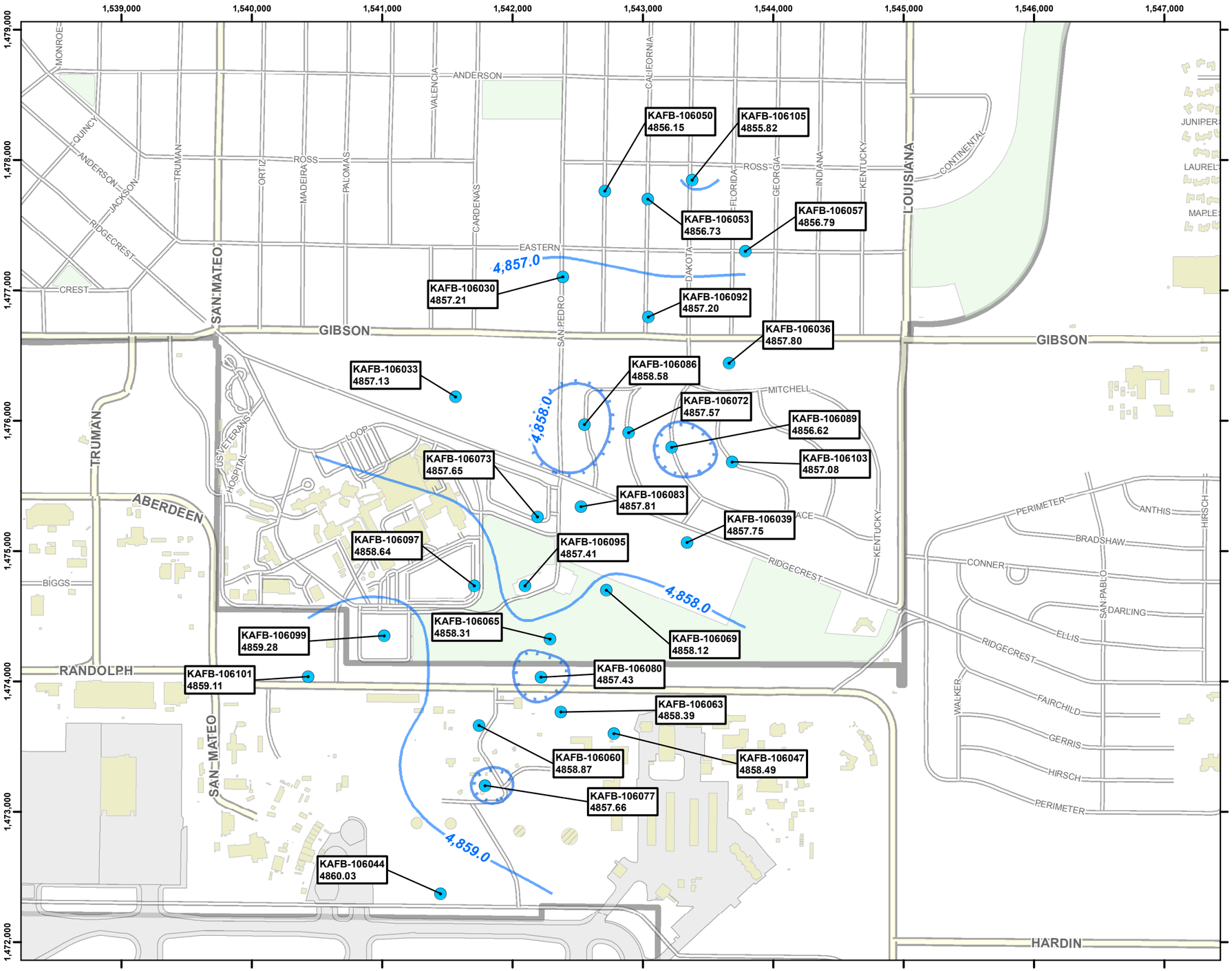
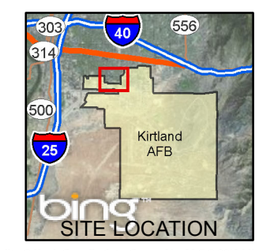


Legend

- Monitor Well With April 2012 Groundwater Elevation
- Groundwater Level Contour (ft msl)
- Groundwater High
- Groundwater Depression

Note: Groundwater level contours were interpolated using ordinary kriging with a range of 6400 ft using a spherical variogram and a nugget of zero.



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Revision Date: 08/19/12

0 400 800 1,600

Feet

1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-3

INTERMEDIATE GROUNDWATER CONTOURS, CORRECTED FOR NAPL THICKNESS, APRIL 2012

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_037_SWL_Contour_Interm_2012_April.mxd 08/19/12

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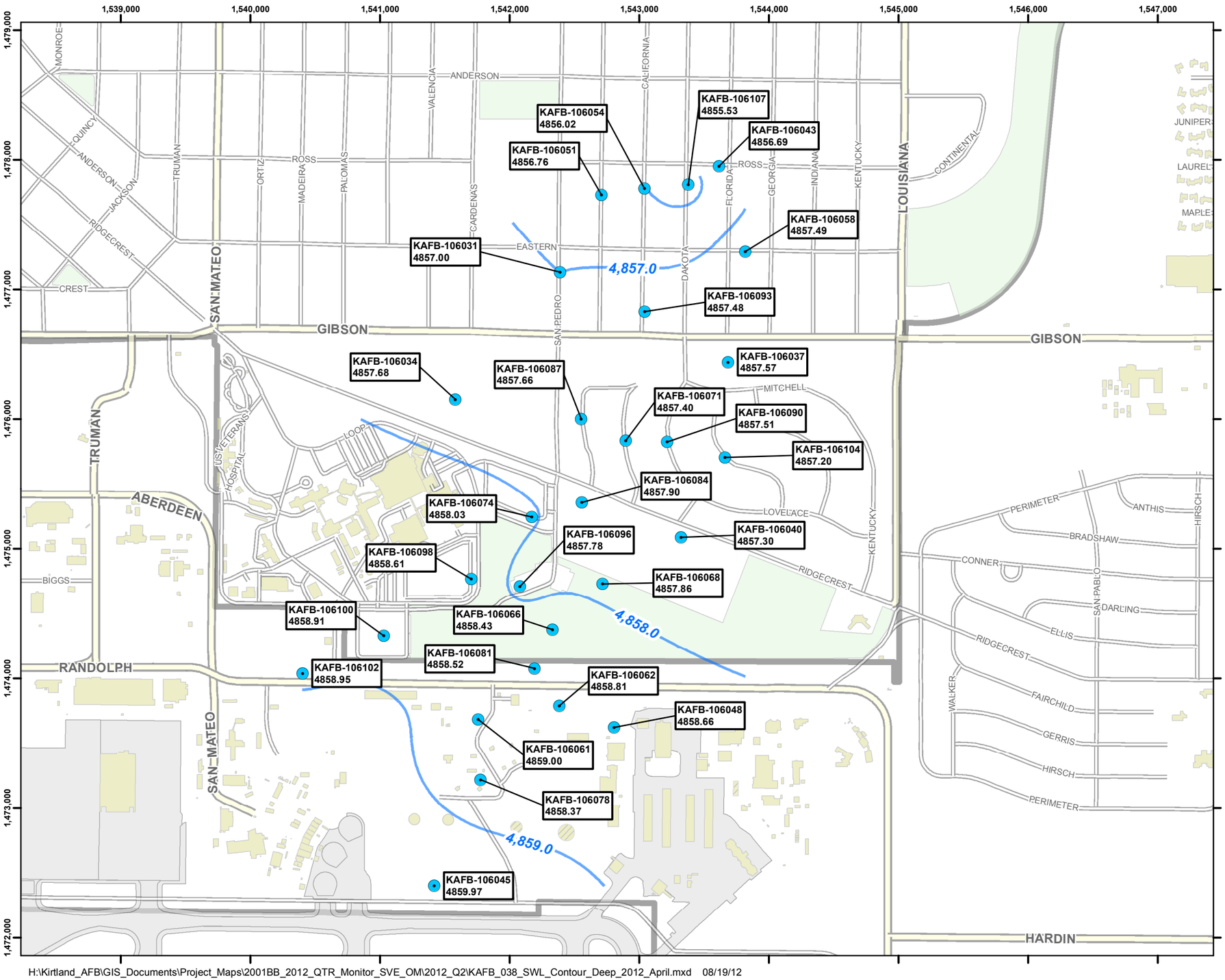
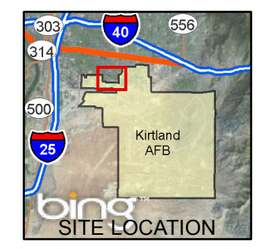


Legend

- Monitor Well With April 2012 Groundwater Elevation
- Groundwater Level Contour (ft msl)

Note: Groundwater level contours were interpolated using ordinary kriging with a range of 6500 ft using a spherical variogram and a nugget of zero.



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Revision Date: 08/19/12

0 400 800 1,600

Feet

1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-4

DEEP GROUNDWATER CONTOURS
CORRECTED FOR NAPL THICKNESS
APRIL 2012

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_038_SWL_Contour_Deep_2012_April.mxd 08/19/12

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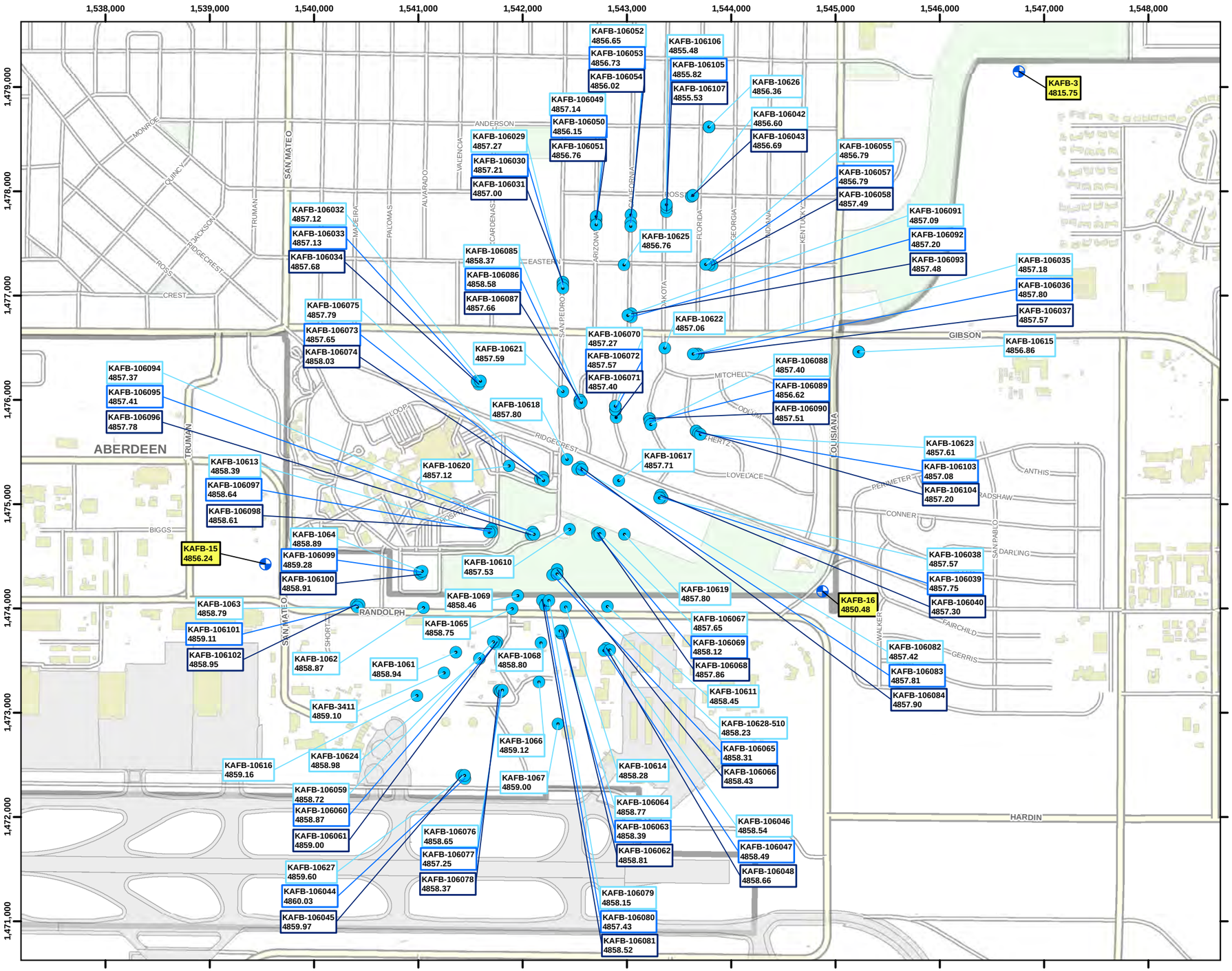


Legend

- Water Supply Well with August 2011 Static (Non-Pumping) Groundwater Elevation
- Monitor Well With December 2011 Groundwater Elevation
- Major Road
- Road
- Structure
- Runway
- Park
- Installation Boundary

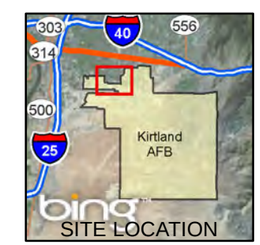
Well Screened in Shallow Zone of Aquifer

Well Screened in Intermediate Zone of Aquifer

Well Screened in Deep Zone of Aquifer

Water Supply Well

Note: Water supply well water elevations are from August, 2011.



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Revision Date: 08/29/12

0 500 1,000 2,000

Feet

1 inch = 1,000 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-5

COMPREHENSIVE POSTING OF
APRIL 2012
WATER LEVEL ELEVATIONS

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_072_SWL_2012_Apr.mxd 08/29/12

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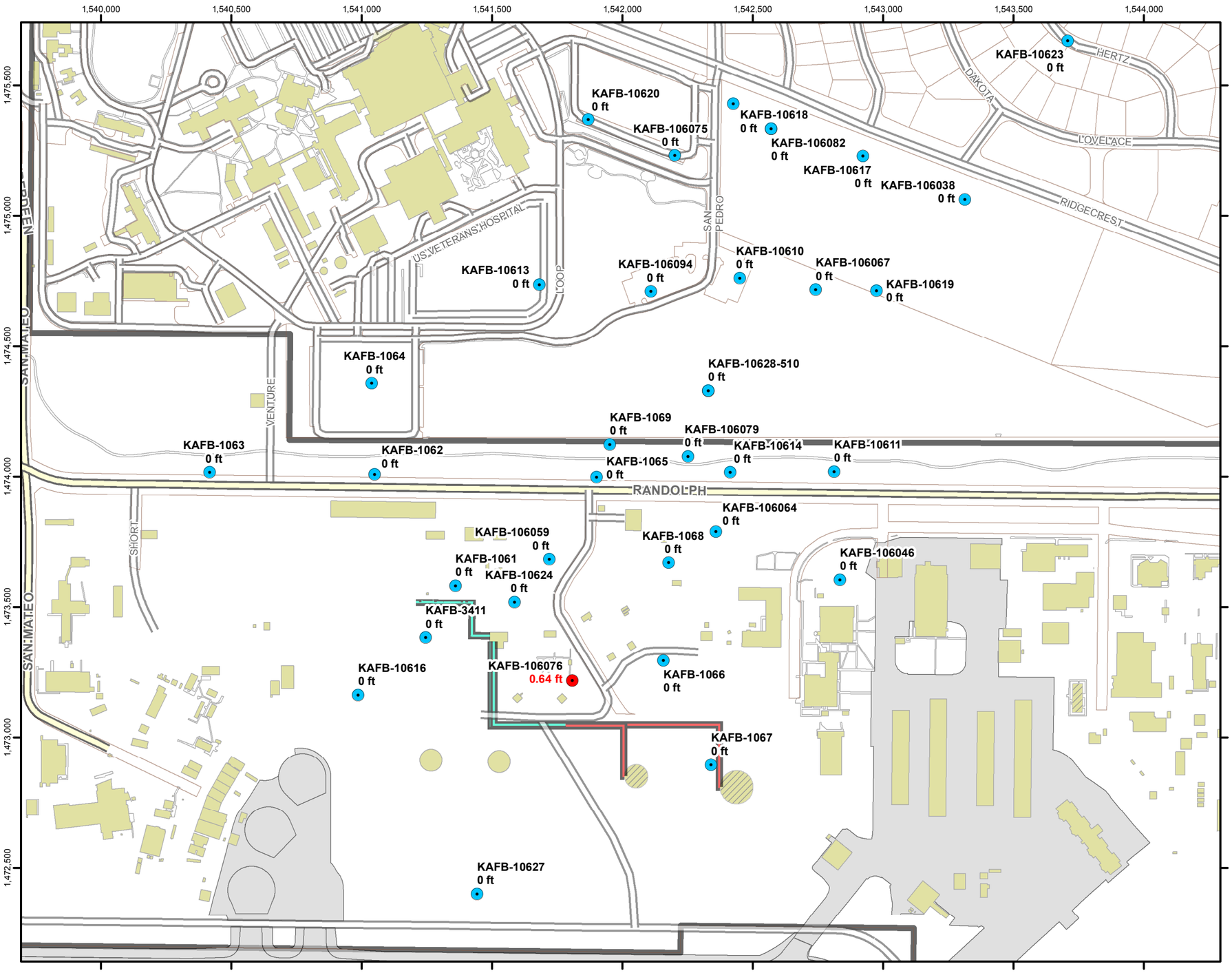

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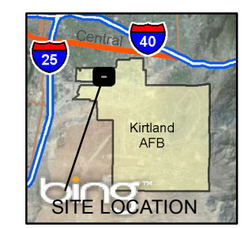
Legend

- Monitor Well With NAPL
- Monitor Well Without NAPL



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N

0 200 400 800

Feet

1 inch = 400 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-6

NAPL THICKNESS
SHALLOW GROUNDWATER
APRIL 2012

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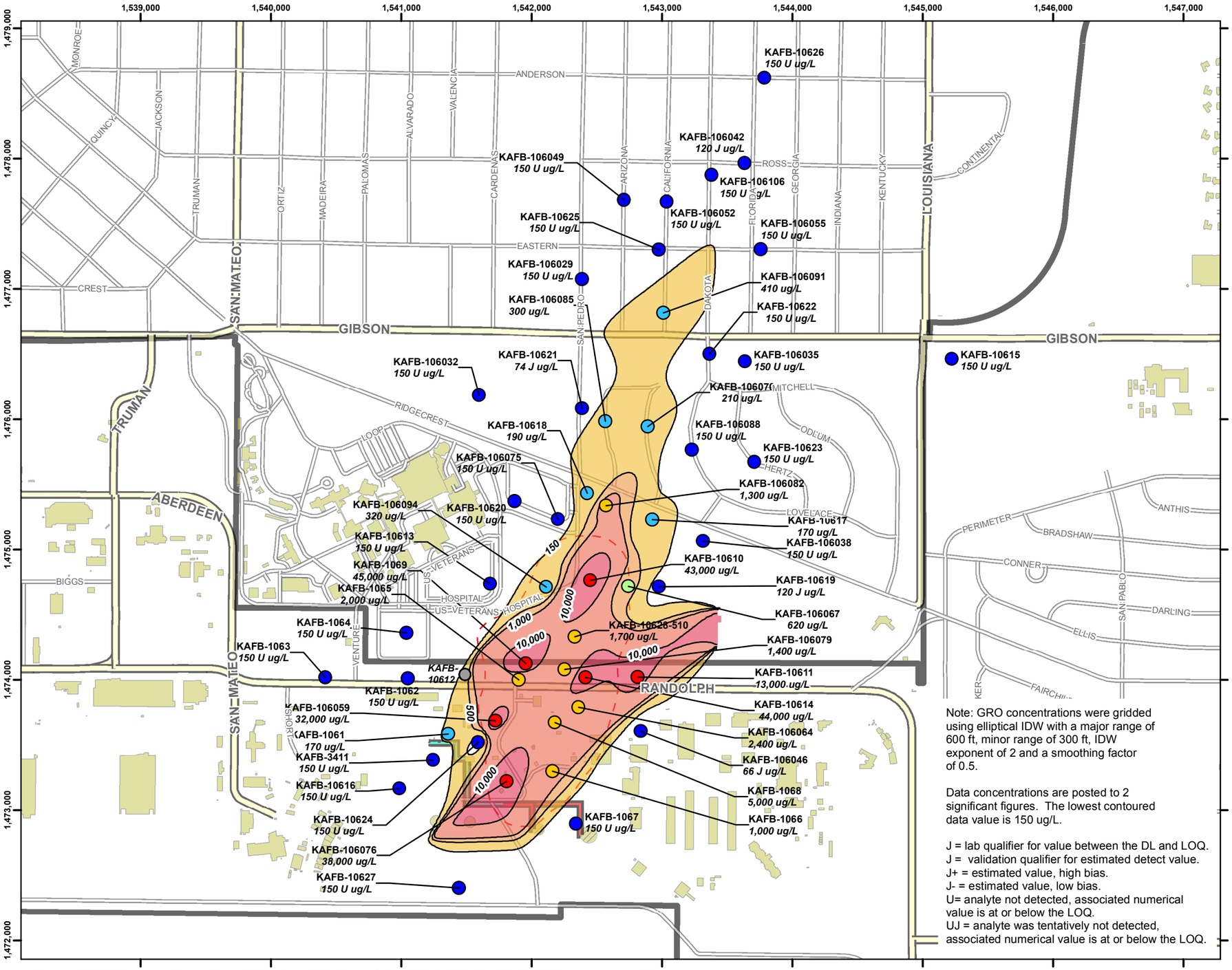


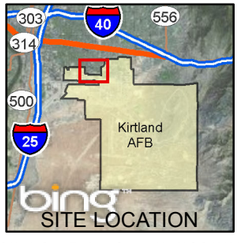
Legend

GRO Result (ug/L)

- 66 - 150
- 160 - 500
- 510 - 1,000
- 1,100 - 10,000
- 11,000 - 45,000
- Not Sampled
- GRO Concentration Contour (ug/L)

GRO Concentration (ug/L)

- 79 - 150
- 150 - 500
- 500 - 1,000
- 1,000 - 10,000
- 10,000 - 45,000
- Historical Area of Observed NAPL (July 2009)



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0 400 800 1,600

Feet

1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

Note: GRO concentrations were gridded using elliptical IDW with a major range of 600 ft, minor range of 300 ft, IDW exponent of 2 and a smoothing factor of 0.5.

Data concentrations are posted to 2 significant figures. The lowest contoured data value is 150 ug/L.

J = lab qualifier for value between the DL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U= analyte not detected, associated numerical value is at or below the LOQ.
UJ = analyte was tentatively not detected, associated numerical value is at or below the LOQ.

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FIGURE 5-7

GASOLINE RANGE ORGANICS CONCENTRATIONS IN SHALLOW GROUNDWATER

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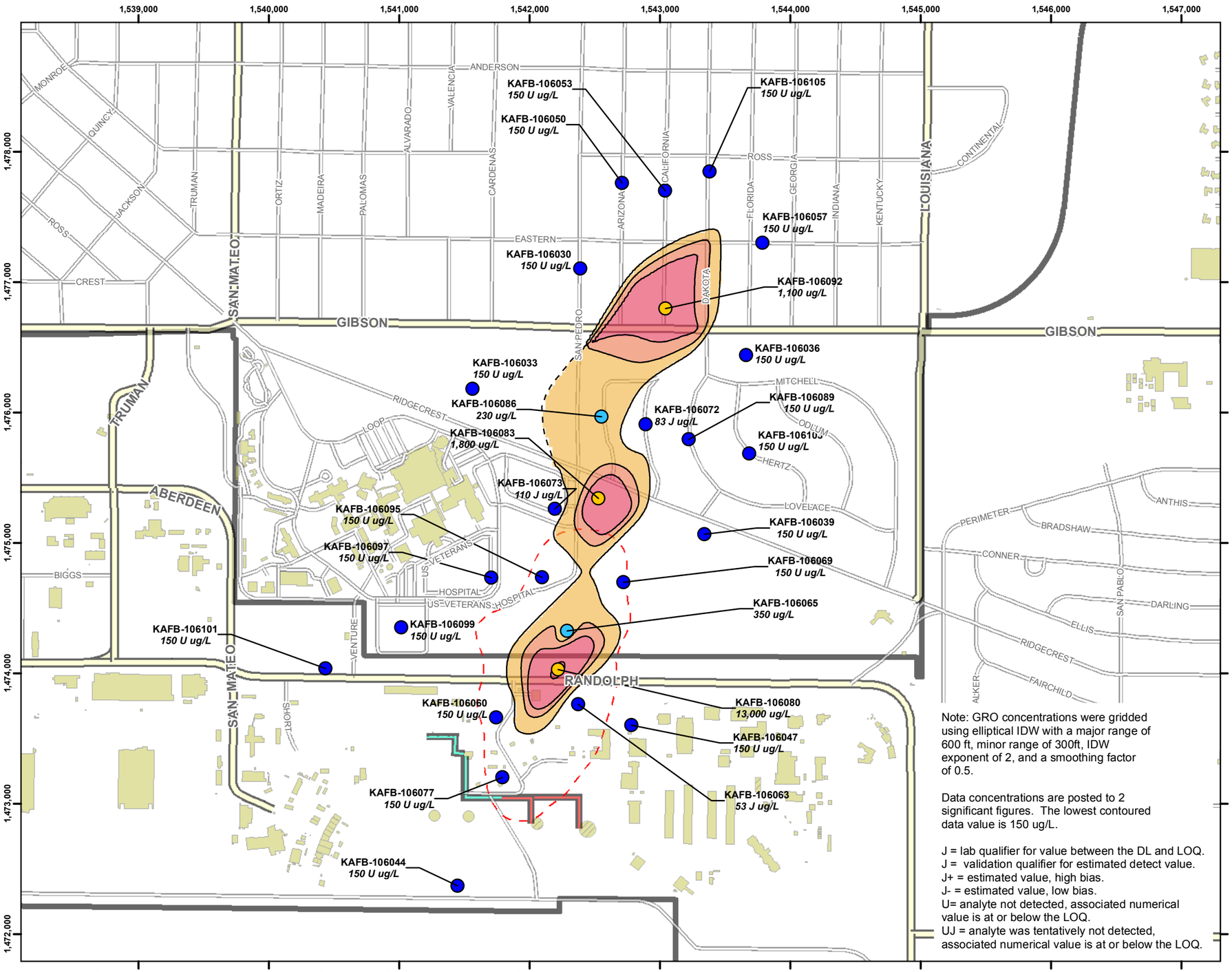


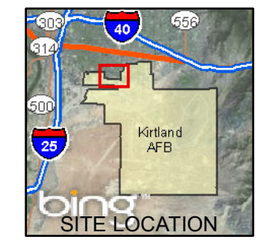
Legend

GRO Result (ug/L)

- 53 - 150
- 160 - 500
- 510 - 1,000
- 1,100 - 13,000
- GRO Concentration Contour (ug/L) (line is dashed where approximated)

GRO Concentration (ug/L)

- 75 - 150
- 160 - 500
- 510 - 1,000
- 1,100 - 13,000
- Historical Area of Observed NAPL (July 2009)



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Note: GRO concentrations were gridded using elliptical IDW with a major range of 600 ft, minor range of 300ft, IDW exponent of 2, and a smoothing factor of 0.5.

Data concentrations are posted to 2 significant figures. The lowest contoured data value is 150 ug/L.

J = lab qualifier for value between the DL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U= analyte not detected, associated numerical value is at or below the LOQ.
UJ = analyte was tentatively not detected, associated numerical value is at or below the LOQ.

N

Revision Date: 08/20/12

0 400 800 1,600

Feet
1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-8

GASOLINE RANGE ORGANICS CONCENTRATIONS IN INTERMEDIATE GROUNDWATER

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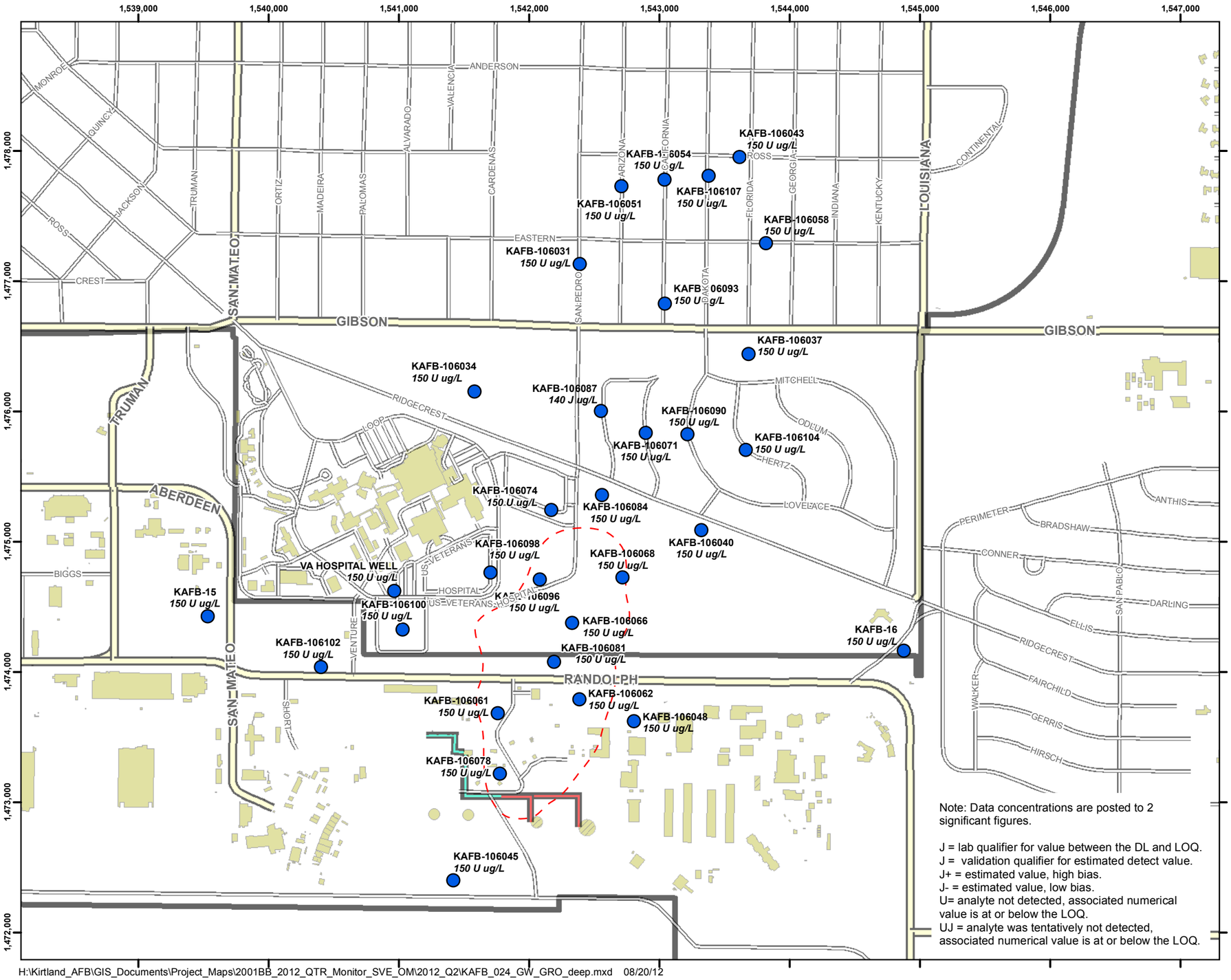

Note: Data concentrations are posted to 2 significant figures.

J = lab qualifier for value between the DL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U= analyte not detected, associated numerical value is at or below the LOQ.
UJ = analyte was tentatively not detected, associated numerical value is at or below the LOQ.

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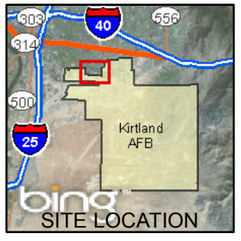
Legend

GRO Result (ug/L)

- 140 - 150
- Historical Area of Observed NAPL (July 2009)



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N

0 400 800 1,600

Feet
1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-9

GASOLINE RANGE ORGANICS CONCENTRATIONS IN DEEP GROUNDWATER

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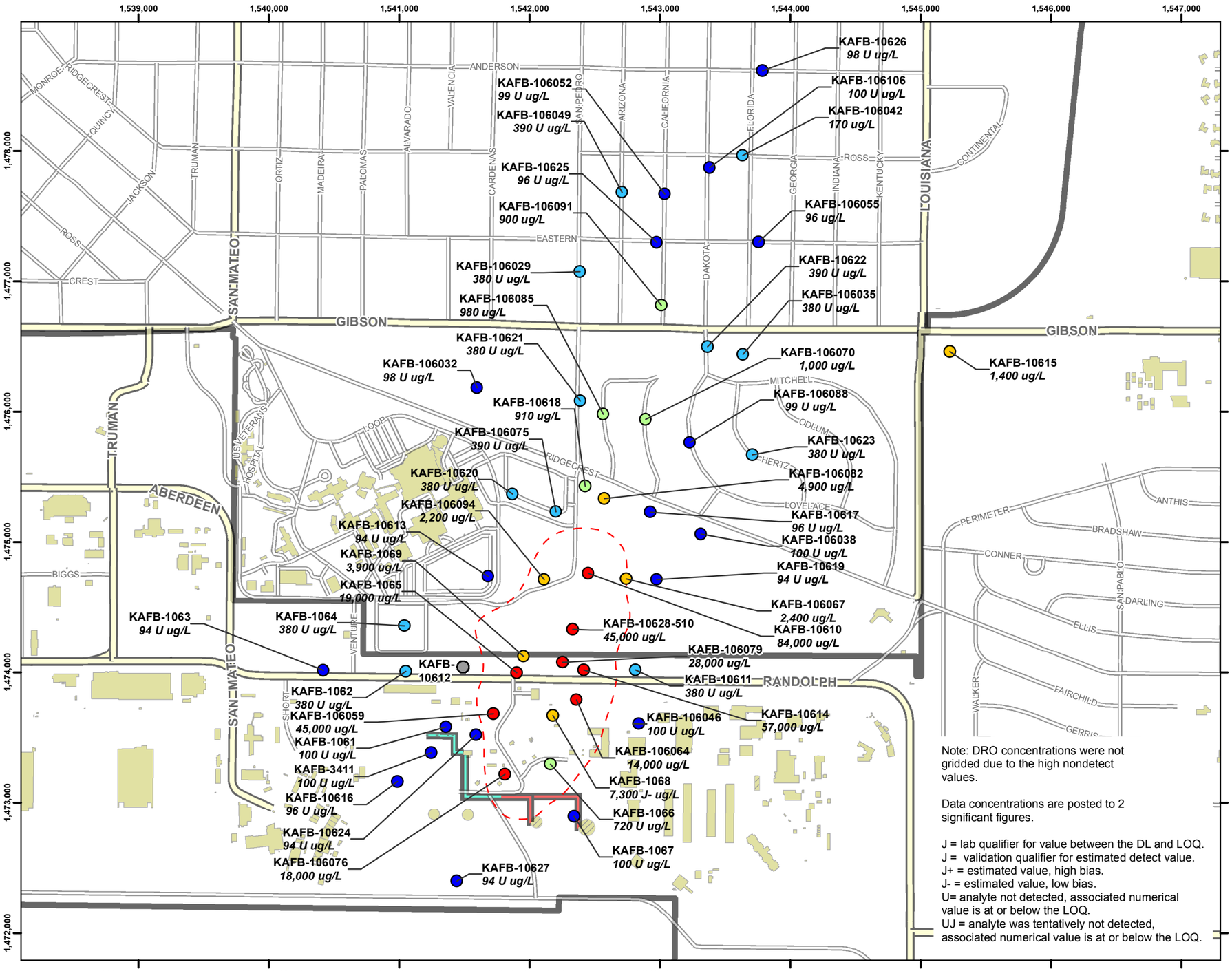
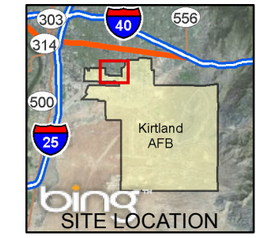


Legend

DRO Result (ug/L)

- 94 - 150
- 160 - 500
- 510 - 1,000
- 1,100 - 10,000
- 11,000 - 84,000
- Not Sampled
- Historical Area of Observed NAPL (July 2009)



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N

Revision Date: 08/27/12

0 400 800 1,600

Feet

1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

Note: DRO concentrations were not gridded due to the high nondetect values.

Data concentrations are posted to 2 significant figures.

J = lab qualifier for value between the DL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U= analyte not detected, associated numerical value is at or below the LOQ.
UJ = analyte was tentatively not detected, associated numerical value is at or below the LOQ.

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FIGURE 5-10

DIESEL RANGE ORGANIC CONCENTRATIONS IN SHALLOW GROUNDWATER

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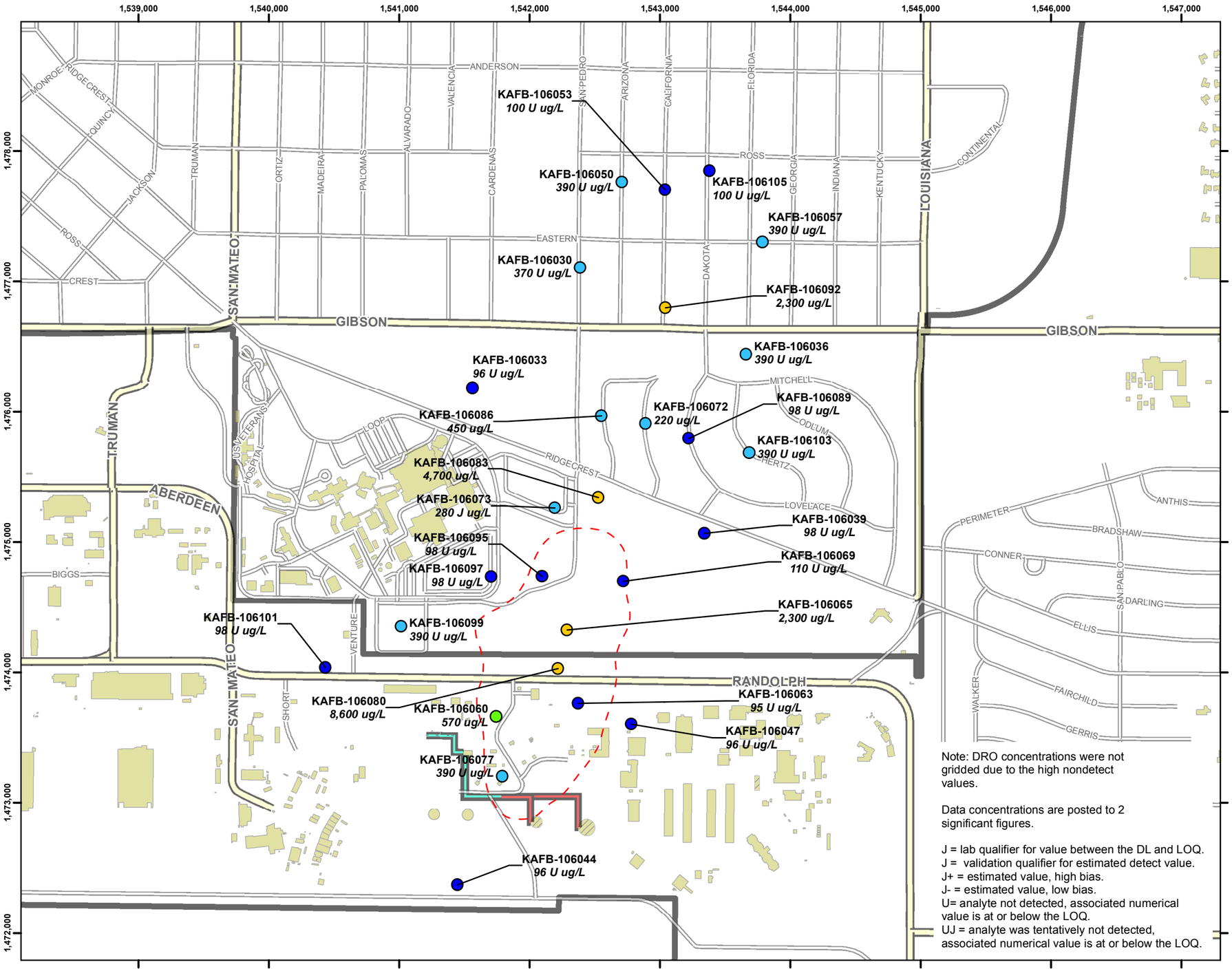
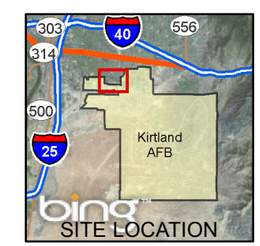


Legend

DRO Result (ug/L)

- 95 - 150
- 160 - 500
- 510 - 1,000
- 1,100 - 8,600
- Historical Area of Observed NAPL (July 2009)



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N

0 400 800 1,600

Feet
1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

Note: DRO concentrations were not gridded due to the high nondetect values.

Data concentrations are posted to 2 significant figures.

J = lab qualifier for value between the DL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U= analyte not detected, associated numerical value is at or below the LOQ.
UJ = analyte was tentatively not detected, associated numerical value is at or below the LOQ.

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FIGURE 5-11

DIESEL RANGE ORGANIC CONCENTRATIONS IN INTERMEDIATE GROUNDWATER

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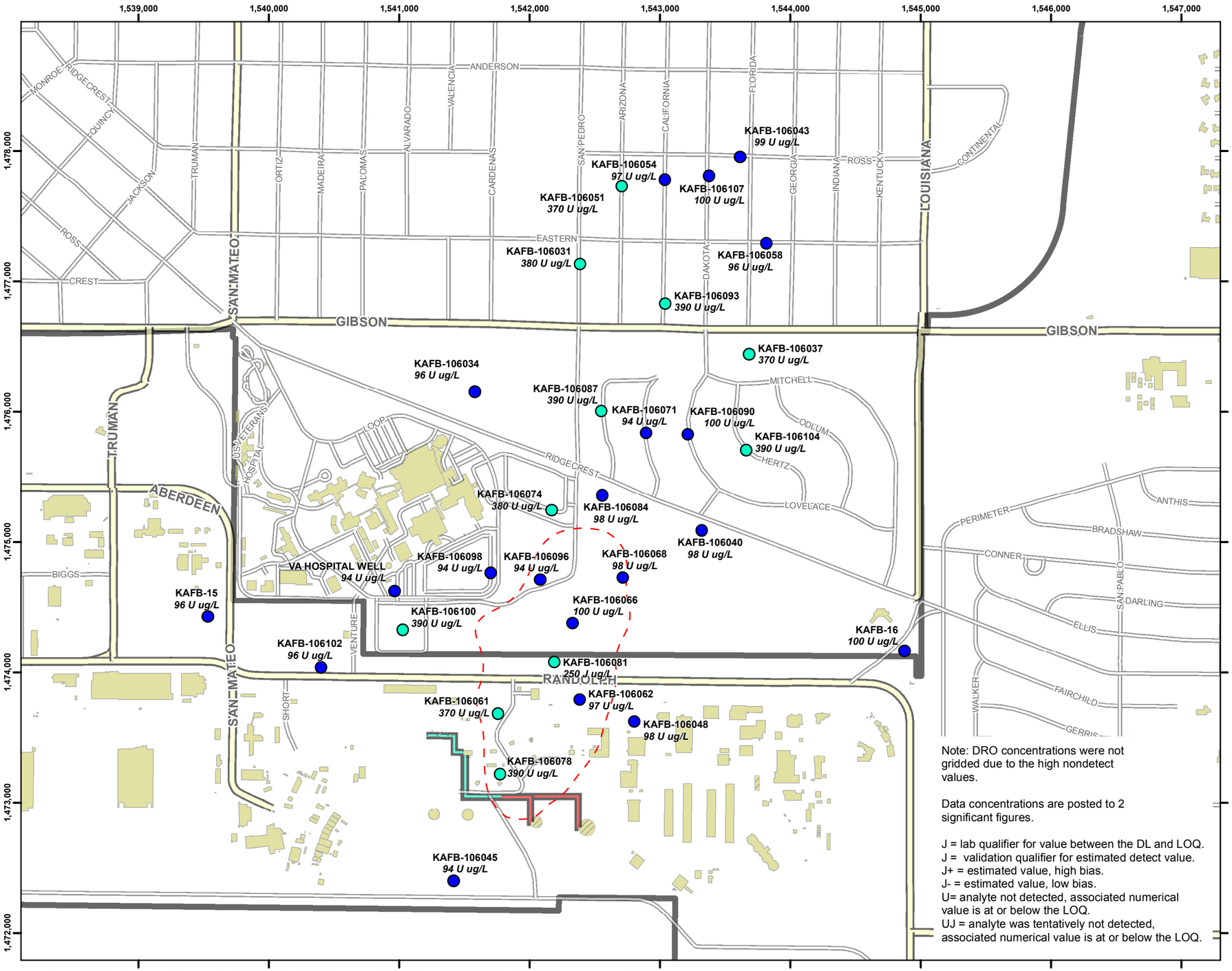
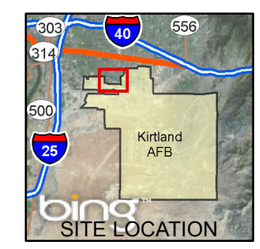


Legend

DRO Result (ug/L)

- 94 - 150
- 160 - 390
- Historical Area of Observed NAPL (July 2009)



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N

0 400 800 1,600

Feet

1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

Note: DRO concentrations were not gridded due to the high nondetect values.

Data concentrations are posted to 2 significant figures.

J = lab qualifier for value between the DL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U= analyte not detected, associated numerical value is at or below the LOQ.
UJ = analyte was tentatively not detected, associated numerical value is at or below the LOQ.

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FIGURE 5-12

DIESEL RANGE ORGANIC CONCENTRATIONS IN DEEP GROUNDWATER

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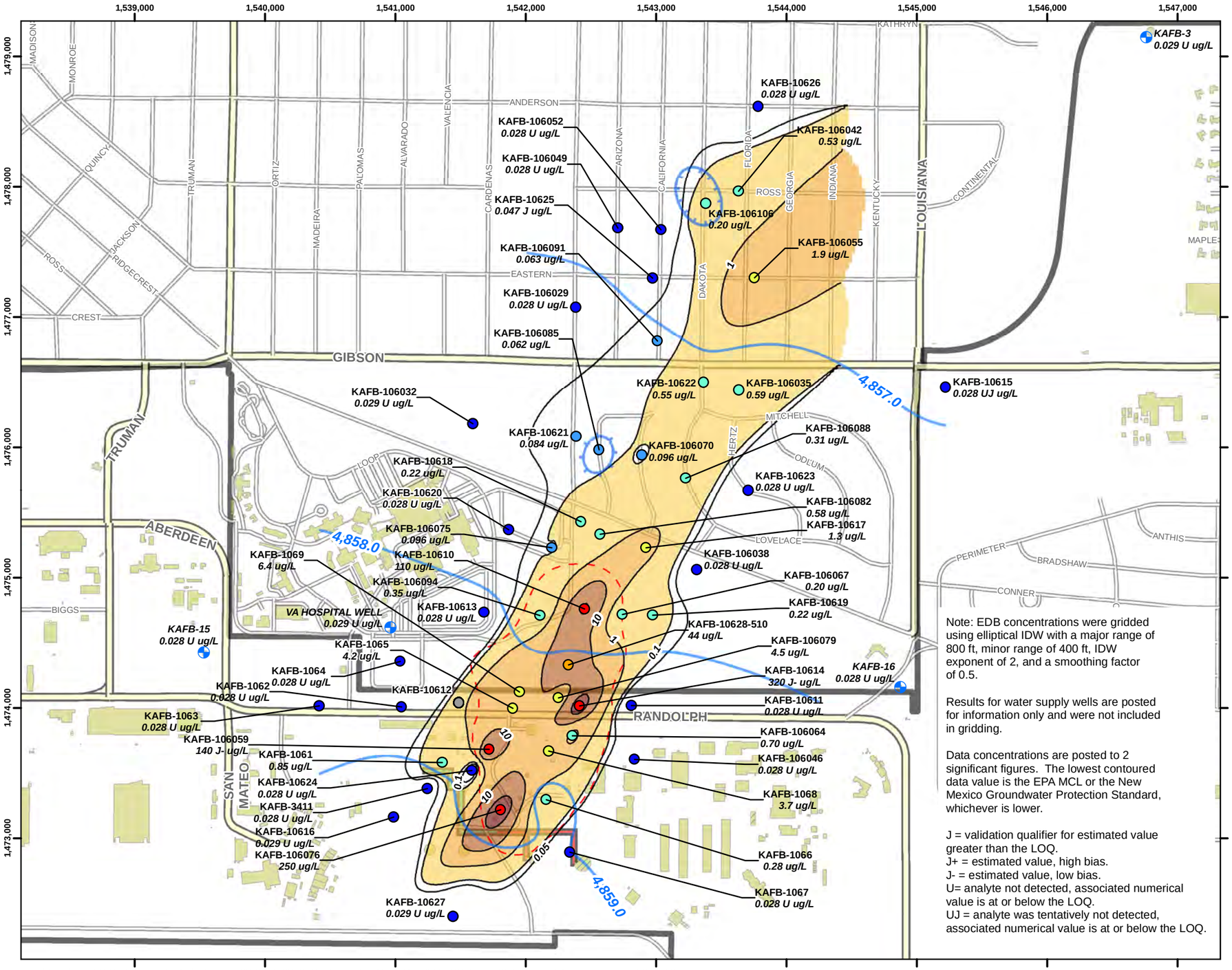


Note: EDB concentrations were gridded using elliptical IDW with a major range of 800 ft, minor range of 400 ft, IDW exponent of 2, and a smoothing factor of 0.5.

Results for water supply wells are posted for information only and were not included in gridding.

Data concentrations are posted to 2 significant figures. The lowest contoured data value is the EPA MCL or the New Mexico Groundwater Protection Standard, whichever is lower.

J = validation qualifier for estimated value greater than the LOQ.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U= analyte not detected, associated numerical value is at or below the LOQ.
UJ = analyte was tentatively not detected, associated numerical value is at or below the LOQ.

Legend

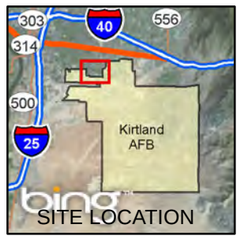
- Water Supply Well

EDB Result (ug/L)

- 0.028 - 0.050
- 0.051 - 0.10
- 0.11 - 1.0
- 1.1 - 10
- 11 - 100
- 110 - 320
- Not Sampled
- Groundwater Level Contour (ft msl)
- Groundwater High
- Groundwater Depression
- EDB Concentration Contour (ug/L)

EDB Concentration (ug/L)

- 0.014 - 0.1
- 0.11 - 1
- 1.1 - 10
- 11 - 100
- 110 - 310
- Historical Area of Observed NAPL (July 2009)



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N

0 400 800 1,600

Feet
1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-13

1,2-DIBROMOETHANE (EDB) CONCENTRATIONS IN SHALLOW GROUNDWATER

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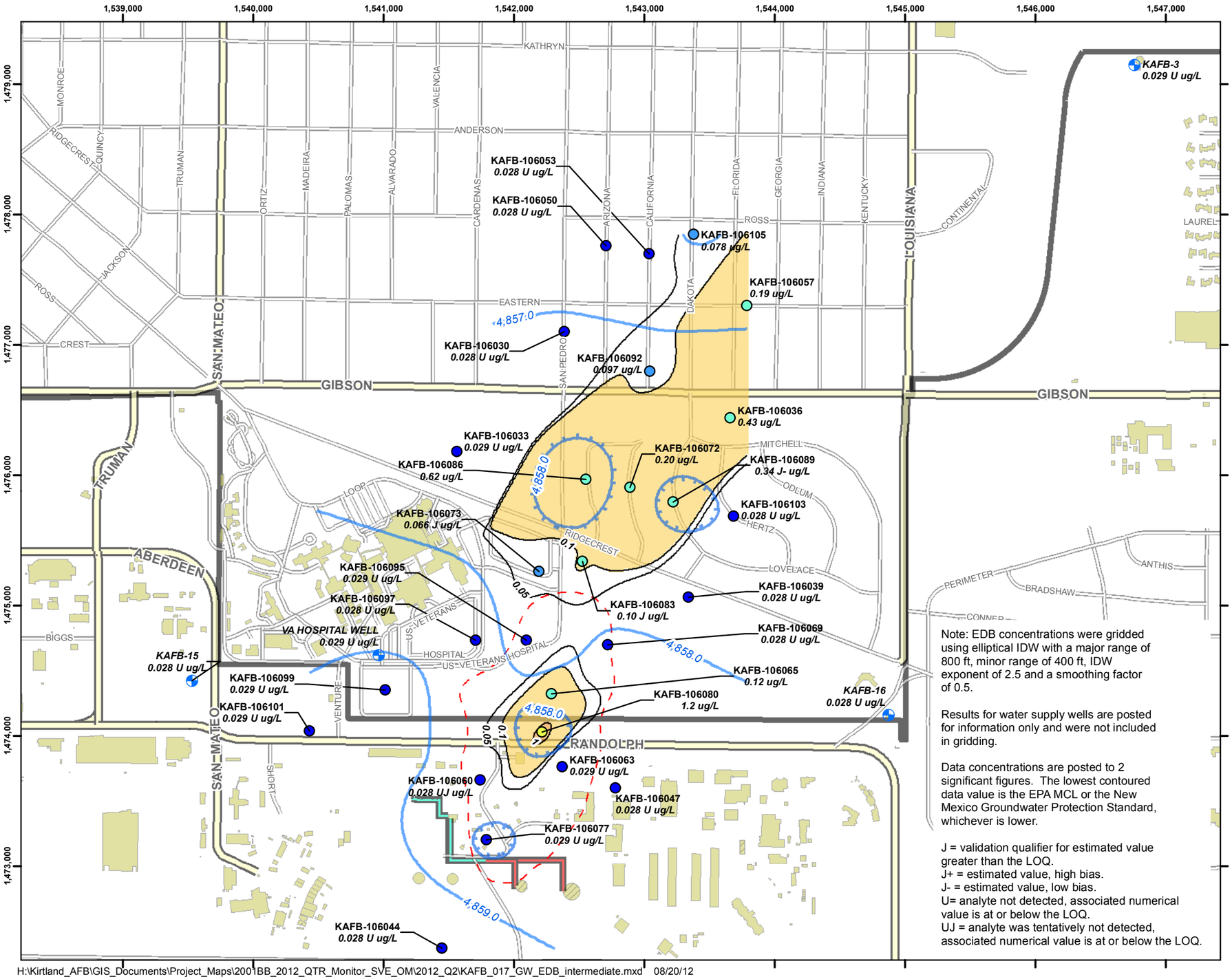


Note: EDB concentrations were gridded using elliptical IDW with a major range of 800 ft, minor range of 400 ft, IDW exponent of 2.5 and a smoothing factor of 0.5.

Results for water supply wells are posted for information only and were not included in gridding.

Data concentrations are posted to 2 significant figures. The lowest contoured data value is the EPA MCL or the New Mexico Groundwater Protection Standard, whichever is lower.

J = validation qualifier for estimated value greater than the LOQ.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U= analyte not detected, associated numerical value is at or below the LOQ.
UJ = analyte was tentatively not detected, associated numerical value is at or below the LOQ.

Legend

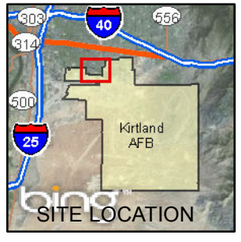
- Water Supply Well

EDB Result (ug/L)

- 0.028 - 0.050
- 0.051 - 0.10
- 0.11 - 1.0
- 1.1 - 1.2
- Groundwater Level Contour (ft msl)
- Groundwater High
- Groundwater Depression
- EDB Concentration Contour (ug/L)

EDB Concentration (ug/L)

- 0.01 - 0.1
- 0.1 - 1.0
- 1.0 - 1.2
- Historical Area of Observed NAPL (July 2009)



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Revision Date: 08/20/12

N

0 400 800 1,600

Feet
1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-14

1,2-DIBROMOETHANE CONCENTRATIONS IN INTERMEDIATE GROUNDWATER

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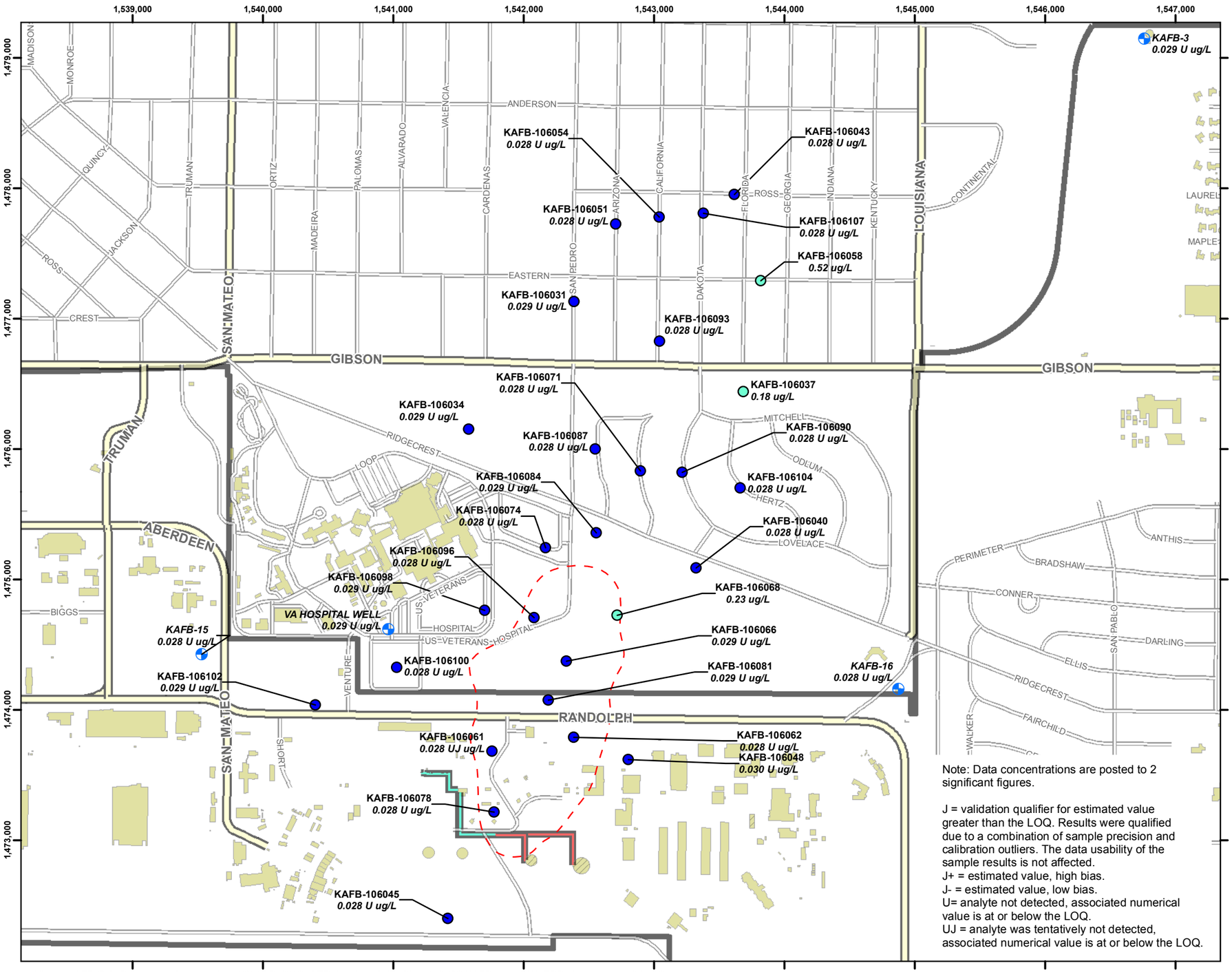


Note: Data concentrations are posted to 2 significant figures.

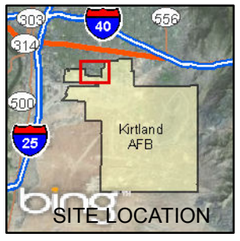
J = validation qualifier for estimated value greater than the LOQ. Results were qualified due to a combination of sample precision and calibration outliers. The data usability of the sample results is not affected.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U= analyte not detected, associated numerical value is at or below the LOQ.
UJ = analyte was tentatively not detected, associated numerical value is at or below the LOQ.

Legend

- Water Supply Well

EDB Result (ug/L)

- 0.028 - 0.050
- 0.051 - 0.10
- 0.11 - 0.52
- Historical Area of Observed NAPL (July 2009)



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N

Revision Date: 08/20/12

0 400 800 1,600

Feet
1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-15

1,2-DIBROMOETHANE CONCENTRATIONS IN DEEP GROUNDWATER

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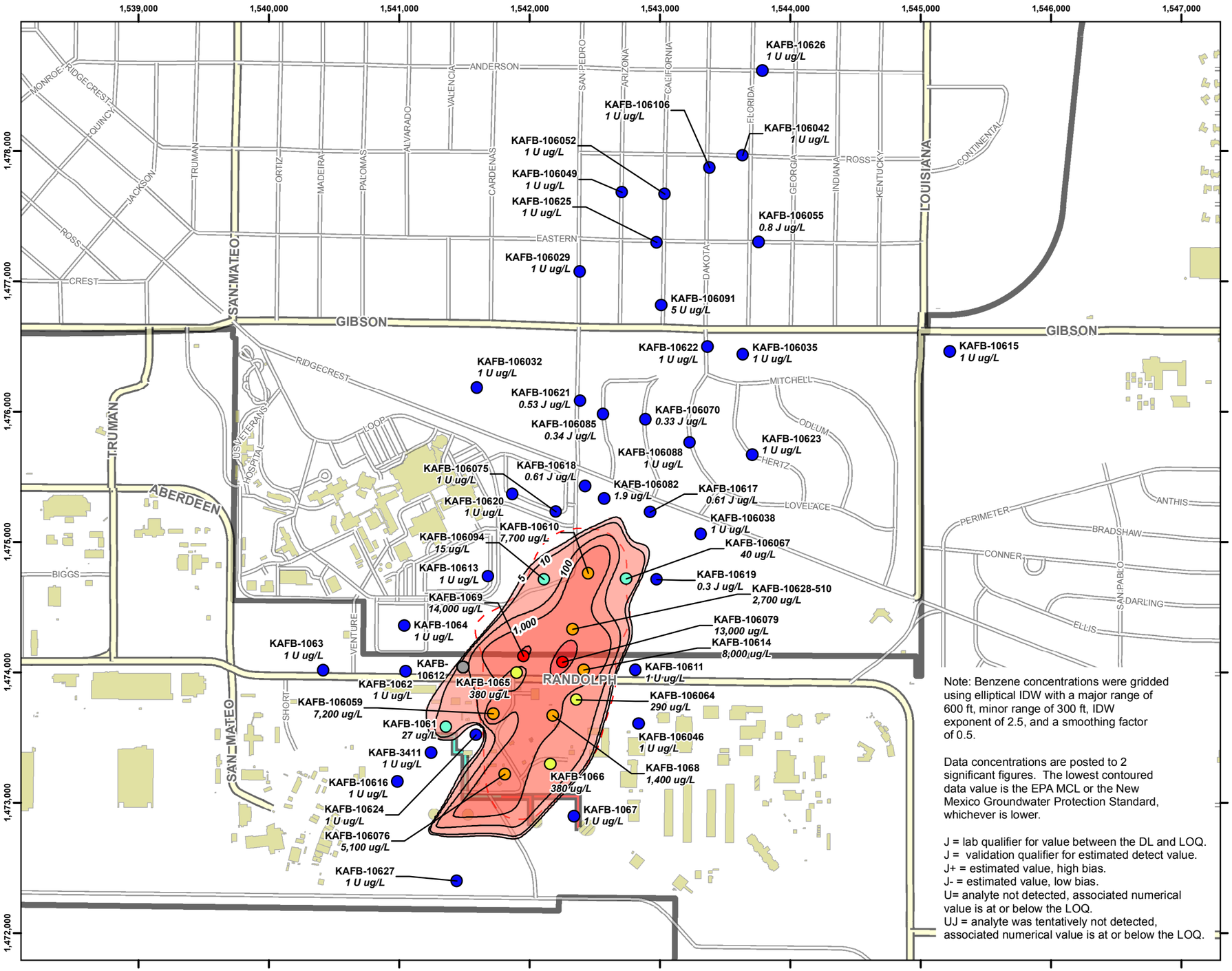


Note: Benzene concentrations were gridded using elliptical IDW with a major range of 600 ft, minor range of 300 ft, IDW exponent of 2.5, and a smoothing factor of 0.5.

Data concentrations are posted to 2 significant figures. The lowest contoured data value is the EPA MCL or the New Mexico Groundwater Protection Standard, whichever is lower.

J = lab qualifier for value between the DL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U= analyte not detected, associated numerical value is at or below the LOQ.
UJ = analyte was tentatively not detected, associated numerical value is at or below the LOQ.

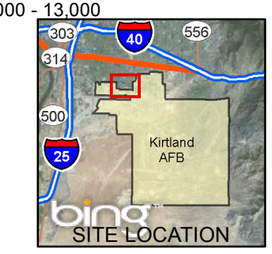
Legend

Benzene Result (ug/L)

- 0.30 - 5.0
- 5.1 - 10
- 11 - 100
- 110 - 1,000
- 1,100 - 10,000
- 11,000 - 14,000
- Not Sampled
- Benzene Concentration Contour (ug/L)
- Historical Area of Observed NAPL (July 2009)

Benzene Concentration (ug/L)

- 0.27 - 5
- 5.1 - 10
- 11 - 100
- 110 - 1,000
- 1,100 - 10,000
- 11,000 - 13,000



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N

Revision Date: 08/27/12

0 400 800 1,600

Feet

1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-16

BENZENE CONCENTRATIONS IN SHALLOW GROUNDWATER

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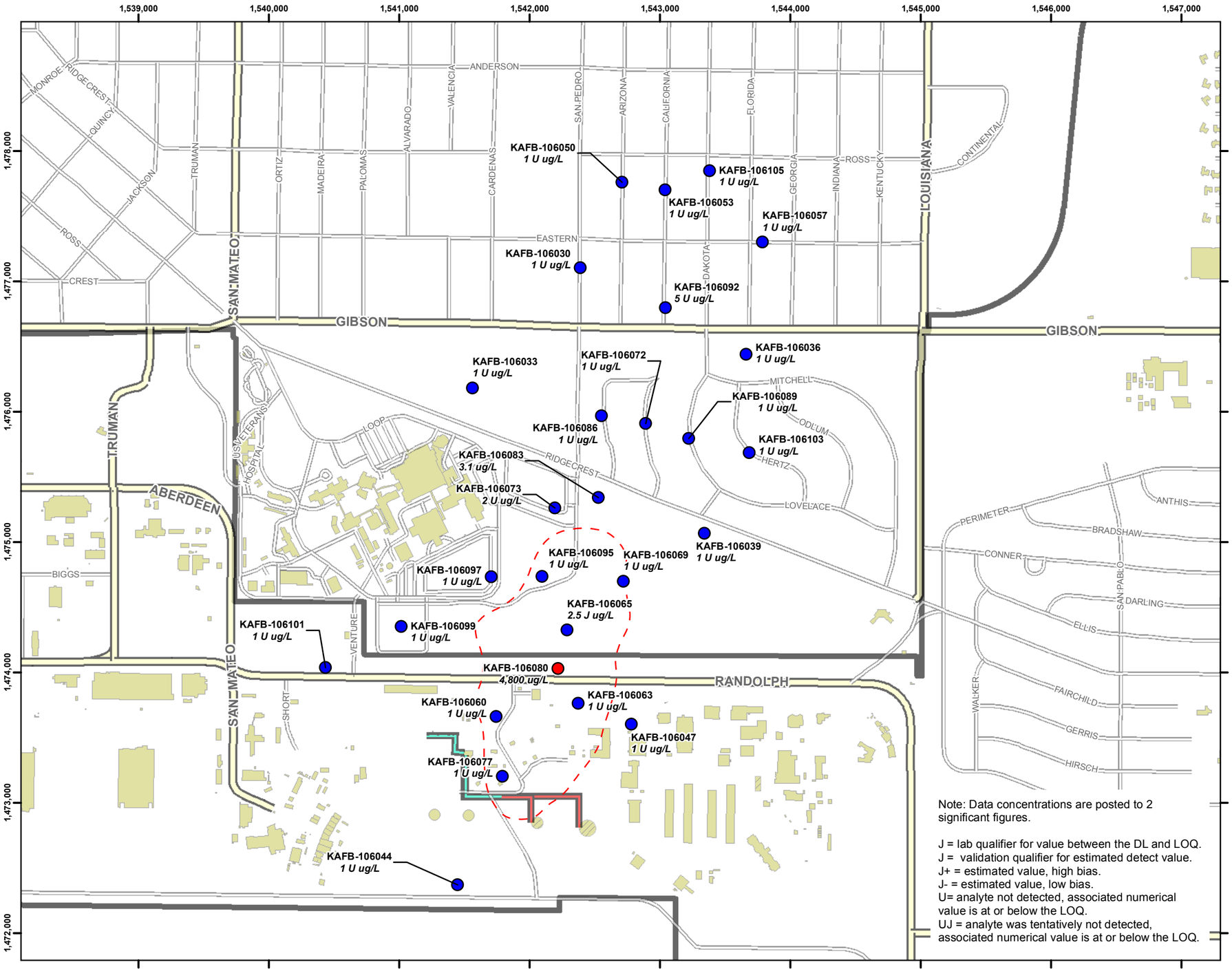
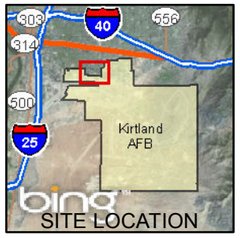


Legend

Benzene Result (ug/L)

- 1.0 - 5.0
- 5.1 - 10
- 11 - 100
- 110 - 1,000
- 1,100 - 4,800
- Historical Area of Observed NAPL (July 2009)



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Revision Date: 08/11/12

N

0 400 800 1,600

Feet

1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

Note: Data concentrations are posted to 2 significant figures.

J = lab qualifier for value between the DL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U= analyte not detected, associated numerical value is at or below the LOQ.
UJ = analyte was tentatively not detected, associated numerical value is at or below the LOQ.

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FIGURE 5-17

BENZENE CONCENTRATIONS IN INTERMEDIATE GROUNDWATER

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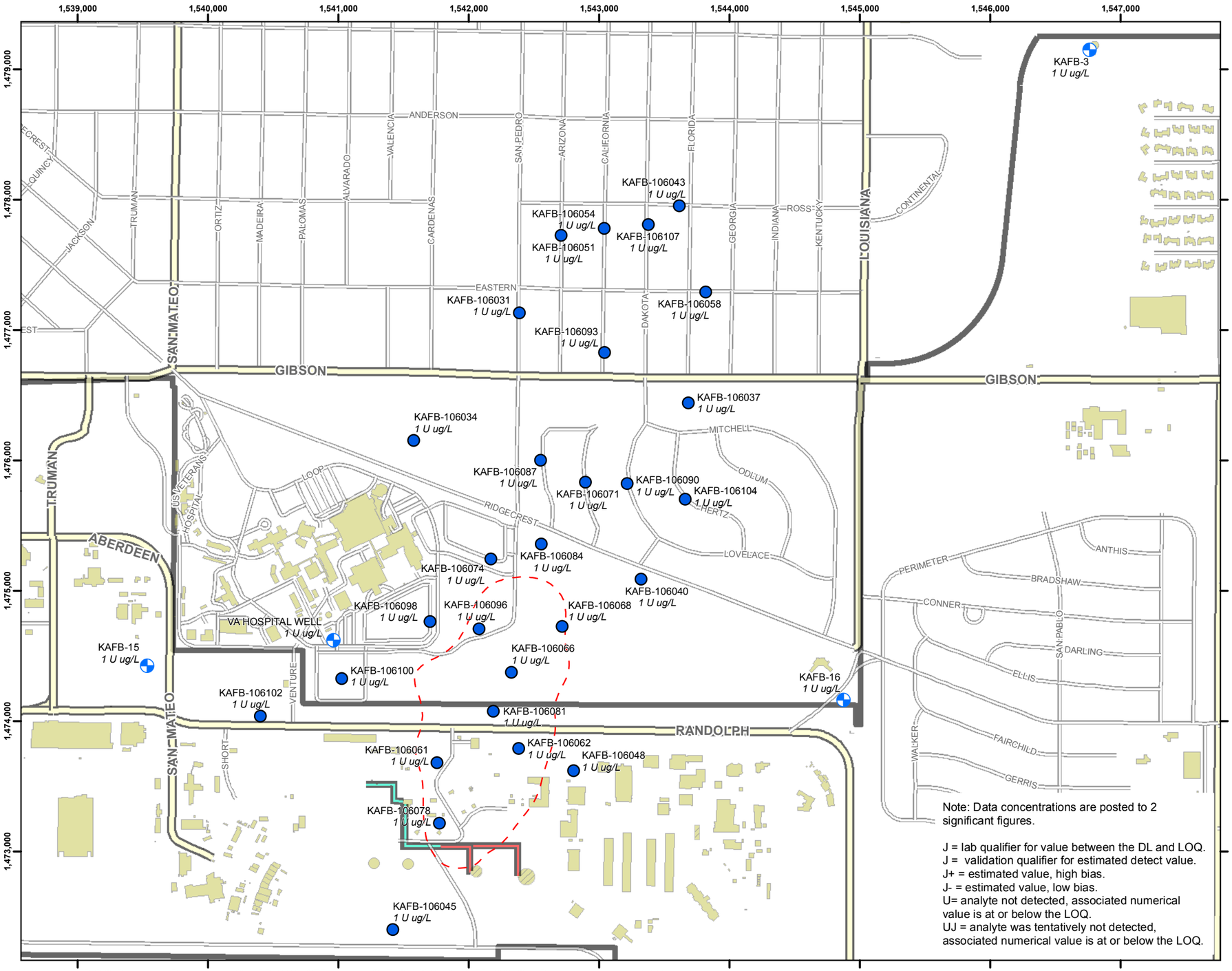


Note: Data concentrations are posted to 2 significant figures.

J = lab qualifier for value between the DL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U= analyte not detected, associated numerical value is at or below the LOQ.
UJ = analyte was tentatively not detected, associated numerical value is at or below the LOQ.

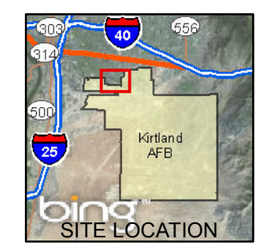
Legend

Water Supply Well

Benzene Result (ug/L)

1.0

Historical Area of Observed NAPL (July 2009)



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N

Revision Date: 08/11/12

0 400 800 1,600

Feet
1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-18

BENZENE
CONCENTRATIONS IN
DEEP GROUNDWATER

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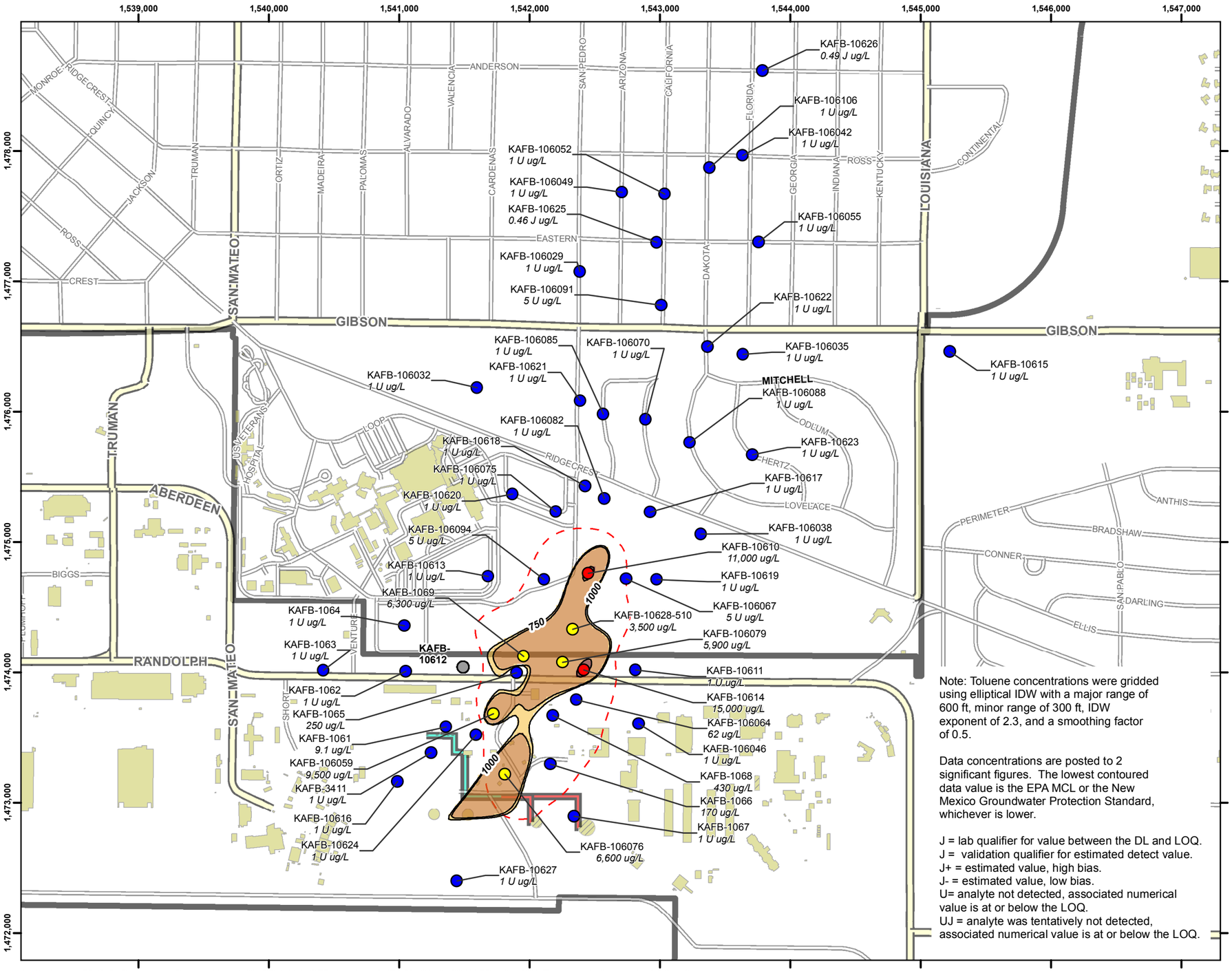


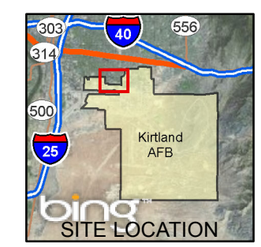
Legend

Toluene Result (ug/L)

- 0.46 - 750
- 760 - 1,000
- 1,100 - 10,000
- 11,000 - 15,000
- Not Sampled
- Toluene Concentration Contour (ug/L)

Toluene Concentration (ug/L)

- 0.46 - 750
- 760 - 1,000
- 1,100 - 10,000
- 11,000 - 14,000
- Historical Area of Observed NAPL (July 2009)



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Note: Toluene concentrations were gridded using elliptical IDW with a major range of 600 ft, minor range of 300 ft, IDW exponent of 2.3, and a smoothing factor of 0.5.

Data concentrations are posted to 2 significant figures. The lowest contoured data value is the EPA MCL or the New Mexico Groundwater Protection Standard, whichever is lower.

J = lab qualifier for value between the DL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U= analyte not detected, associated numerical value is at or below the LOQ.
UJ = analyte was tentatively not detected, associated numerical value is at or below the LOQ.

N

0 400 800 1,600

Feet
1 inch = 800 feet

Revision Date: 08/27/12

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 5-19

TOLUENE CONCENTRATIONS IN SHALLOW GROUNDWATER

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_004_GW_Toluene_shallow.mxd 08/27/12

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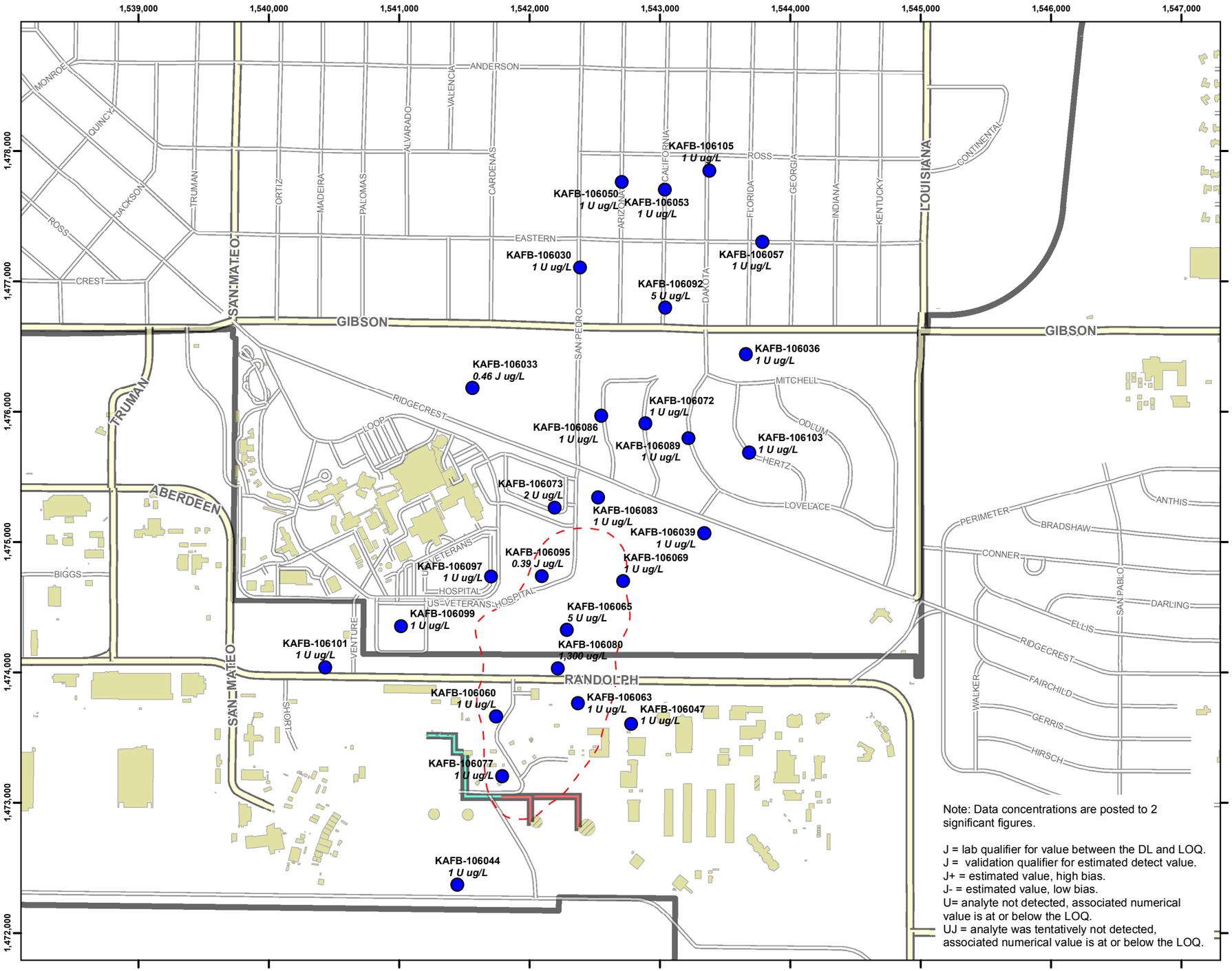
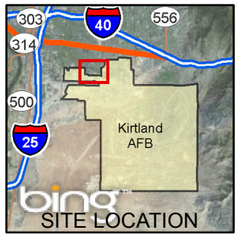


Legend

Toluene Result (ug/L)

- 0.39 - 1,300
- Historical Area of Observed NAPL (July 2009)



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N

0 400 800 1,600

Feet

1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

Note: Data concentrations are posted to 2 significant figures.

J = lab qualifier for value between the DL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U= analyte not detected, associated numerical value is at or below the LOQ.
UJ = analyte was tentatively not detected, associated numerical value is at or below the LOQ.

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FIGURE 5-20

TOLUENE CONCENTRATIONS IN INTERMEDIATE GROUNDWATER

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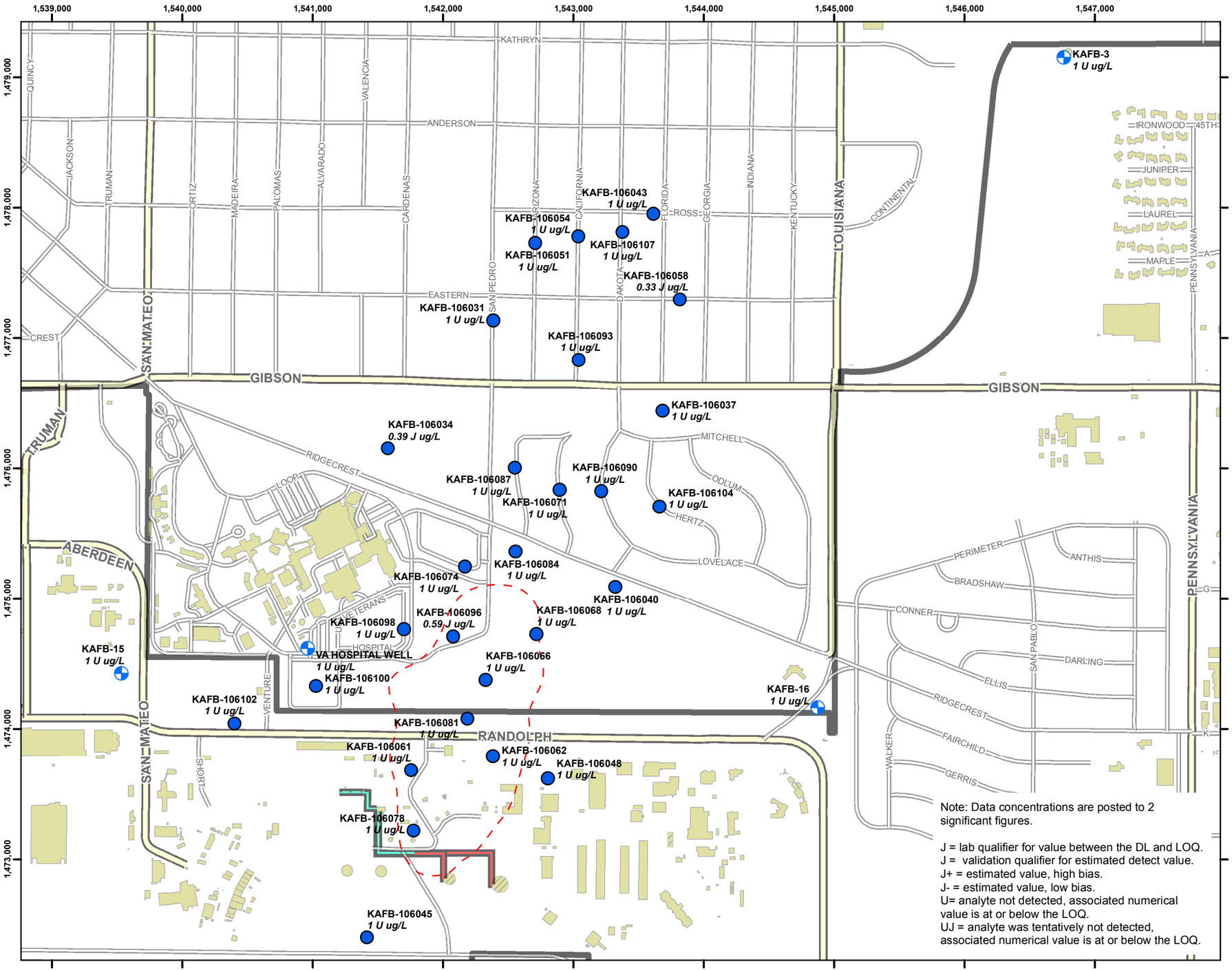


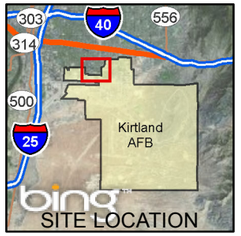
Legend

Water Supply Well

Toluene Result (ug/L)

0.33 - 1.0

Historical Area of Observed NAPL (July 2009)



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N

Revision Date: 08/20/12

0 400 800 1,600

Feet

1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

Note: Data concentrations are posted to 2 significant figures.

J = lab qualifier for value between the DL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U= analyte not detected, associated numerical value is at or below the LOQ.
UJ = analyte was tentatively not detected, associated numerical value is at or below the LOQ.

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FIGURE 5-21

TOLUENE CONCENTRATIONS IN DEEP GROUNDWATER

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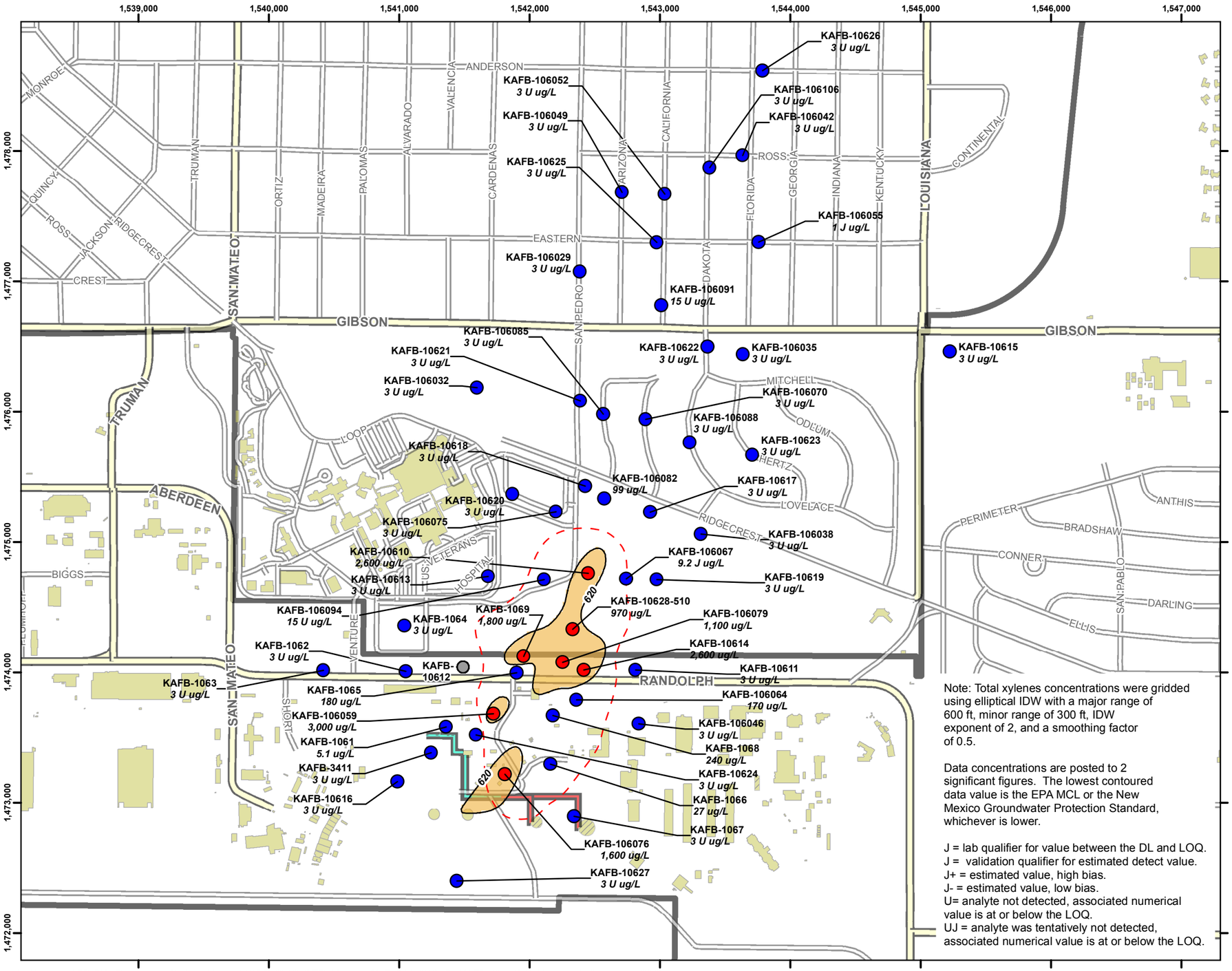


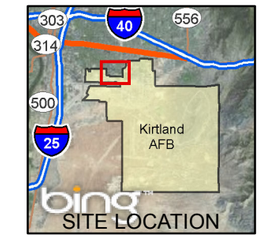
Legend

Total Xylenes Result (ug/L)

- 1.0 - 620
- 630 - 3,000
- Not Sampled
- Total Xylenes Concentration Contour (ug/L)
- Historical Area of Observed NAPL (July 2009)

Total Xylenes Concentration (ug/L)

- 1 - 620
- 630 - 2,900



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Note: Total xylenes concentrations were gridded using elliptical IDW with a major range of 600 ft, minor range of 300 ft, IDW exponent of 2, and a smoothing factor of 0.5.

Data concentrations are posted to 2 significant figures. The lowest contoured data value is the EPA MCL or the New Mexico Groundwater Protection Standard, whichever is lower.

J = lab qualifier for value between the DL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U= analyte not detected, associated numerical value is at or below the LOQ.
UJ = analyte was tentatively not detected, associated numerical value is at or below the LOQ.

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0 400 800 1,600

Feet
1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-22

TOTAL XYLENES CONCENTRATIONS IN SHALLOW GROUNDWATER

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_007_GW_Xylene_shallow.mxd 08/27/12

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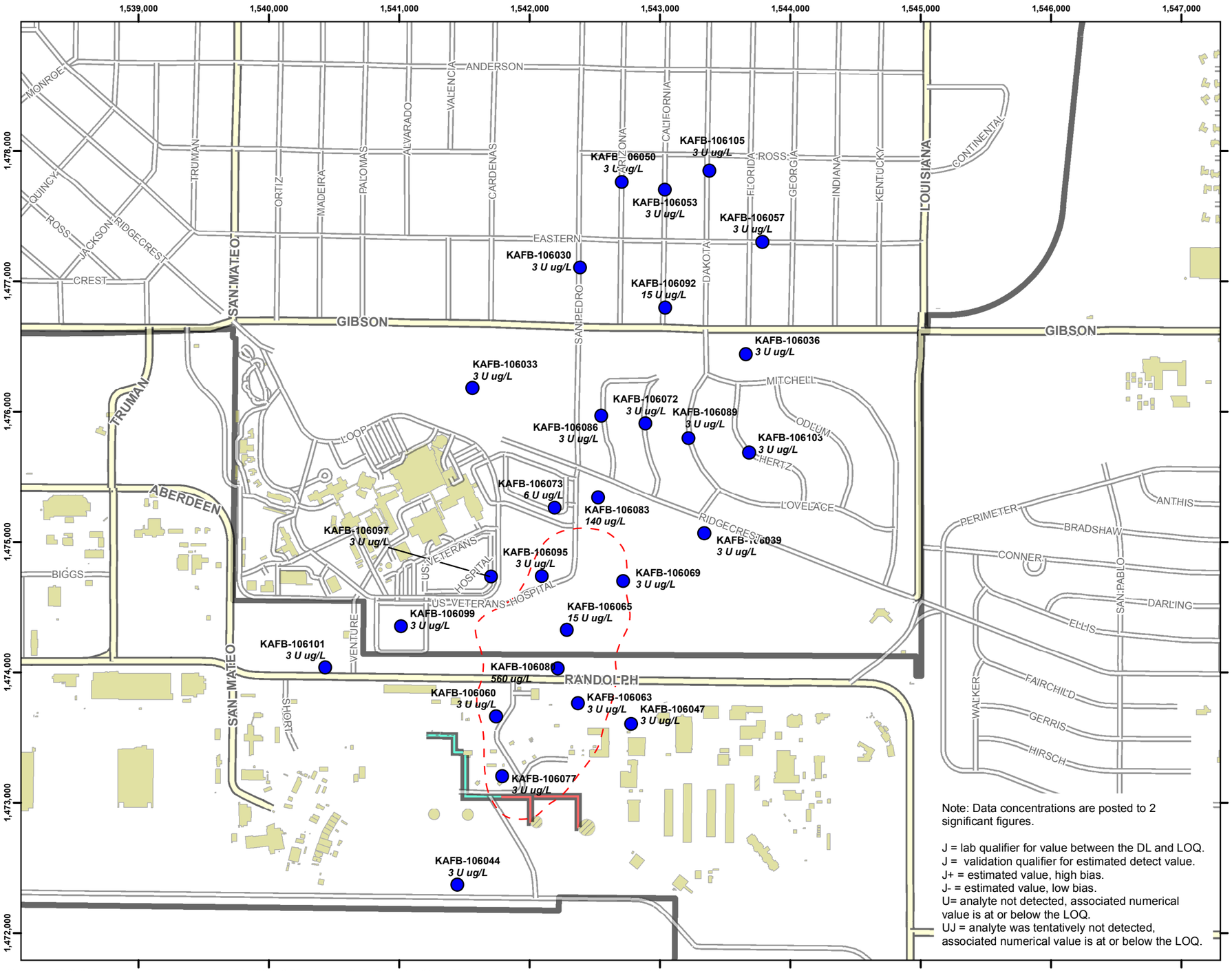
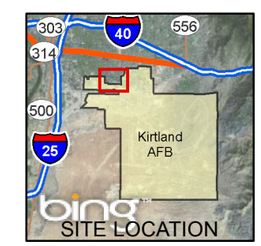


Legend

Total Xylenes Result (ug/L)

- 3.0 - 560
- Historical Area of Observed NAPL (July 2009)



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N

0 400 800 1,600

Feet
1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

Note: Data concentrations are posted to 2 significant figures.

J = lab qualifier for value between the DL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U= analyte not detected, associated numerical value is at or below the LOQ.
UJ = analyte was tentatively not detected, associated numerical value is at or below the LOQ.

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FIGURE 5-23

TOTAL XYLENES CONCENTRATIONS IN INTERMEDIATE GROUNDWATER

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_008_GW_Xylene_intermediate.mxd 08/15/12

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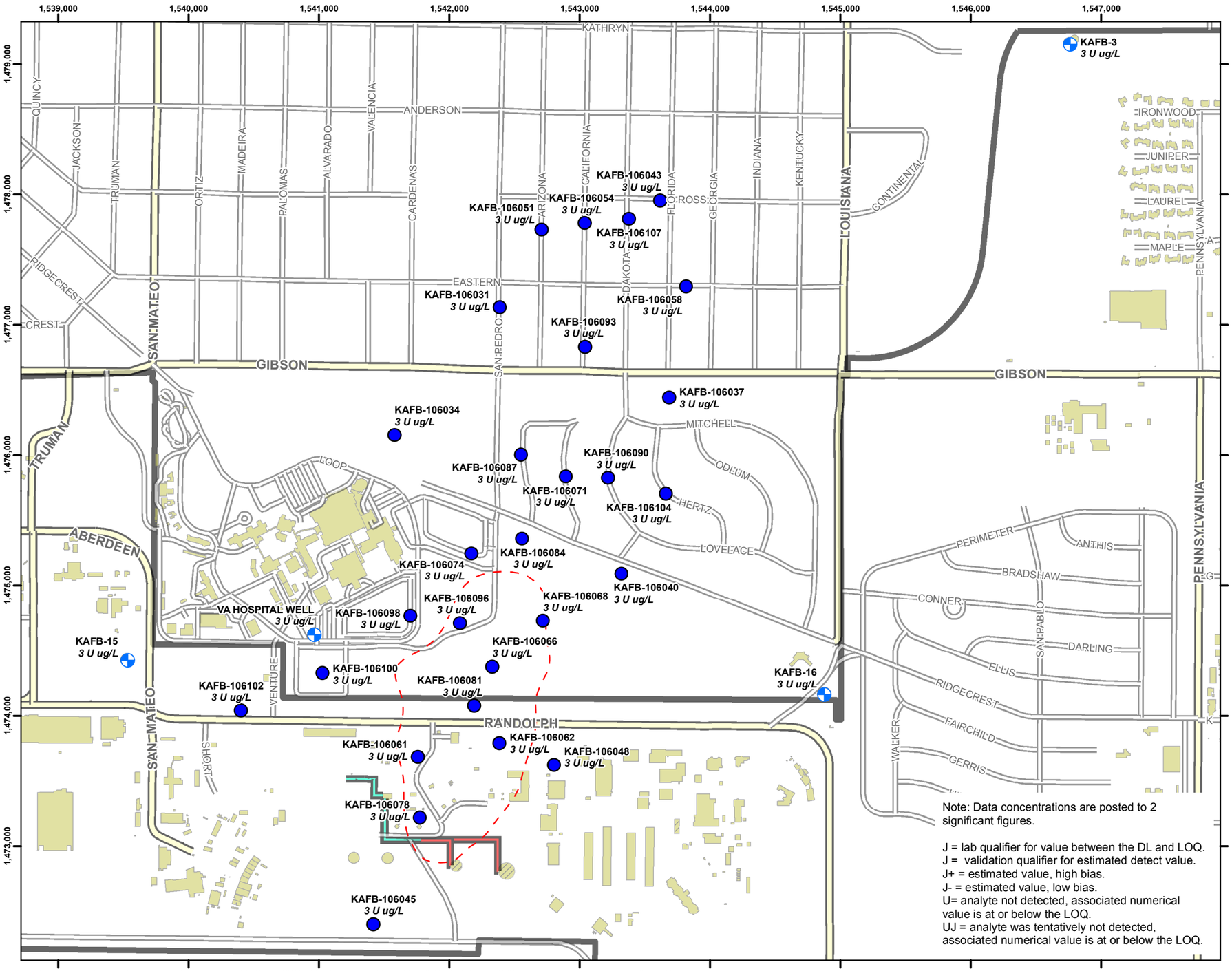


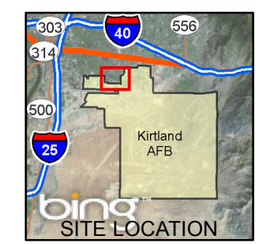
Legend

Water Supply Well

Total Xylenes Result (ug/L)

3.0

Historical Area of Observed NAPL (July 2009)



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N

0 400 800 1,600

Feet

1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

Note: Data concentrations are posted to 2 significant figures.

J = lab qualifier for value between the DL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U= analyte not detected, associated numerical value is at or below the LOQ.
UJ = analyte was tentatively not detected, associated numerical value is at or below the LOQ.

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FIGURE 5-24

TOTAL XYLENES CONCENTRATIONS IN DEEP GROUNDWATER

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_009_GW_Xylene_deep.mxd 08/15/12

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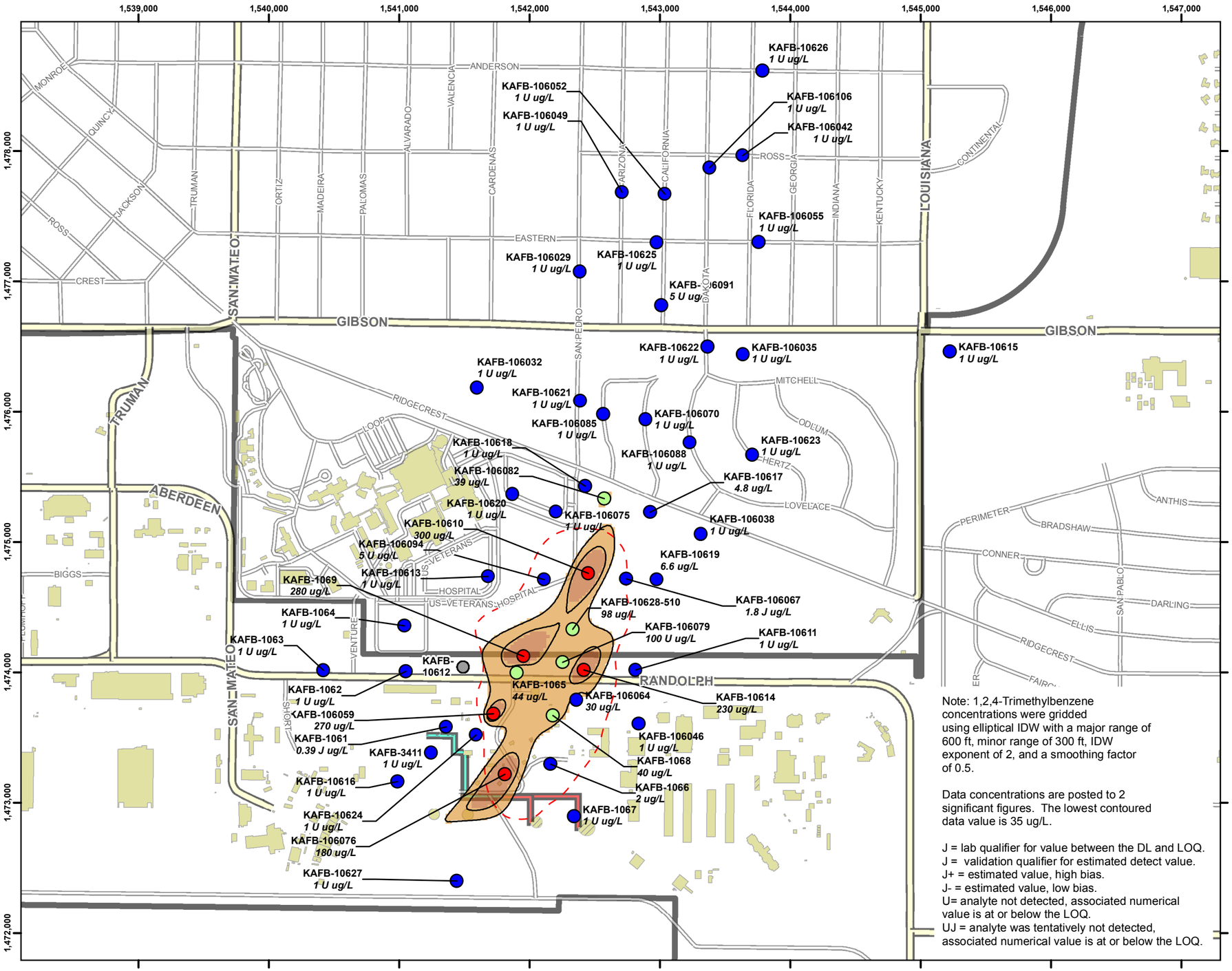


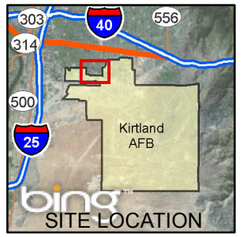
Legend

1,2,4-Trimethylbenzene Result (ug/L)

- 0.39 - 35
- 36 - 100
- 110 - 300
- Not Sampled
- 1,2,4-Trimethylbenzene Concentration Contour (ug/L)
- Historical Area of Observed NAPL (July 2009)

1,2,4-Trimethylbenzene Concentration (ug/L)

- 0.39 - 33
- 34 - 110
- 120 - 290



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Note: 1,2,4-Trimethylbenzene concentrations were gridded using elliptical IDW with a major range of 600 ft, minor range of 300 ft, IDW exponent of 2, and a smoothing factor of 0.5.

Data concentrations are posted to 2 significant figures. The lowest contoured data value is 35 ug/L.

J = lab qualifier for value between the DL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U= analyte not detected, associated numerical value is at or below the LOQ.
UJ = analyte was tentatively not detected, associated numerical value is at or below the LOQ.

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N

0 400 800 1,600

Feet
1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-25

1,2,4-TRIMETHYLBENZENE CONCENTRATIONS IN SHALLOW GROUNDWATER

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_010_GW_124TMBZ_shallow.mxd 08/27/12

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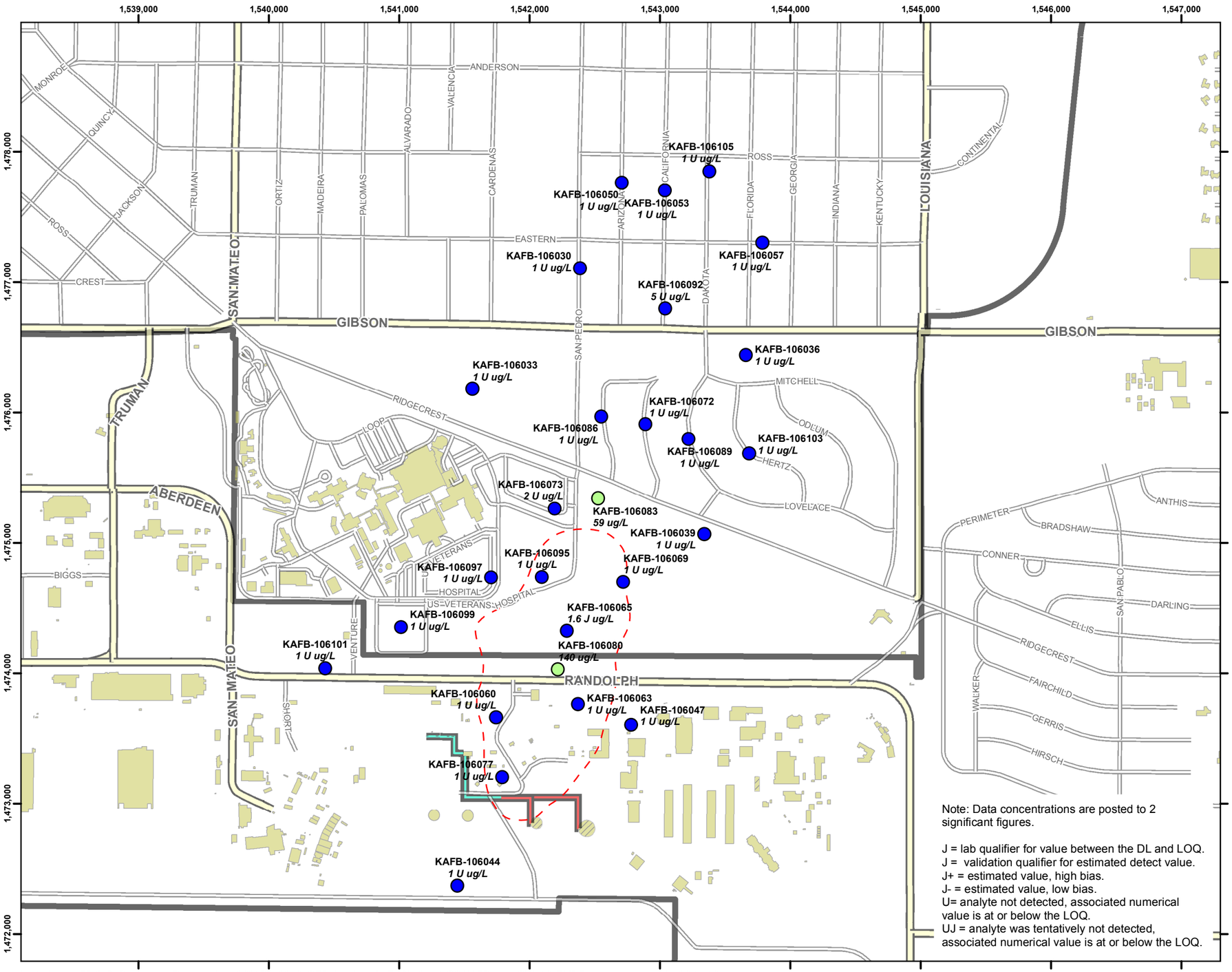
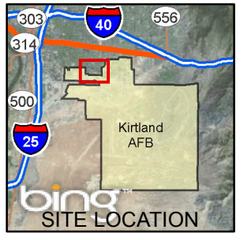


Legend

1,2,4-Trimethylbenzene Result (ug/L)

- 1.0 - 35
- 36 - 140
- Historical Area of Observed NAPL (July 2009)



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N

0 400 800 1,600

Feet

1 inch = 800 feet

Revision Date: 08/15/12

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

Note: Data concentrations are posted to 2 significant figures.

J = lab qualifier for value between the DL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U= analyte not detected, associated numerical value is at or below the LOQ.
UJ = analyte was tentatively not detected, associated numerical value is at or below the LOQ.

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FIGURE 5-26

1,2,4-TRIMETHYLBENZENE CONCENTRATIONS IN INTERMEDIATE GROUNDWATER

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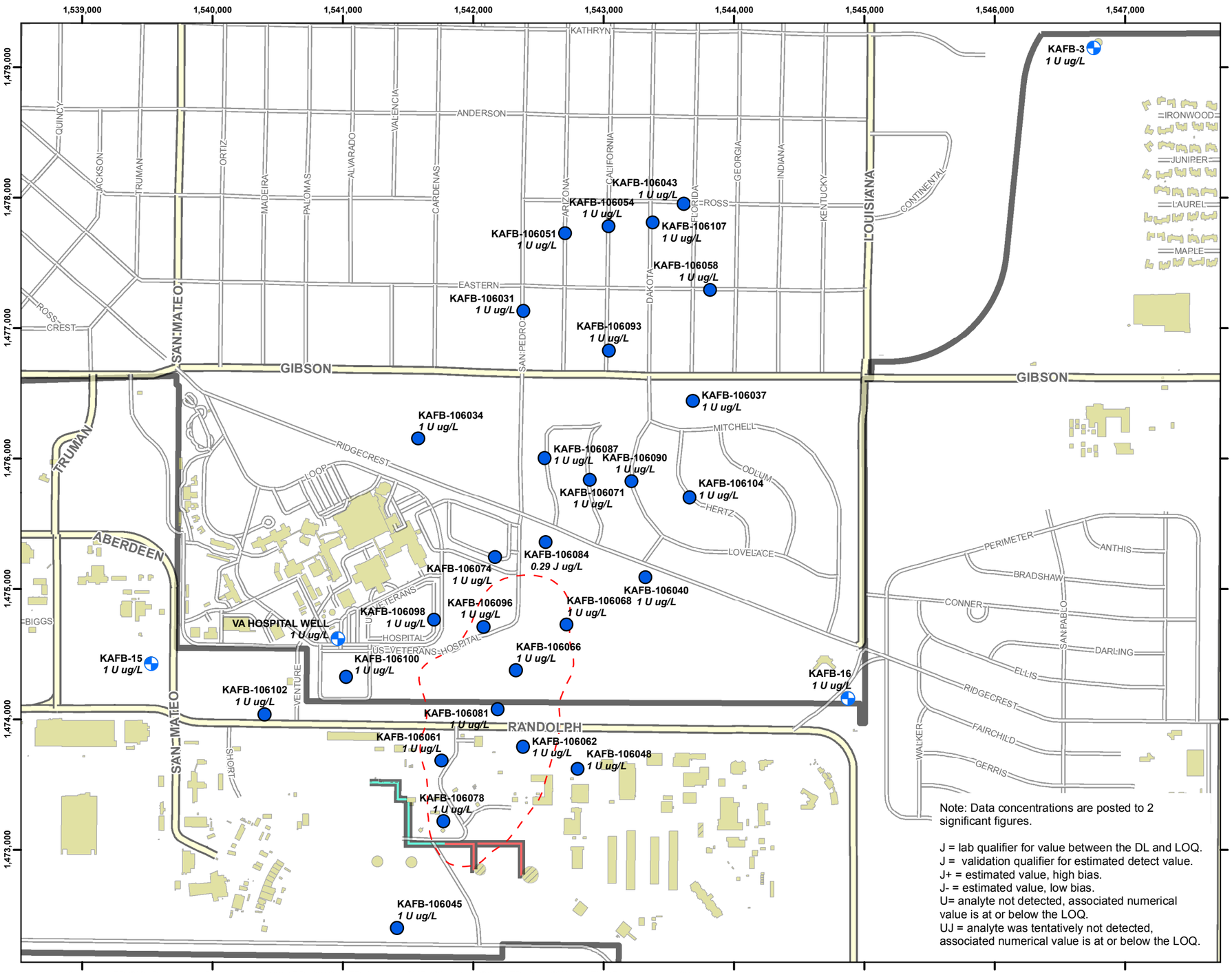


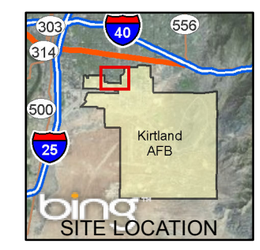
Legend

Water Supply Well

1,2,4-Trimethylbenzene Result (ug/L)

0.29 - 1.0

Historical Area of Observed NAPL (July 2009)



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N

Revision Date: 08/15/12

0 400 800 1,600

Feet

1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

Note: Data concentrations are posted to 2 significant figures.

J = lab qualifier for value between the DL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U= analyte not detected, associated numerical value is at or below the LOQ.
UJ = analyte was tentatively not detected, associated numerical value is at or below the LOQ.

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FIGURE 5-27

1,2,4-TRIMETHYLBENZENE CONCENTRATIONS IN DEEP GROUNDWATER

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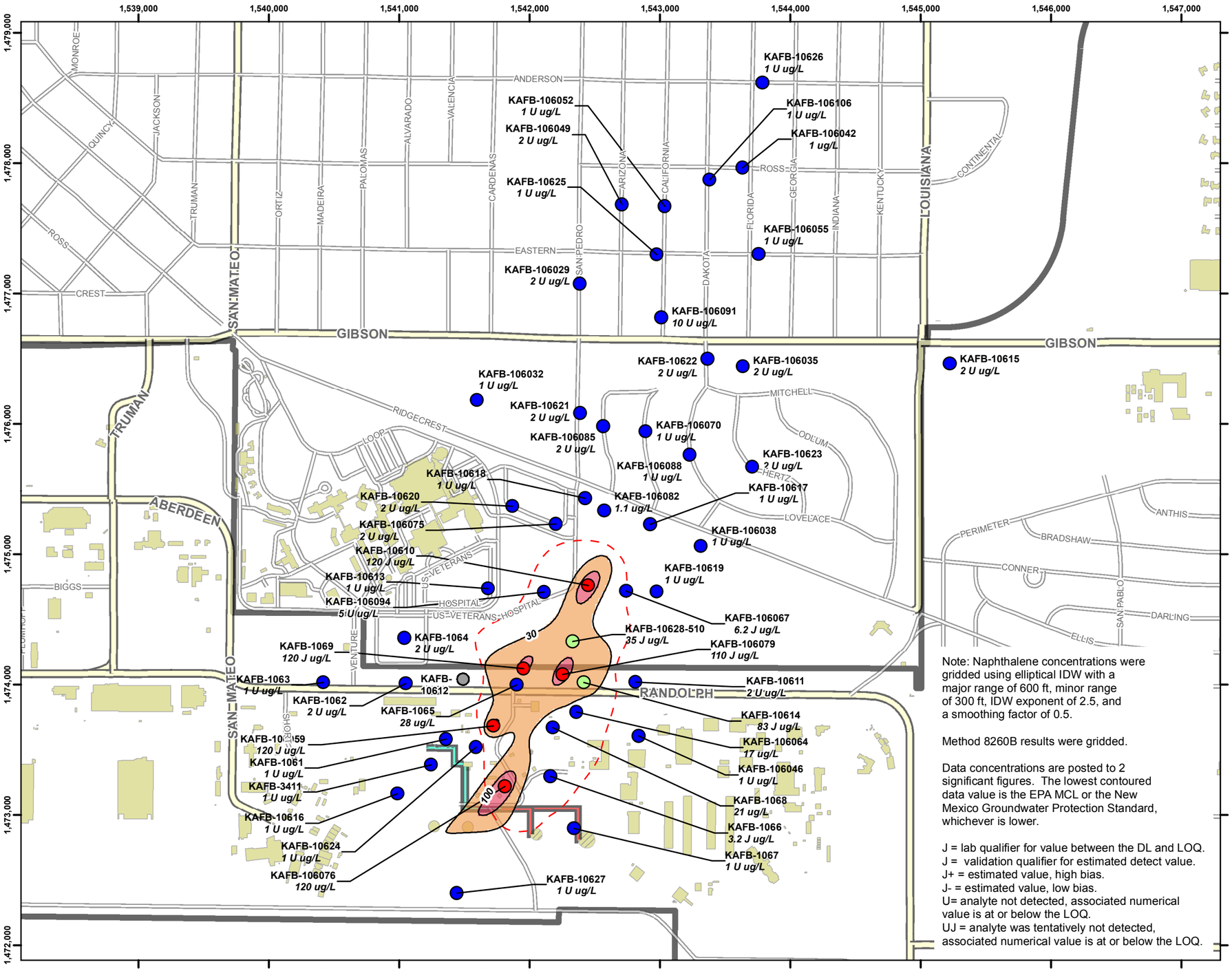


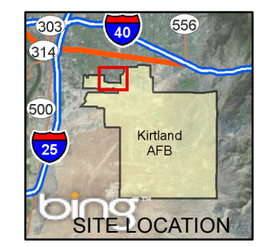
Legend

Naphthalene Result (ug/L)

- 1.0 - 30
- 31 - 100
- 110 - 120
- Not Sampled
- Naphthalene Concentration Contour (ug/L)
- Historical Area of Observed NAPL (July 2009)

Naphthalene Concentration (ug/L)

- 0.5 - 30
- 31 - 100
- 110 - 120



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Note: Naphthalene concentrations were gridded using elliptical IDW with a major range of 600 ft, minor range of 300 ft, IDW exponent of 2.5, and a smoothing factor of 0.5.

Method 8260B results were gridded.

Data concentrations are posted to 2 significant figures. The lowest contoured data value is the EPA MCL or the New Mexico Groundwater Protection Standard, whichever is lower.

J = lab qualifier for value between the DL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U= analyte not detected, associated numerical value is at or below the LOQ.
UJ = analyte was tentatively not detected, associated numerical value is at or below the LOQ.

N

Revision Date: 08/27/12

0 400 800 1,600

Feet
1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-28

NAPHTHALENE CONCENTRATIONS IN SHALLOW GROUNDWATER

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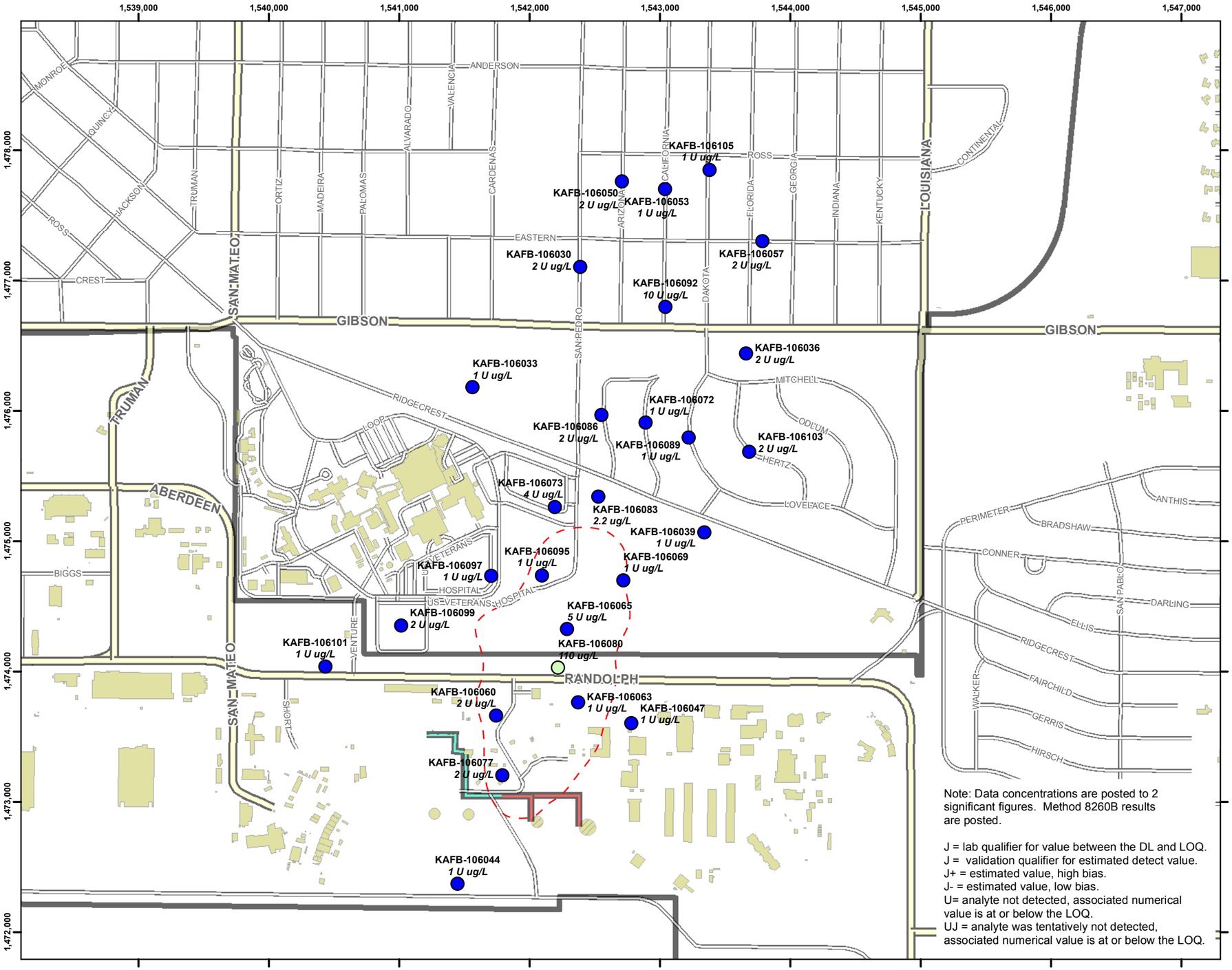
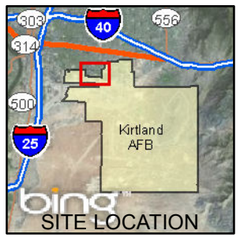


Legend

Naphthalene Result (ug/L)

- 1.0 - 30
- 31 - 110
- Historical Area of Observed NAPL (July 2009)



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N

0 400 800 1,600

Feet

1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

Note: Data concentrations are posted to 2 significant figures. Method 8260B results are posted.

J = lab qualifier for value between the DL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U= analyte not detected, associated numerical value is at or below the LOQ.
UJ = analyte was tentatively not detected, associated numerical value is at or below the LOQ.

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FIGURE 5-29

NAPHTHALENE CONCENTRATIONS IN INTERMEDIATE GROUNDWATER

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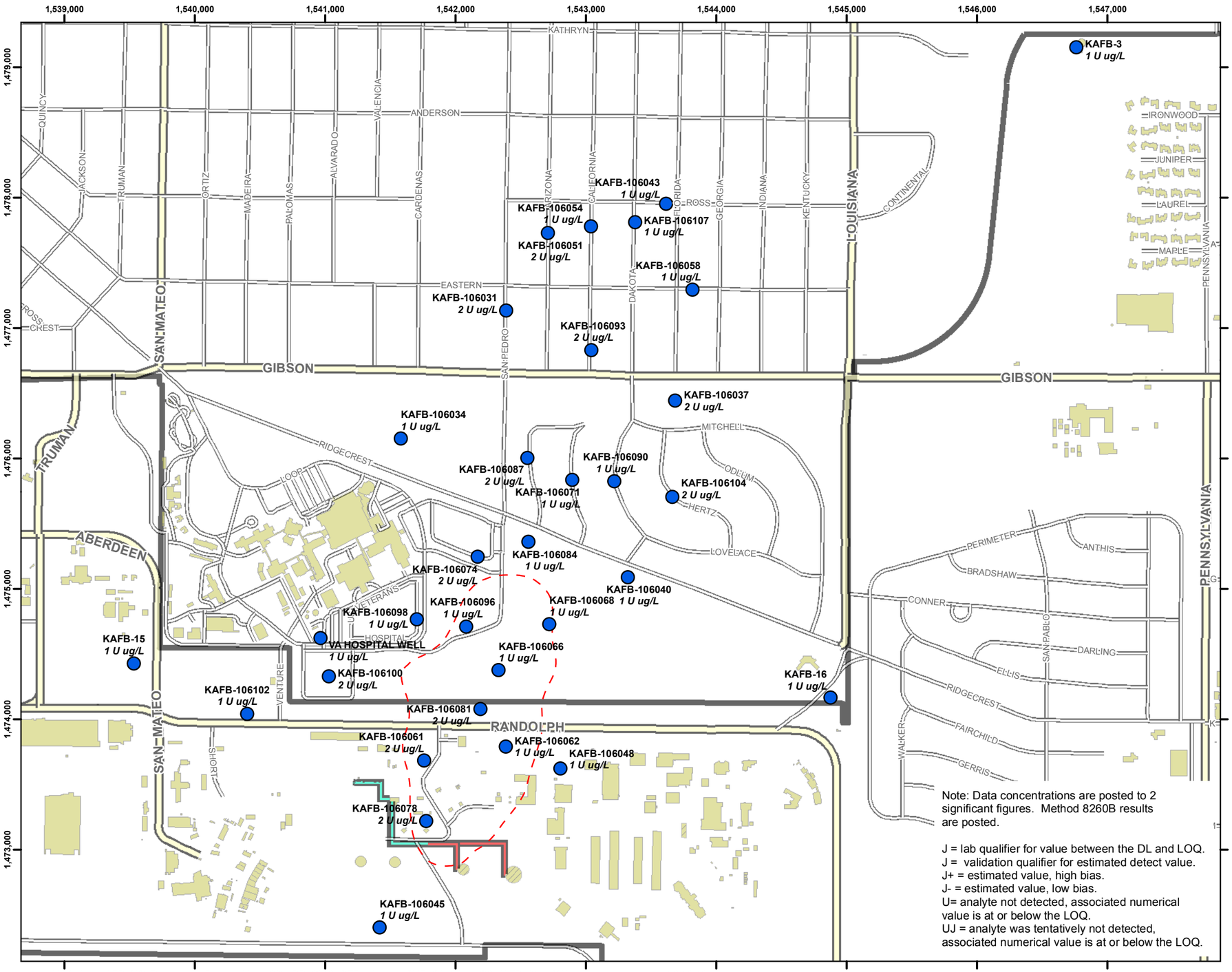


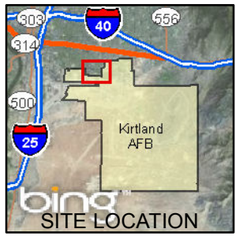
Note: Data concentrations are posted to 2 significant figures. Method 8260B results are posted.

J = lab qualifier for value between the DL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U= analyte not detected, associated numerical value is at or below the LOQ.
UJ = analyte was tentatively not detected, associated numerical value is at or below the LOQ.

Legend

Naphthalene Result (ug/L)

- 1.0 - 2.0
- Historical Area of Observed NAPL (July 2009)



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0 400 800 1,600

Feet
1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-30

NAPHTHALENE CONCENTRATIONS IN DEEP GROUNDWATER

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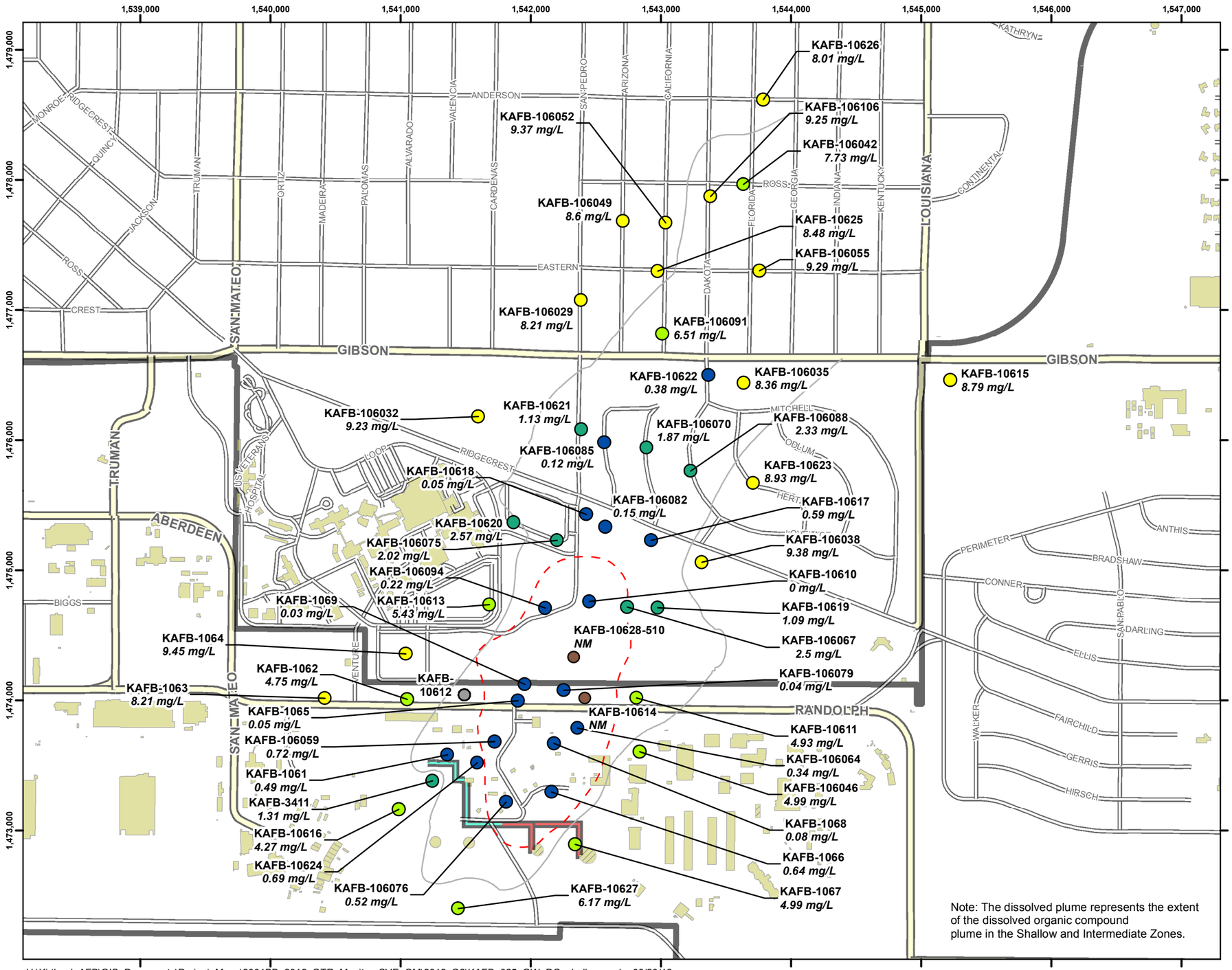


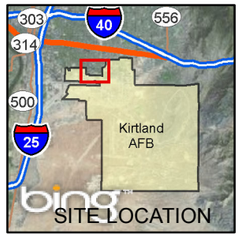
Note: The dissolved plume represents the extent of the dissolved organic compound plume in the Shallow and Intermediate Zones.

Legend

Dissolved Oxygen (mg/L)

Shallow Groundwater

- 0.00 - 1.00
- 1.01 - 4.00
- 4.01 - 8.00
- 8.01 - 9.45
- Not Sampled
- Not Measured (NM)
- Historical Area of Observed NAPL (July 2009)
- Dissolved Plume May 2011



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N

0 400 800 1,600

Feet

1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-31

DISSOLVED OXYGEN CONCENTRATIONS IN SHALLOW GROUNDWATER

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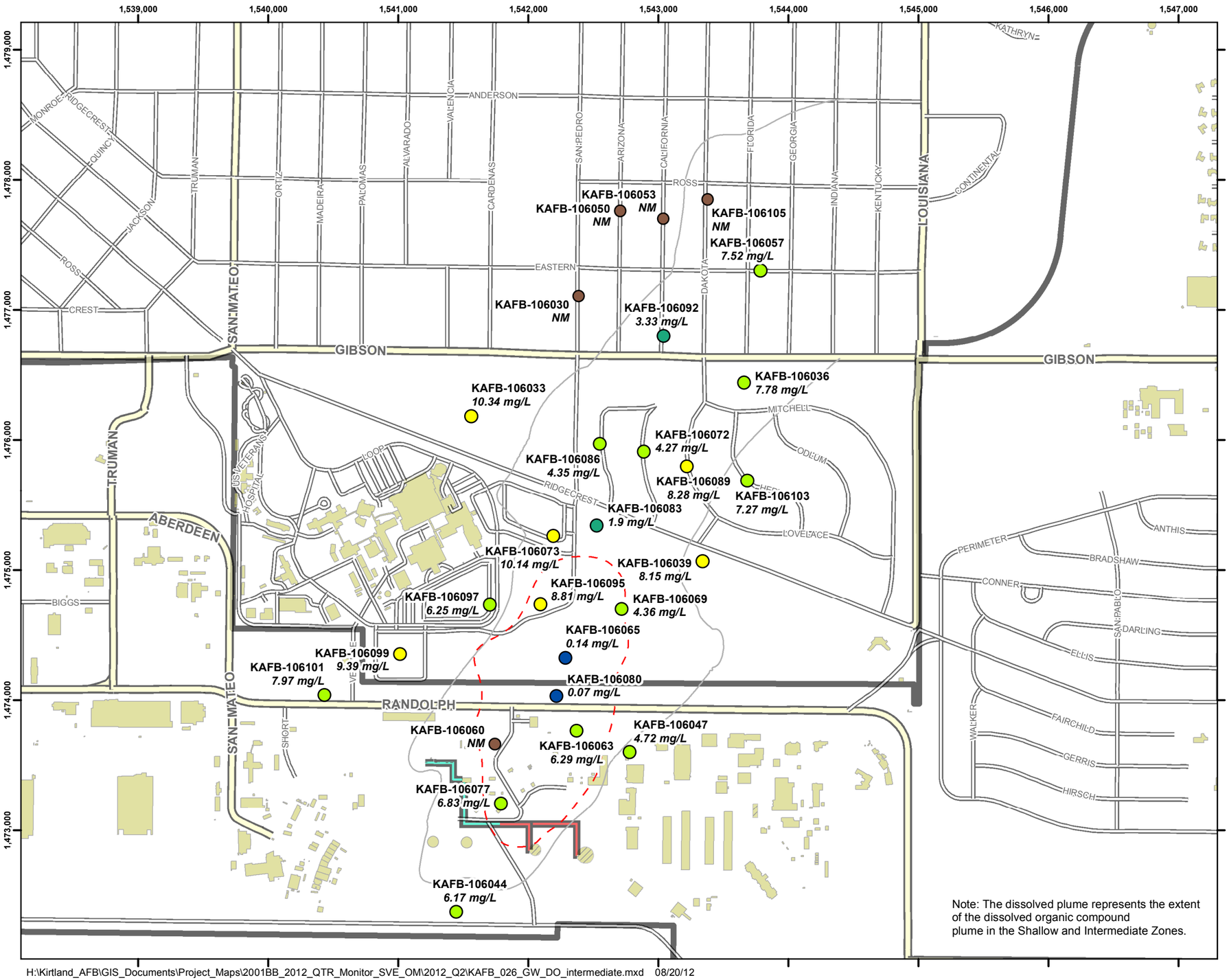


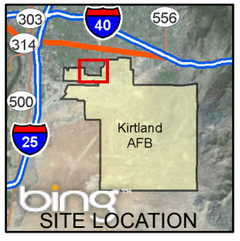
Note: The dissolved plume represents the extent of the dissolved organic compound plume in the Shallow and Intermediate Zones.

Legend

Dissolved Oxygen (mg/L)

Intermediate Groundwater

- 0.07 - 1.00
- 1.01 - 4.00
- 4.01 - 8.00
- 8.01 - 10.34
- Not Measured (NM)
- Historical Area of Observed NAPL (July 2009)
- Dissolved Plume May 2012



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N

0 400 800 1,600

Feet

1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-32

DISSOLVED OXYGEN CONCENTRATIONS IN INTERMEDIATE GROUNDWATER

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_026_GW_DO_intermediate.mxd 08/20/12

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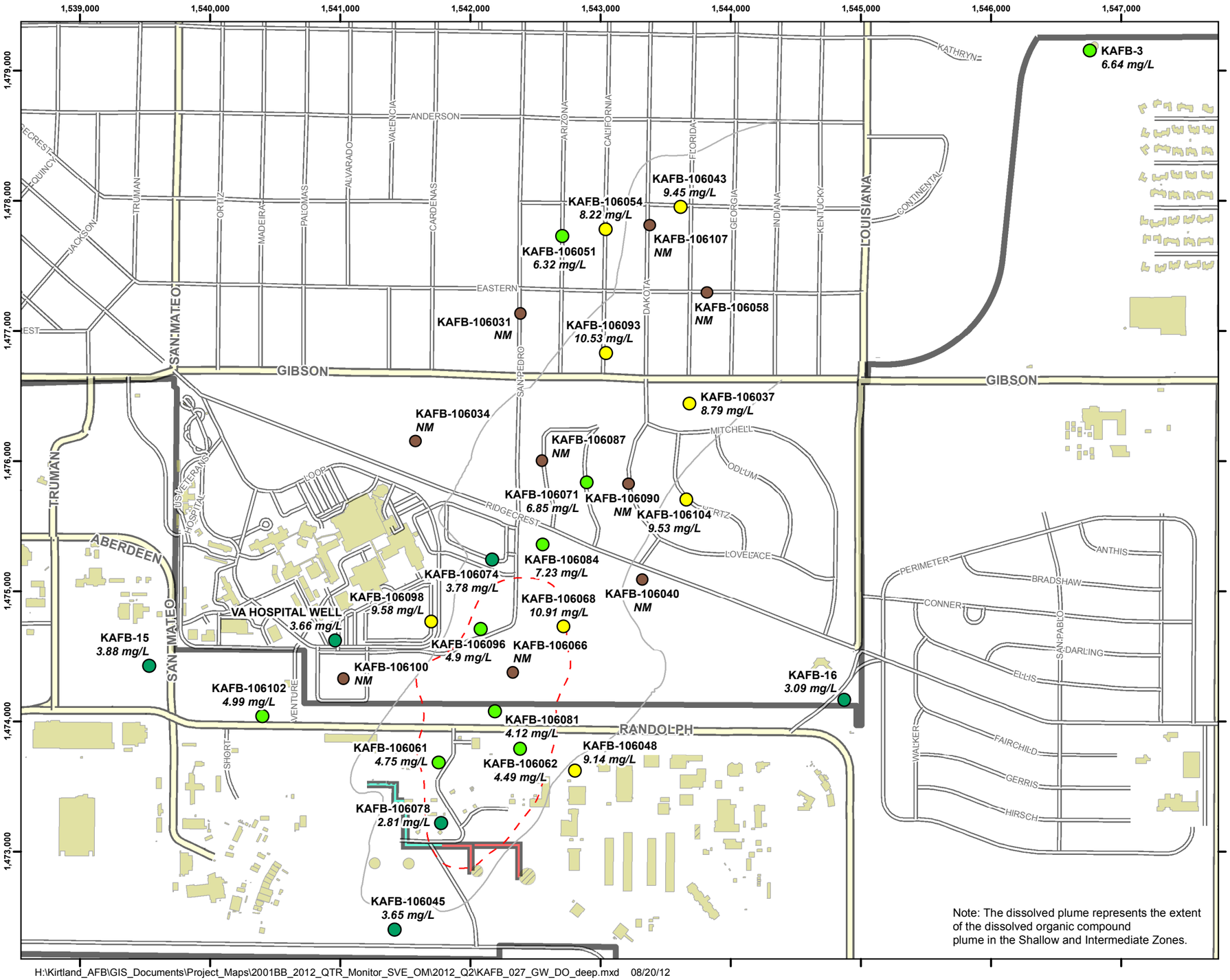


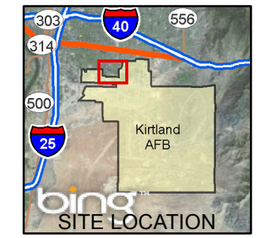
H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_027_GW_DO_deep.mxd 08/20/12

Legend

Dissolved Oxygen (mg/L)

Deep Groundwater

- 2.81 - 4.00
- 4.01 - 8.00
- 8.01 - 10.91
- Not Measured (NM)
- Historical Area of Observed NAPL (July 2009)
- Dissolved Plume May 2012



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Revision Date: 08/20/12

N

0 400 800 1,600

Feet
1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 5-33

DISSOLVED OXYGEN CONCENTRATIONS IN DEEP GROUNDWATER

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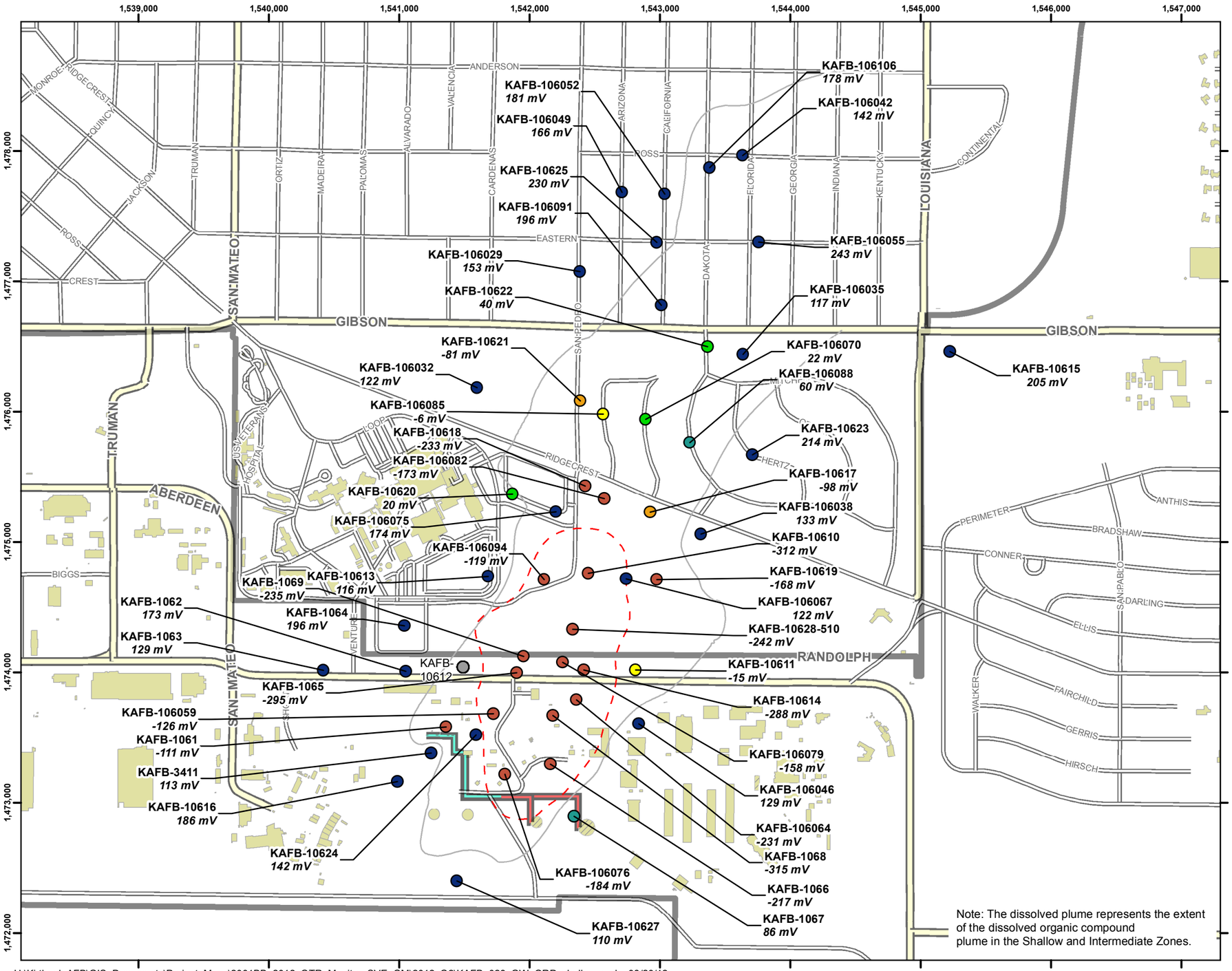
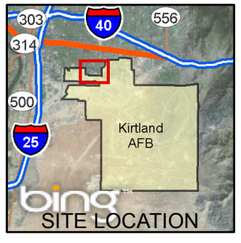


Legend

Oxidation-Reduction Potential (mV)

Shallow Groundwater

- -315 - -100
- -99 - -50
- -49 - 0
- 1 - 50
- 51 - 100
- 101 - 243
- Not Sampled
- Historical Area of Observed NAPL (July 2009)
- Dissolved Plume May 2012



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0 400 800 1,600

Feet

1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-34

OXIDATION-REDUCTION POTENTIAL IN SHALLOW GROUNDWATER

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_028_GW_ORP_shallow.mxd 08/20/12

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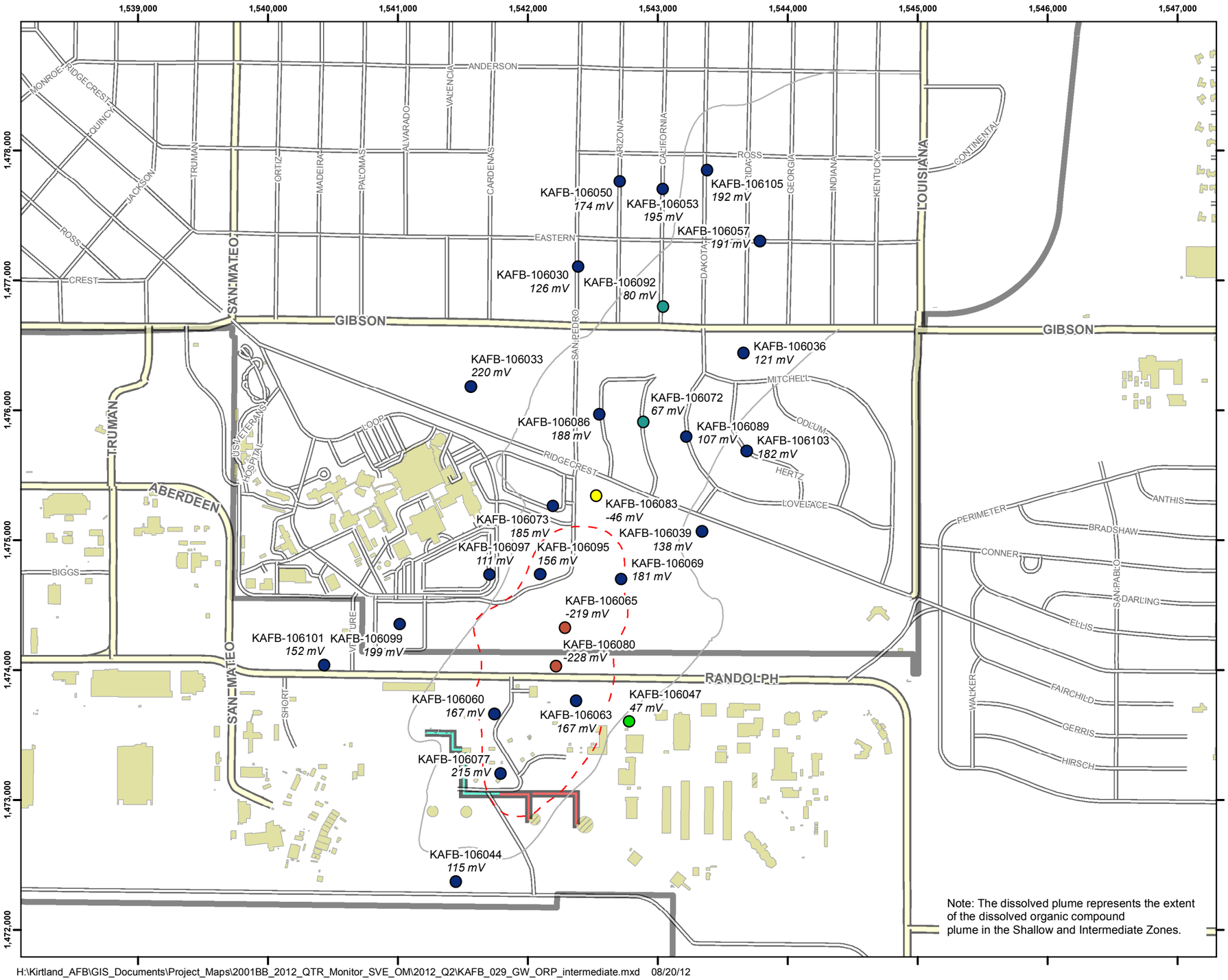


Note: The dissolved plume represents the extent of the dissolved organic compound plume in the Shallow and Intermediate Zones.

Legend

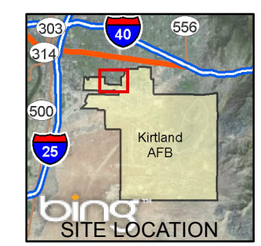
Oxidation-Reduction Potential (mV)

Intermediate Groundwater

- -228 - -100
- -99 - -50
- -49 - 0
- 0 - 50
- 51 - 100
- 101 - 220

Historical Area of Observed NAPL (July 2009)

Dissolved Plume May 2012



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N

0 400 800 1,600

Feet

1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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BULK FUELS FACILITY
KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 5-35

OXIDATION-REDUCTION POTENTIAL IN INTERMEDIATE GROUNDWATER

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_029_GW_ORP_intermediate.mxd 08/20/12

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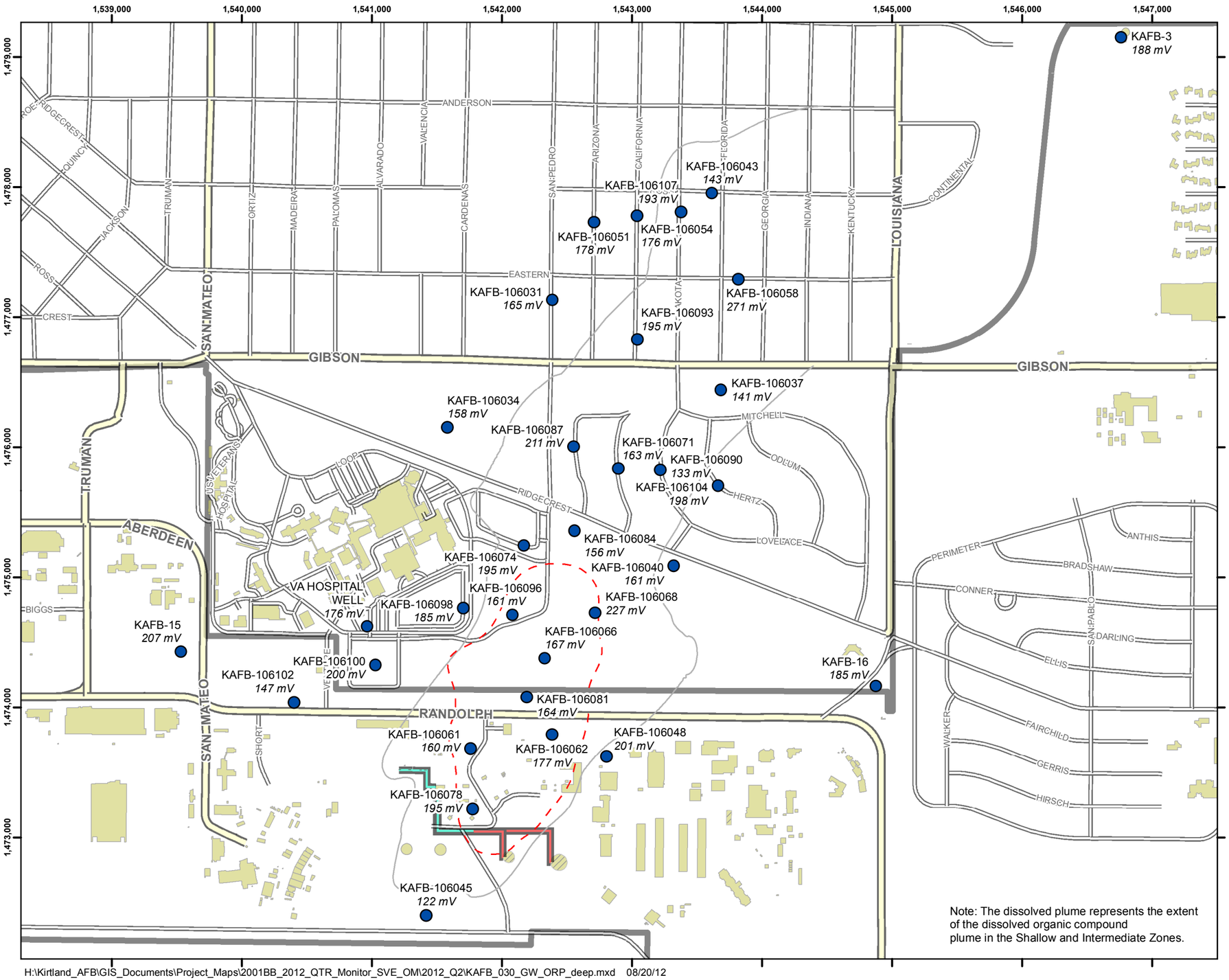


Legend

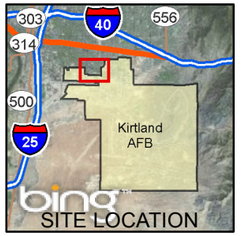
Oxidation-Reduction Potential (mV)

Deep Groundwater

- 122 - 271

Historical Area of Observed NAPL (July 2009)

Dissolved Plume May 2012



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Revision Date: 08/20/12

0 400 800 1,600

Feet

1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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BULK FUELS FACILITY
KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 5-36

OXIDATION-REDUCTION POTENTIAL IN DEEP GROUNDWATER

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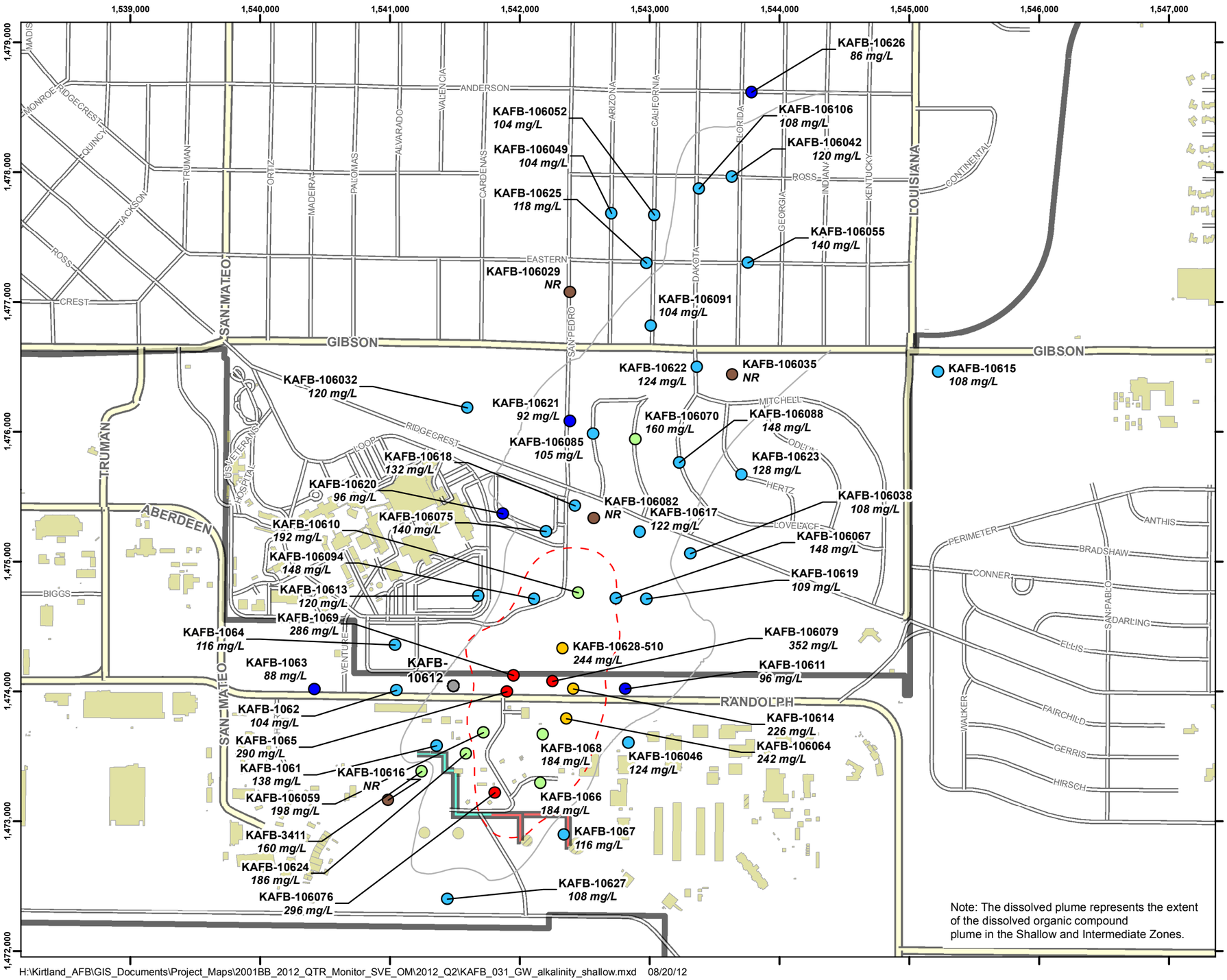

Note: The dissolved plume represents the extent of the dissolved organic compound plume in the Shallow and Intermediate Zones.

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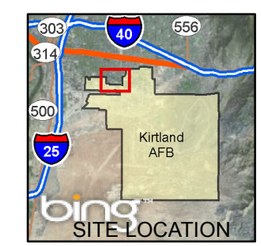
Legend

Alkalinity (mg/L)

Shallow Groundwater

- 86 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- 251 - 352
- Not Recorded (NR)
- Not Sampled
- Historical Area of Observed NAPL (July 2009)
- Dissolved Plume May 2012



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0 400 800 1,600

Feet

1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-37

ALKALINITY, BICARBONATE (as CaCO3), CONCENTRATIONS IN SHALLOW GROUNDWATER

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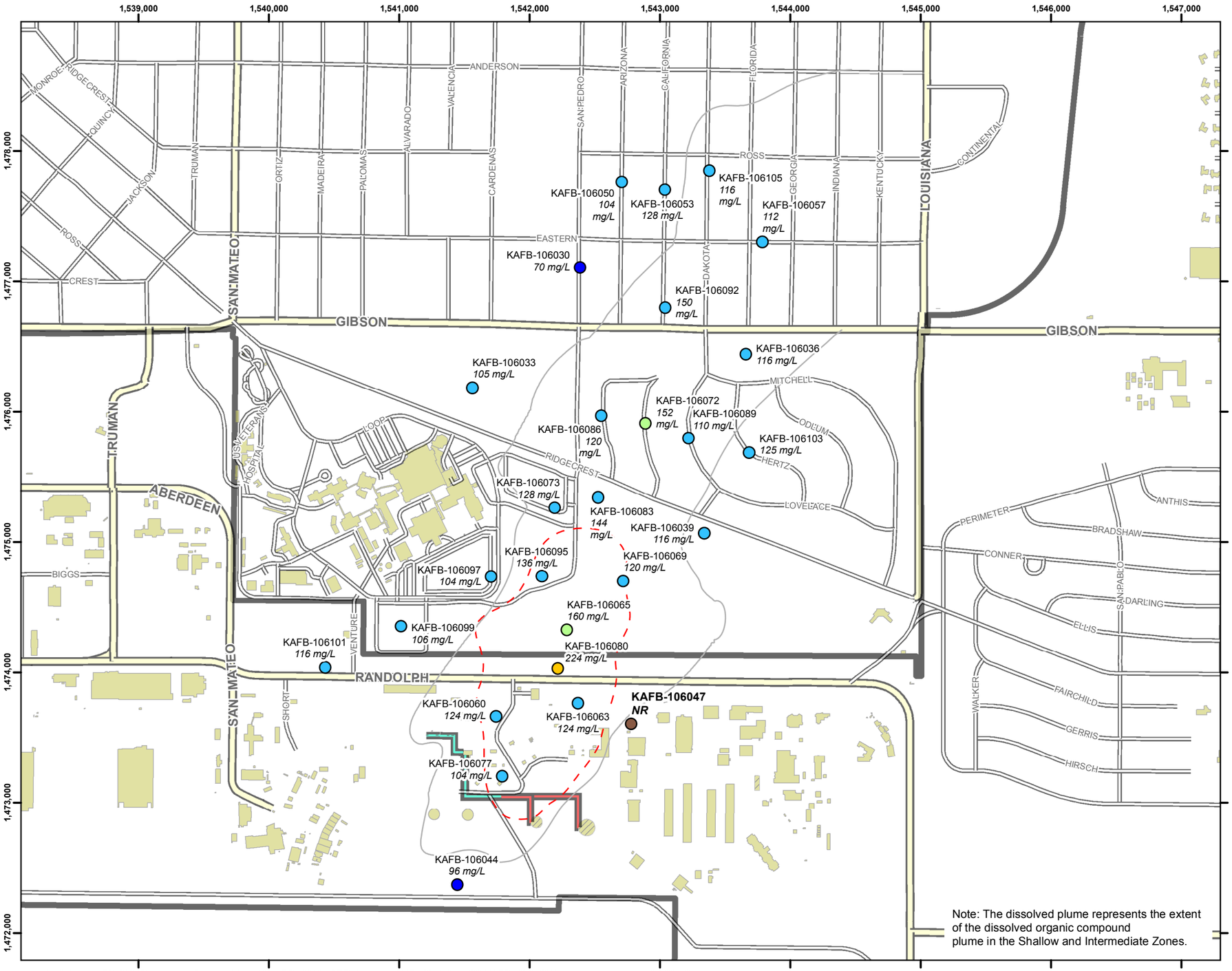
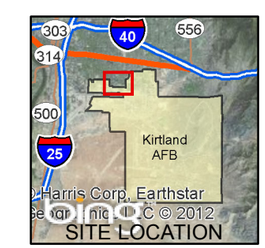


Legend

Alkalinity (mg/L)

Intermediate Groundwater

- 70 - 100
- 101 - 150
- 151 - 200
- 201 - 224
- Not Recorded (NR)
- Historical Area of Observed NAPL (July 2009)
- Dissolved Plume May 2012



Revision Date: 08/20/12

N

0 400 800 1,600

Feet

1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-38

ALKALINITY, BICARBONATE (as $CaCO_3$), CONCENTRATIONS IN INTERMEDIATE GROUNDWATER

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_032_GW_alkalinity_int.mxd 08/20/12

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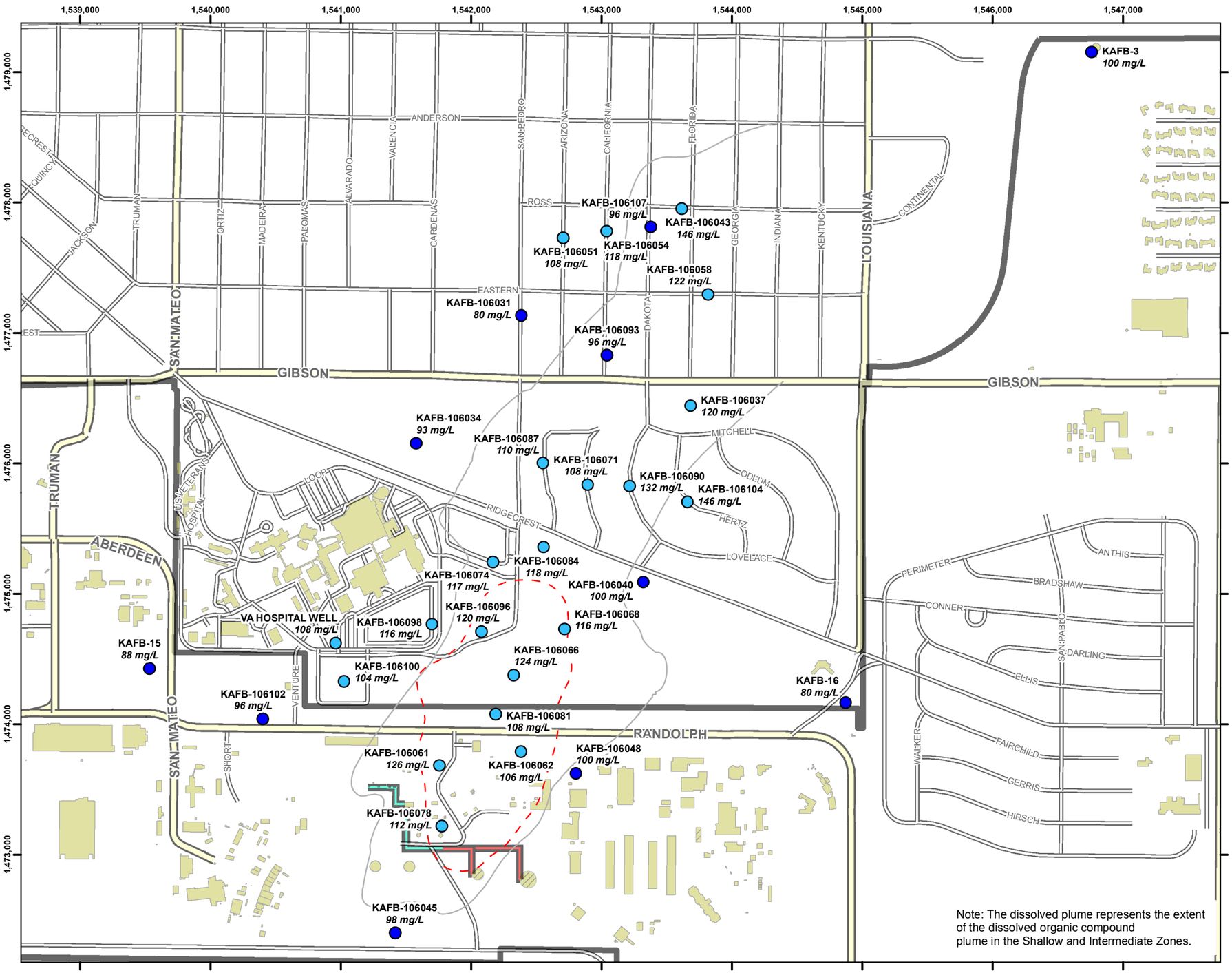


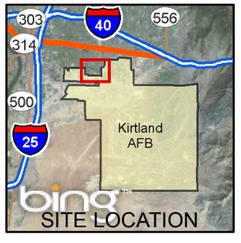
Note: The dissolved plume represents the extent of the dissolved organic compound plume in the Shallow and Intermediate Zones.

Legend

Alkalinity (mg/L)

Deep Groundwater

- 80 - 100
- 101 - 146
- Historical Area of Observed NAPL (July 2009)
- Dissolved Plume May 2012



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0 400 800 1,600

Feet

1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 5-39

ALKALINITY, BICARBONATE (as $CaCO_3$), CONCENTRATIONS IN DEEP GROUNDWATER

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_033_GW_alkalinity_deep.mxd 08/20/12

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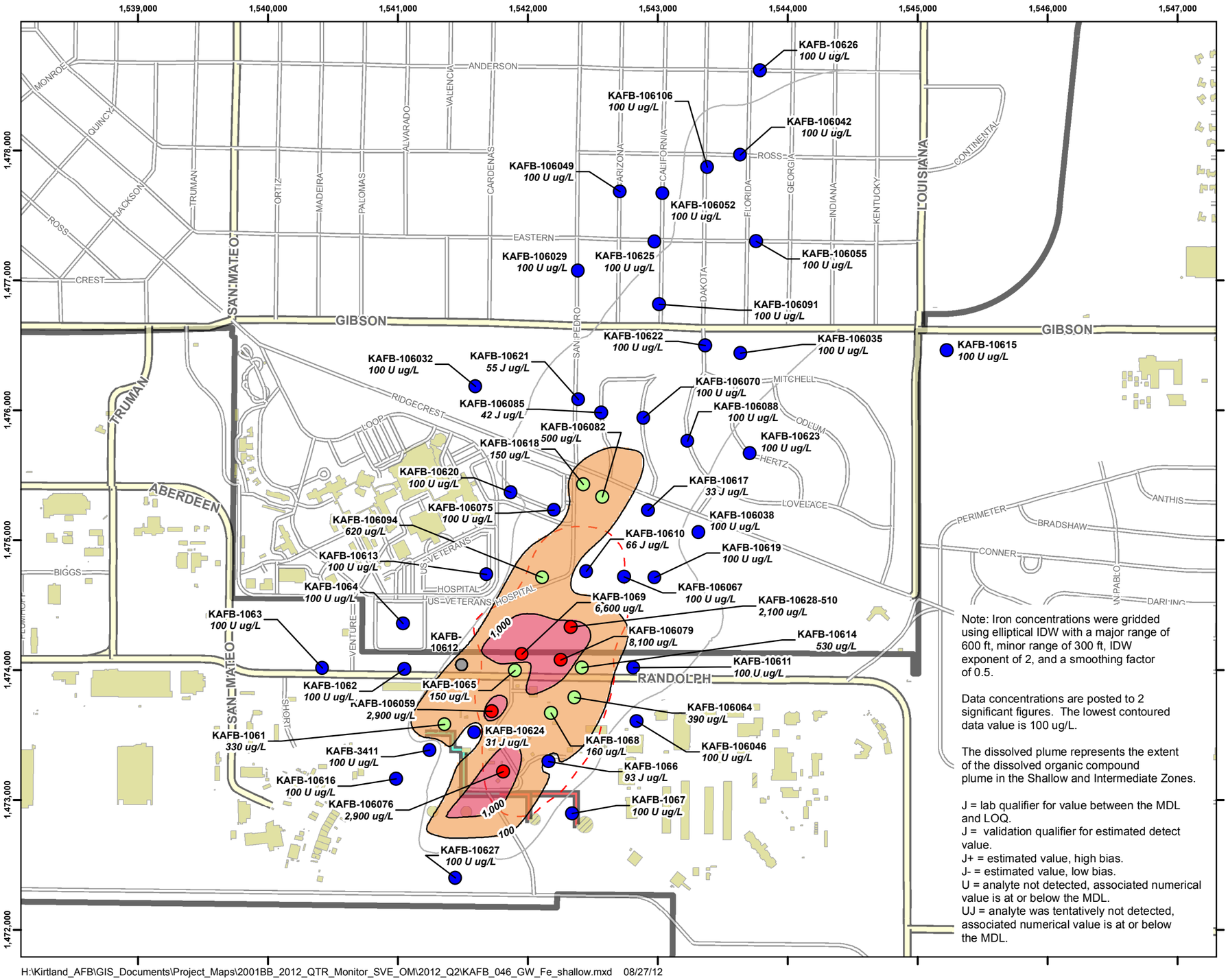


Note: Iron concentrations were gridded using elliptical IDW with a major range of 600 ft, minor range of 300 ft, IDW exponent of 2, and a smoothing factor of 0.5.

Data concentrations are posted to 2 significant figures. The lowest contoured data value is 100 ug/L.

The dissolved plume represents the extent of the dissolved organic compound plume in the Shallow and Intermediate Zones.

J = lab qualifier for value between the MDL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U = analyte not detected, associated numerical value is at or below the MDL.
UJ = analyte was tentatively not detected, associated numerical value is at or below the MDL.

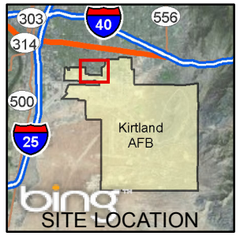
Legend

Iron Concentration (ug/L)

- 31 - 100
- 110 - 1,000
- 1,100 - 8,100
- Not Sampled
- Iron Concentration Contour (ug/L)

Iron Concentration (ug/L)

- 31 - 100
- 110 - 1,000
- 1,100 - 7,900
- Historical Area of Observed NAPL (July 2009)
- Dissolved Plume May 2012



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Revision Date: 08/27/12

N

0 400 800 1,600

Feet
1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 5-40

IRON CONCENTRATIONS
IN SHALLOW GROUNDWATER

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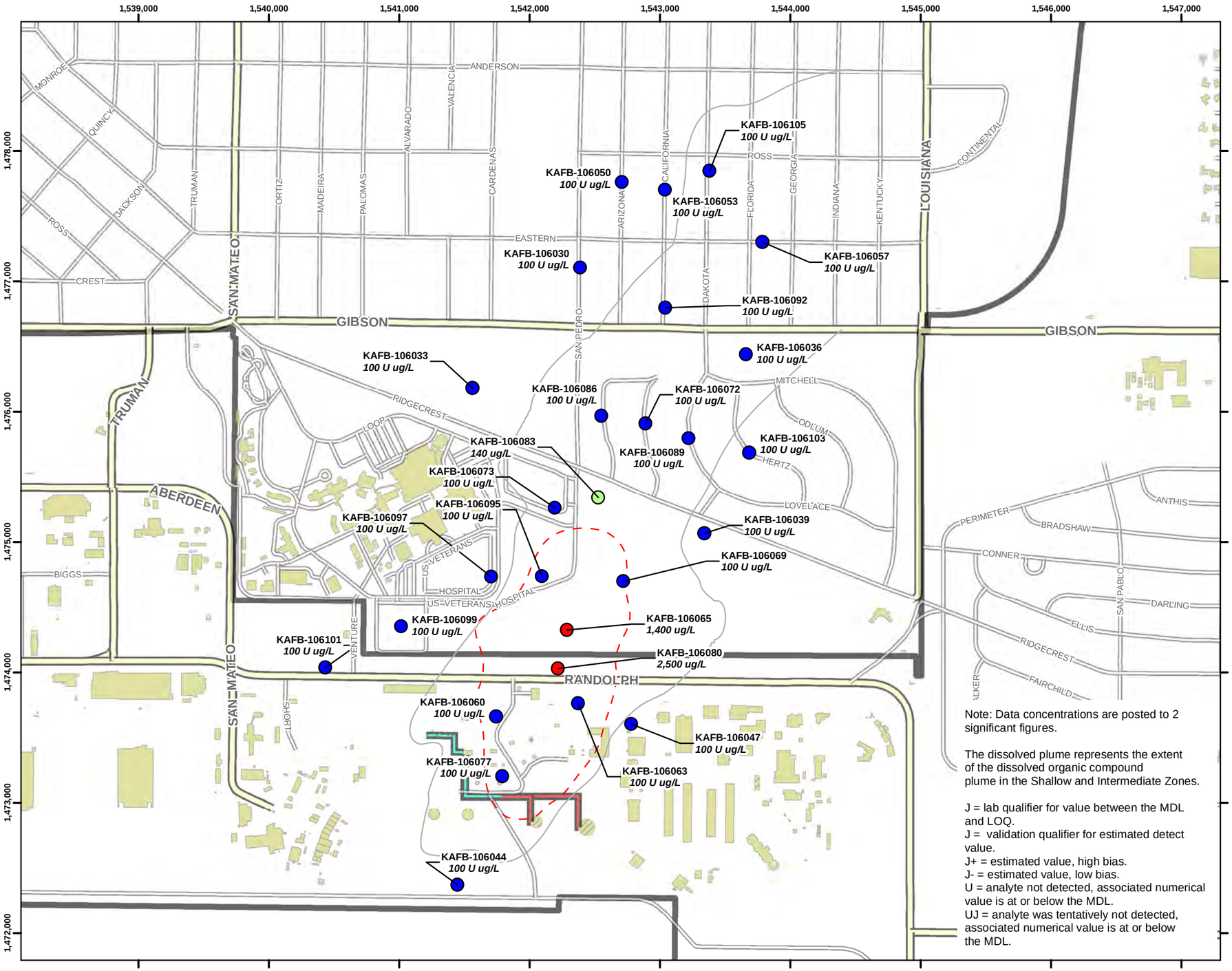
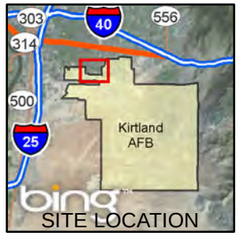


Legend

Iron Concentration (ug/L)

- 100
- 110 - 1,000
- 1,100 - 2,500
- Historical Area of Observed NAPL (July 2009)
- Dissolved Plume May 2012



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Note: Data concentrations are posted to 2 significant figures.

The dissolved plume represents the extent of the dissolved organic compound plume in the Shallow and Intermediate Zones.

J = lab qualifier for value between the MDL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U = analyte not detected, associated numerical value is at or below the MDL.
UJ = analyte was tentatively not detected, associated numerical value is at or below the MDL.

N

Revision Date: 08/21/12

0 400 800 1,600

Feet
1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-41

IRON CONCENTRATIONS
IN INTERMEDIATE GROUNDWATER

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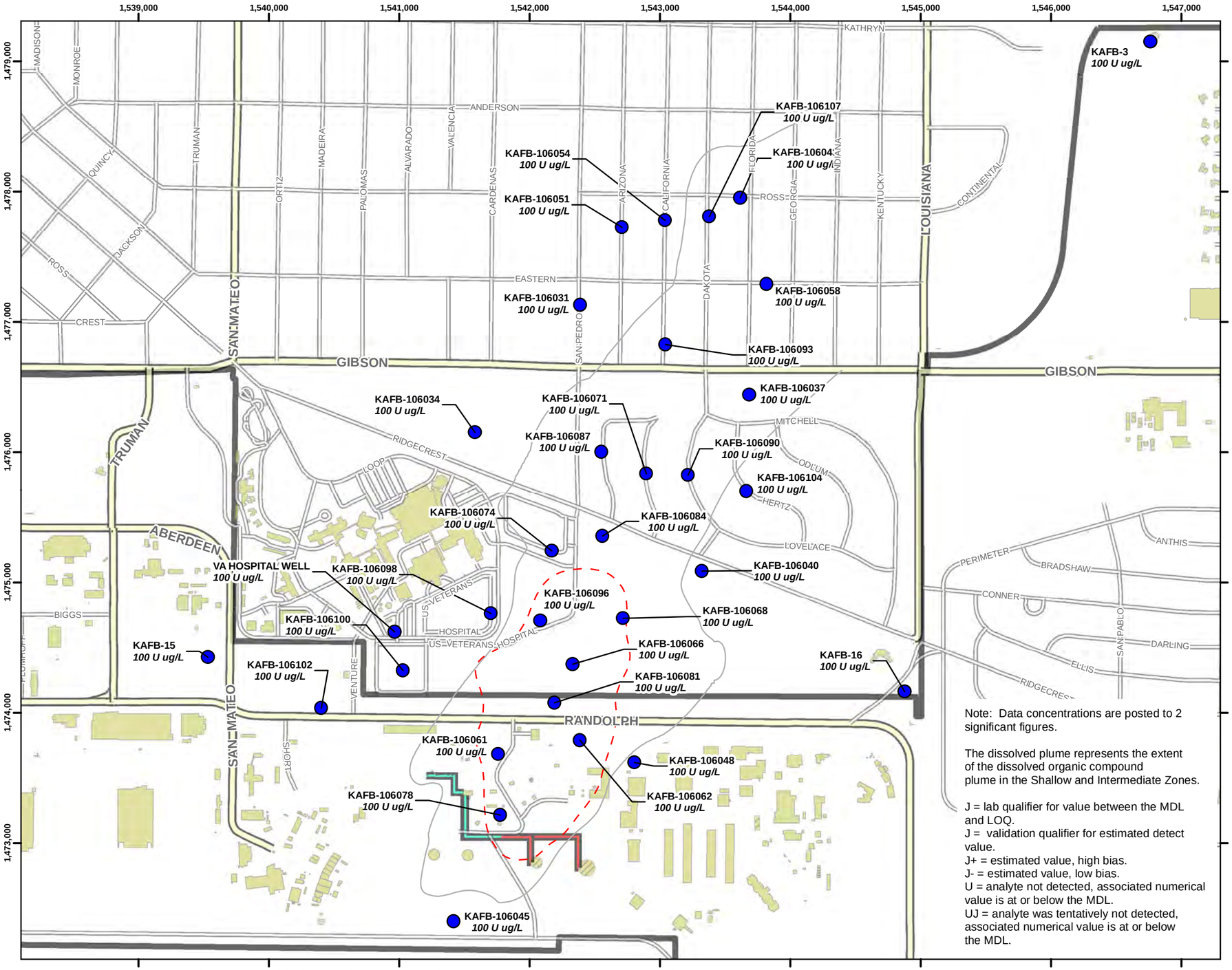


Note: Data concentrations are posted to 2 significant figures.

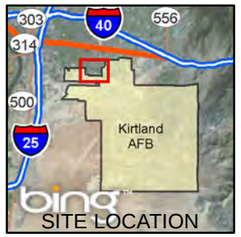
The dissolved plume represents the extent of the dissolved organic compound plume in the Shallow and Intermediate Zones.

J = lab qualifier for value between the MDL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U = analyte not detected, associated numerical value is at or below the MDL.
UJ = analyte was tentatively not detected, associated numerical value is at or below the MDL.

Legend

Iron Concentration (ug/L)

- 100
- Historical Area of Observed NAPL (July 2009)
- Dissolved Plume May 2012



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Revision Date: 08/21/12

0 400 800 1,600

Feet
1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 5-42

IRON CONCENTRATIONS
IN DEEP GROUNDWATER

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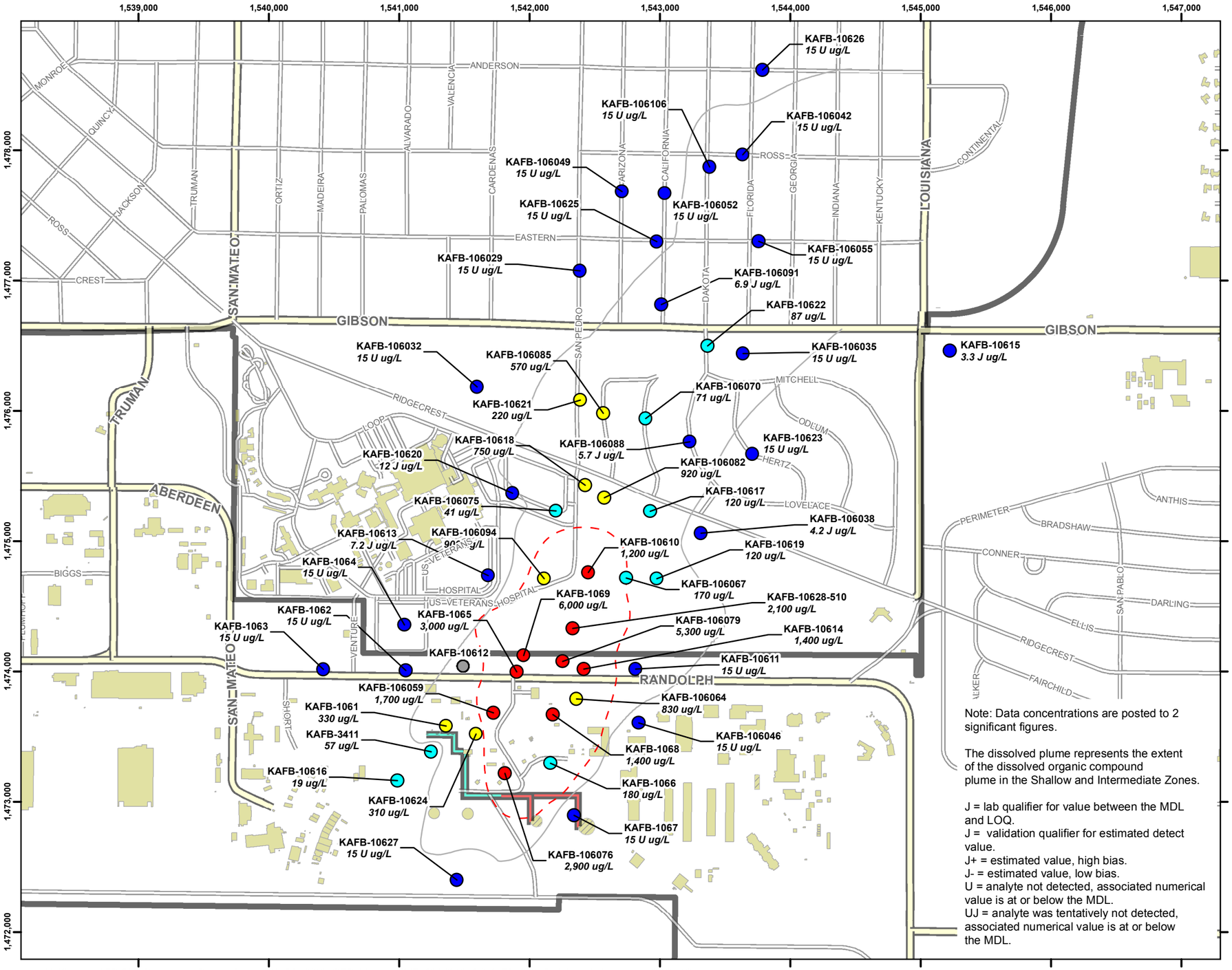
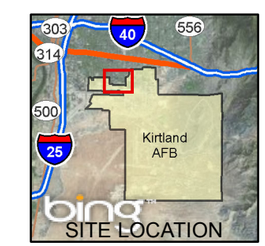


Legend

Manganese Concentration (ug/L)

- 3.3 - 15
- 16 - 200
- 210 - 1,000
- 1,100 - 6,000
- Not Sampled
- Historical Area of Observed NAPL (July 2009)
- Dissolved Plume May 2012



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Note: Data concentrations are posted to 2 significant figures.

The dissolved plume represents the extent of the dissolved organic compound plume in the Shallow and Intermediate Zones.

J = lab qualifier for value between the MDL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U = analyte not detected, associated numerical value is at or below the MDL.
UJ = analyte was tentatively not detected, associated numerical value is at or below the MDL.

N

Revision Date: 08/27/12

0 400 800 1,600

Feet
1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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BULK FUELS FACILITY
KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 5-43

MANGANESE CONCENTRATIONS IN SHALLOW GROUNDWATER

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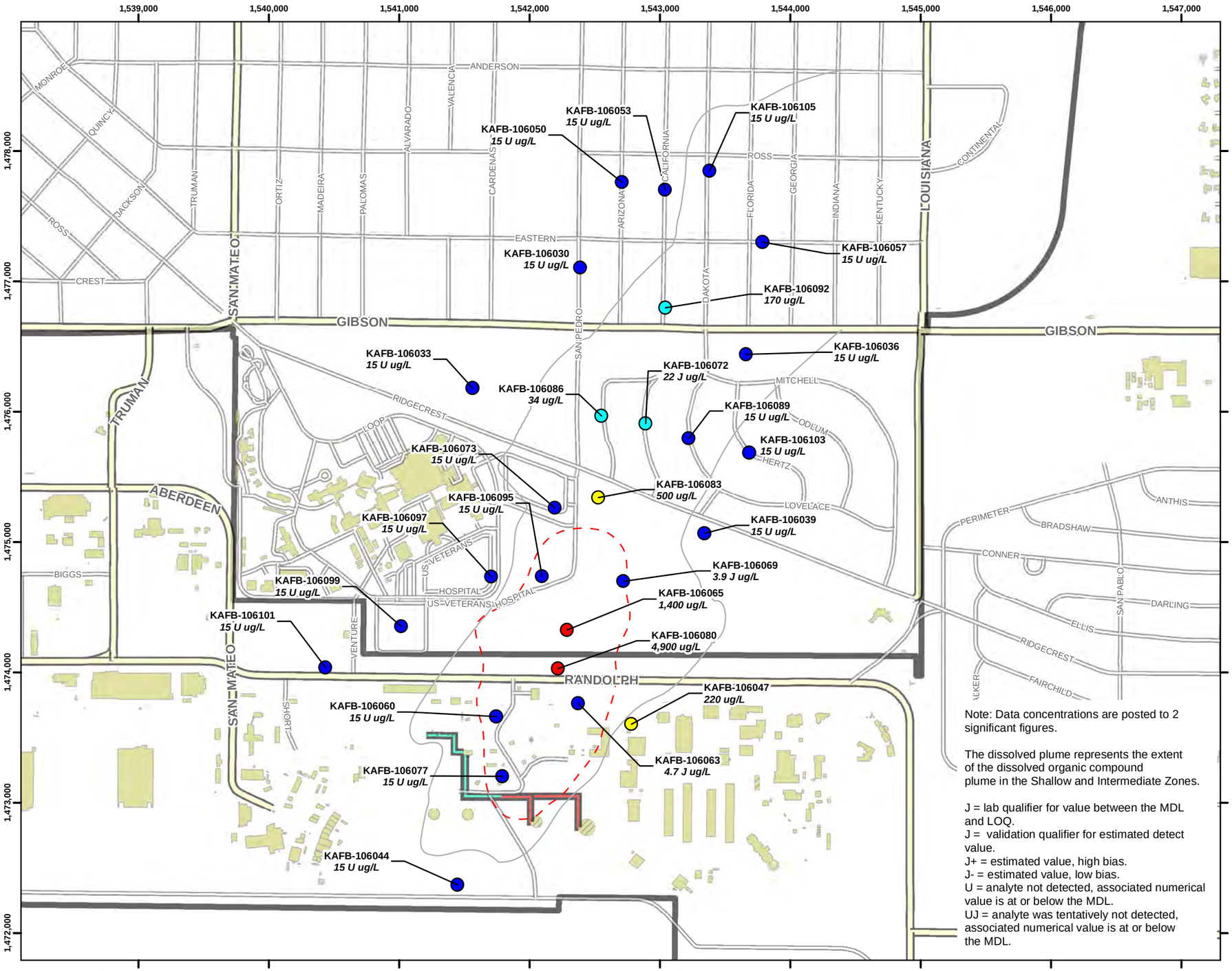
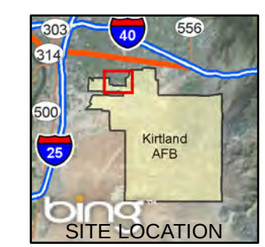


Legend

Manganese Concentration (ug/L)

- 3.9 - 15
- 16 - 200
- 210 - 1,000
- 1,100 - 4,900
- Historical Area of Observed NAPL (July 2009)
- Dissolved Plume May 2012



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Note: Data concentrations are posted to 2 significant figures.

The dissolved plume represents the extent of the dissolved organic compound plume in the Shallow and Intermediate Zones.

J = lab qualifier for value between the MDL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U = analyte not detected, associated numerical value is at or below the MDL.
UJ = analyte was tentatively not detected, associated numerical value is at or below the MDL.

Revision Date: 08/21/12

N

0 400 800 1,600

Feet
1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 5-44

MANGANESE CONCENTRATIONS
IN INTERMEDIATE GROUNDWATER

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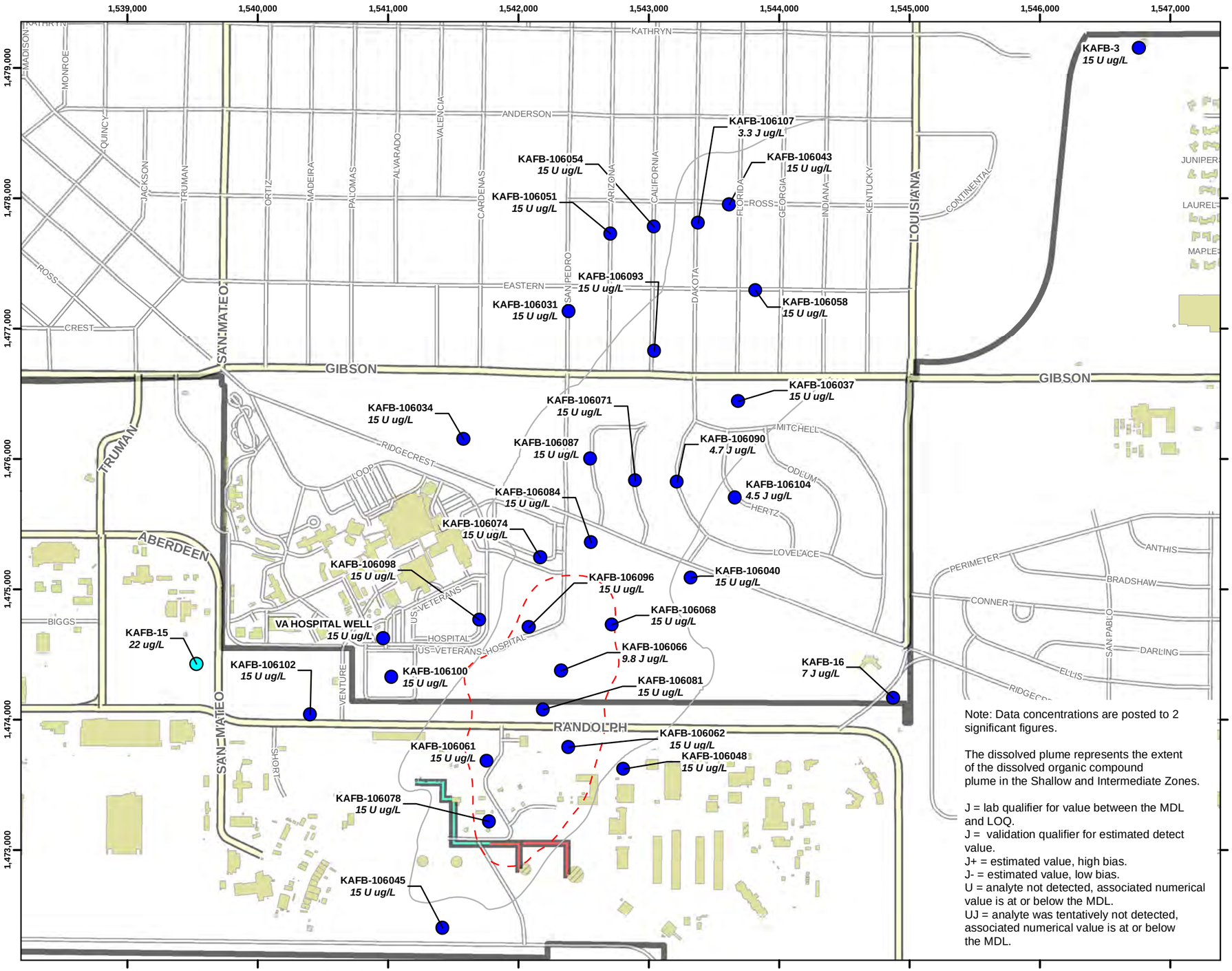
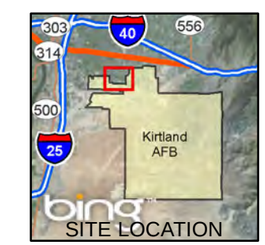


Legend

Manganese Concentration (ug/L)

- 3.3 - 15
- 16 - 22
- Historical Area of Observed NAPL (July 2009)
- Dissolved Plume May 2012



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N

0 400 800 1,600

Feet
1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

Note: Data concentrations are posted to 2 significant figures.

The dissolved plume represents the extent of the dissolved organic compound plume in the Shallow and Intermediate Zones.

J = lab qualifier for value between the MDL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U = analyte not detected, associated numerical value is at or below the MDL.
UJ = analyte was tentatively not detected, associated numerical value is at or below the MDL.

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FIGURE 5-45

MANGANESE CONCENTRATIONS IN DEEP GROUNDWATER

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_053_GW_Mn_deep.mxd 08/21/12

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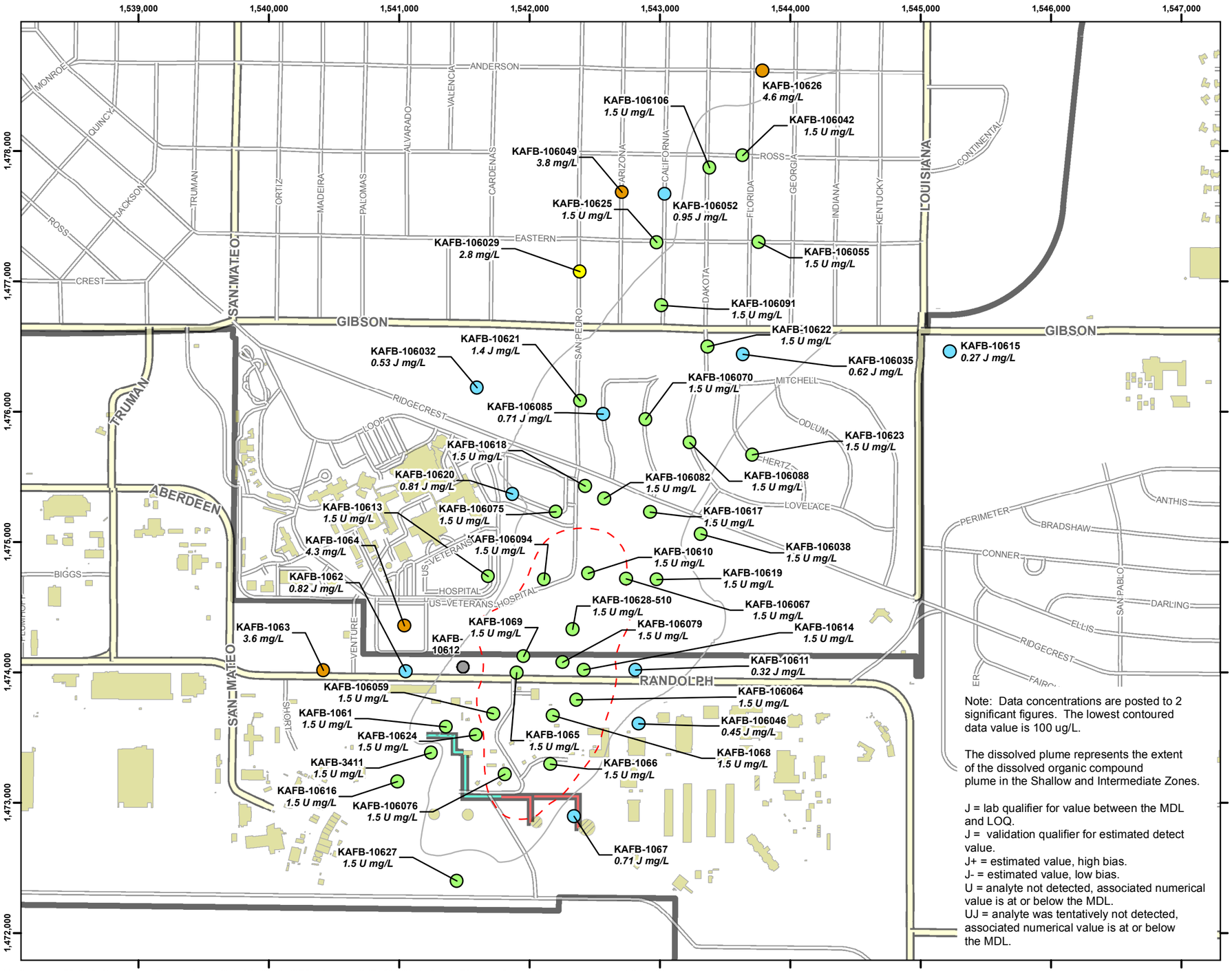
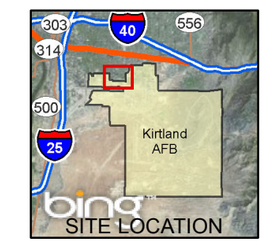


Legend

Nitrogen Concentration (mg/L)

- 0.27 - 1.0
- 1.1 - 2.0
- 2.1 - 3.0
- 3.1 - 4.6
- Not Sampled
- Historical Area of Observed NAPL (July 2009)
- Dissolved Plume May 2012



Service Layer Credits: © Harris Corp, Earthstar Geographics LLC © 2012 Microsoft Corporation

Note: Data concentrations are posted to 2 significant figures. The lowest contoured data value is 100 ug/L.

The dissolved plume represents the extent of the dissolved organic compound plume in the Shallow and Intermediate Zones.

J = lab qualifier for value between the MDL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U = analyte not detected, associated numerical value is at or below the MDL.
UJ = analyte was tentatively not detected, associated numerical value is at or below the MDL.

N

Revision Date: 08/27/12

0 400 800 1,600

Feet
1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-46

NITROGEN (NITRATE-NITRITE) CONCENTRATIONS IN SHALLOW GROUNDWATER

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_055_GW_sulfate_shallow.mxd 08/27/12

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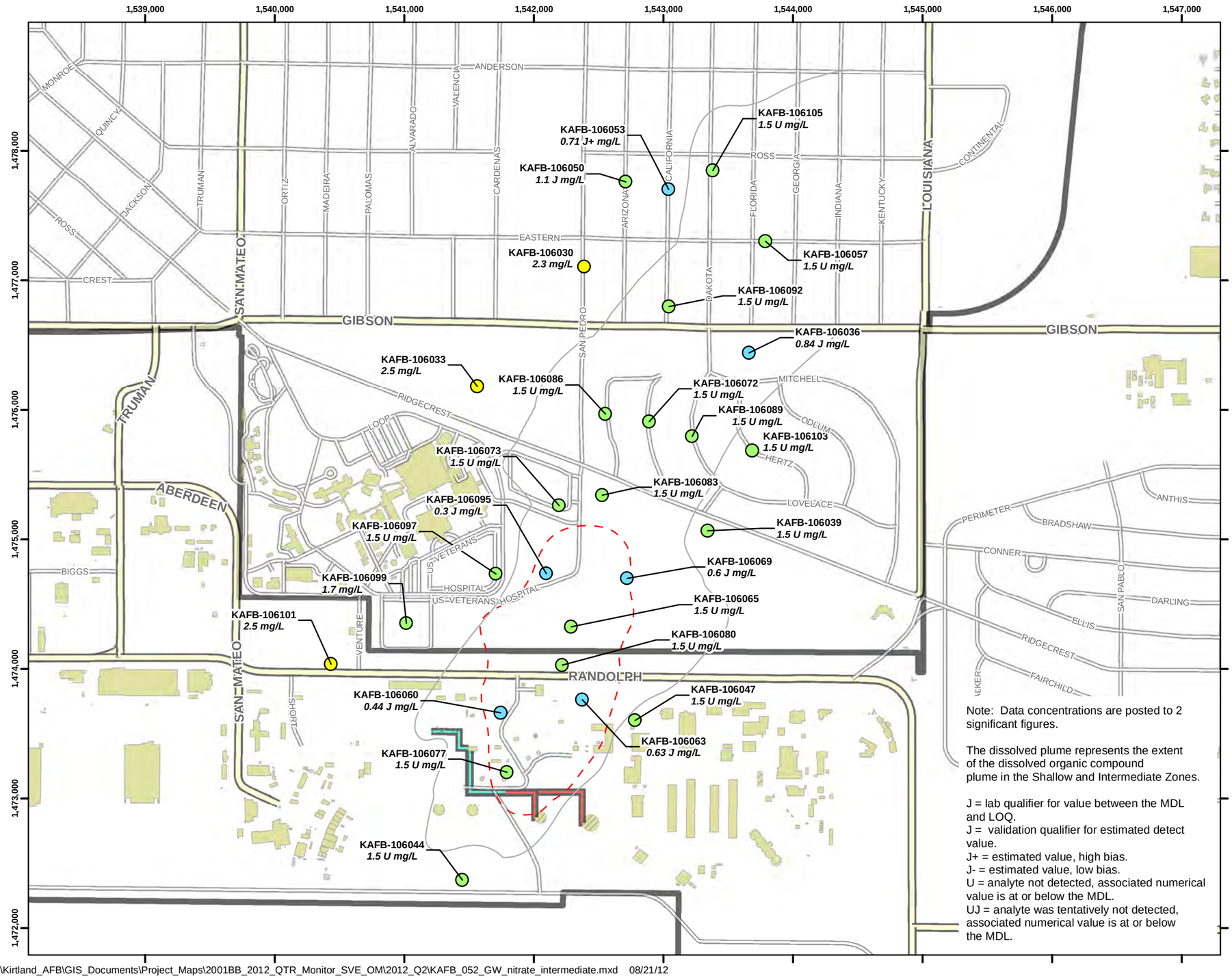
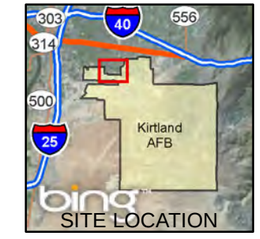


Legend

Nitrogen Concentration (mg/L)

- 0.30 - 1.0
- 1.1 - 2.0
- 2.1 - 2.5
- Historical Area of Observed NAPL (July 2009)
- Dissolved Plume May 2012



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Note: Data concentrations are posted to 2 significant figures.

The dissolved plume represents the extent of the dissolved organic compound plume in the Shallow and Intermediate Zones.

J = lab qualifier for value between the MDL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U = analyte not detected, associated numerical value is at or below the MDL.
UJ = analyte was tentatively not detected, associated numerical value is at or below the MDL.

N

Revision Date: 08/21/12

0 400 800 1,600

Feet
1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 5-47

NITROGEN (NITRATE-NITRITE) CONCENTRATIONS IN INTERMEDIATE GROUNDWATER

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_052_GW_nitrate_intermediate.mxd 08/21/12

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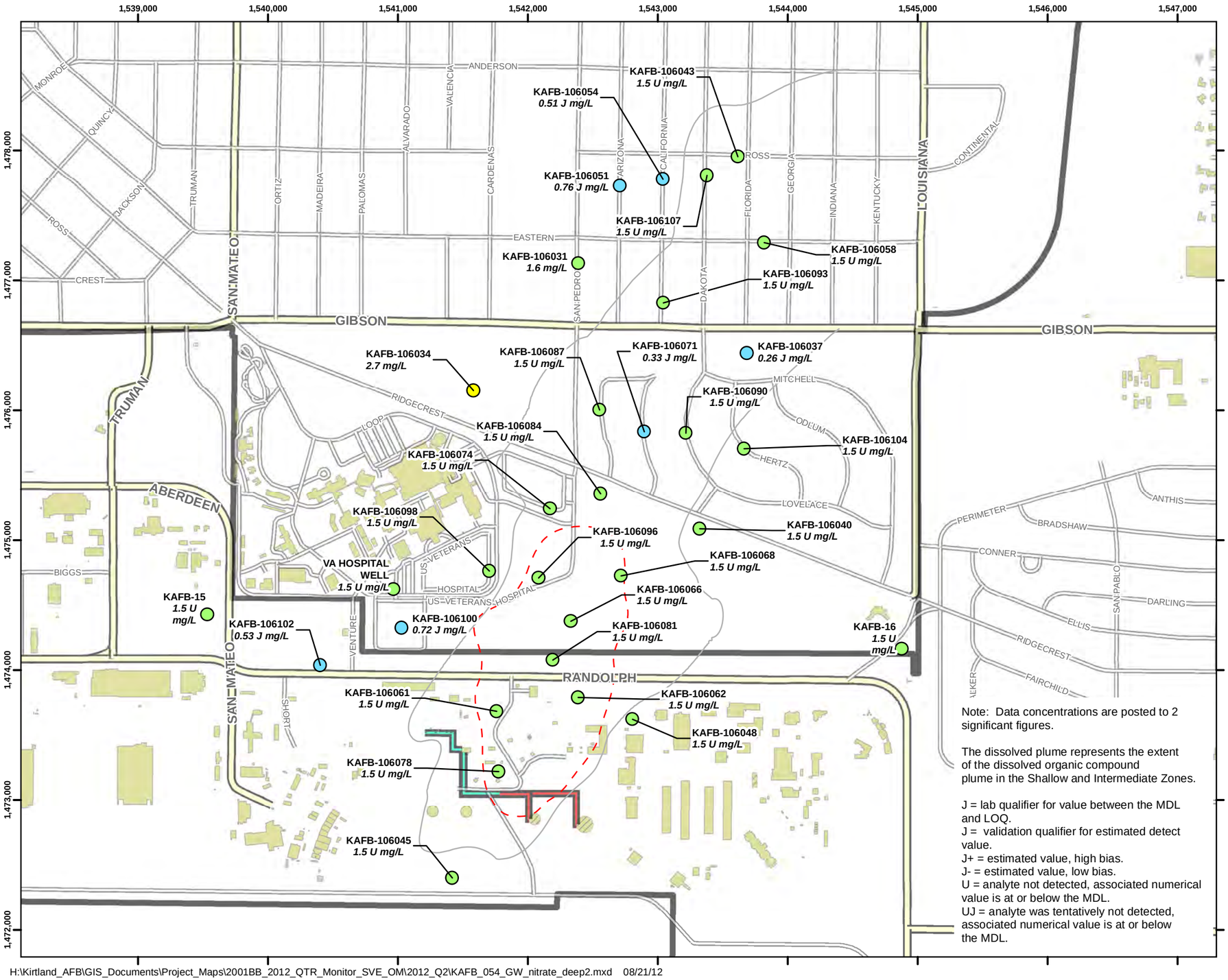
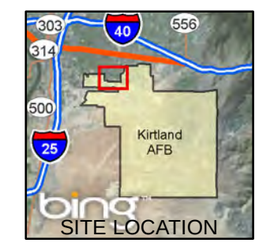


Legend

Nitrogen Concentration (mg/L)

- 0.26 - 1.0
- 1.1 - 2.0
- 2.1 - 2.7
- Historical Area of Observed NAPL (July 2009)
- Dissolved Plume May 2012



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Note: Data concentrations are posted to 2 significant figures.

The dissolved plume represents the extent of the dissolved organic compound plume in the Shallow and Intermediate Zones.

J = lab qualifier for value between the MDL and LOQ.
J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U = analyte not detected, associated numerical value is at or below the MDL.
UJ = analyte was tentatively not detected, associated numerical value is at or below the MDL.

N

0 400 800 1,600

Feet
1 inch = 800 feet

Revision Date: 08/21/12

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-48

NITROGEN (NITRATE-NITRITE) CONCENTRATIONS IN DEEP GROUNDWATER

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_054_GW_nitrate_deep2.mxd 08/21/12

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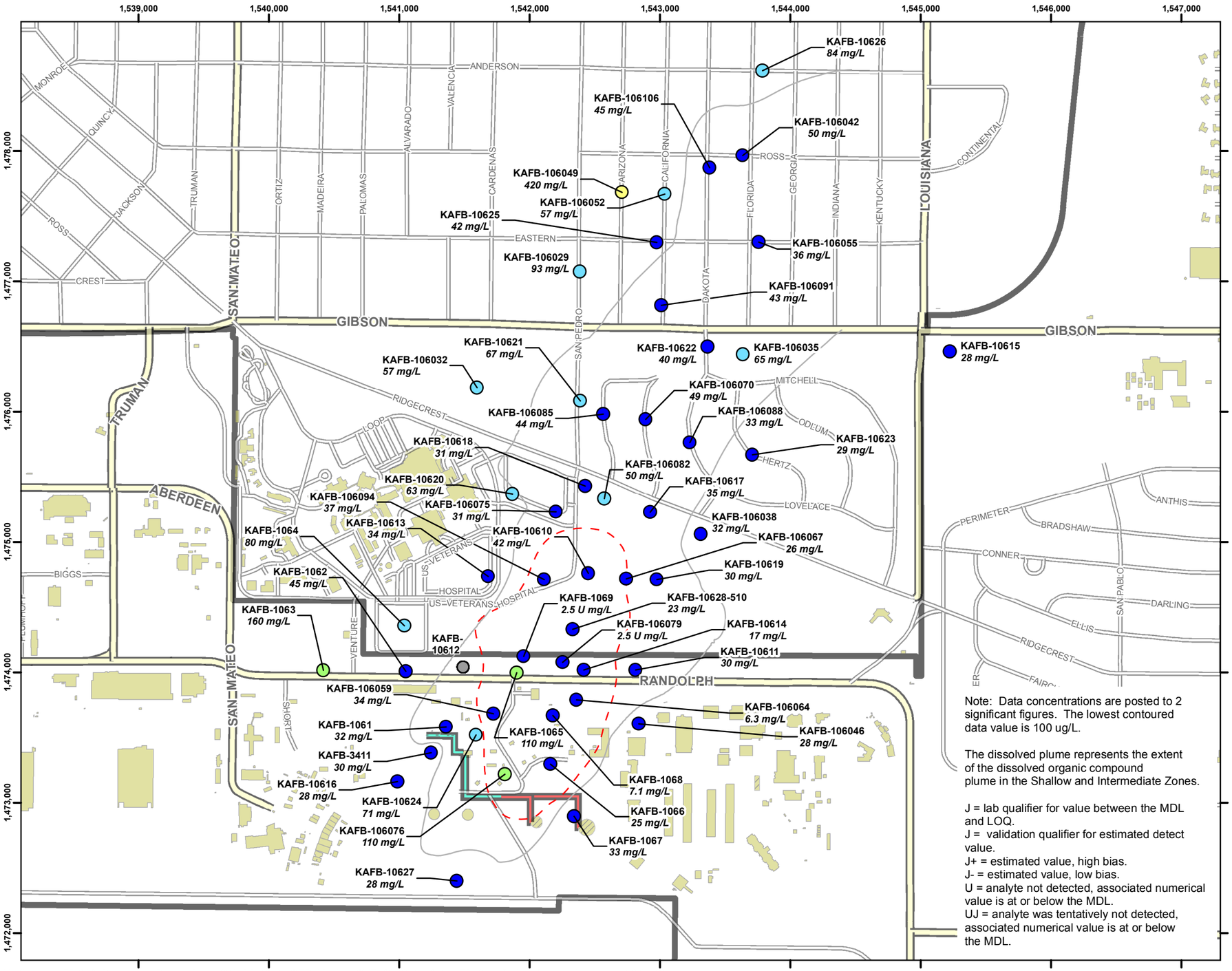
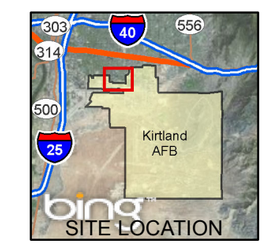


Legend

Sulfate Concentration (mg/L)

- 2.5 - 50
- 51 - 100
- 110 - 200
- 210 - 420
- Not Sampled
- Historical Area of Observed NAPL (July 2009)
- Dissolved Plume May 2012



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Note: Data concentrations are posted to 2 significant figures. The lowest contoured data value is 100 ug/L.

The dissolved plume represents the extent of the dissolved organic compound plume in the Shallow and Intermediate Zones.

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J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U = analyte not detected, associated numerical value is at or below the MDL.
UJ = analyte was tentatively not detected, associated numerical value is at or below the MDL.

N

Revision Date: 08/27/12

0 400 800 1,600

Feet
1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-49

SULFATE CONCENTRATIONS IN SHALLOW GROUNDWATER

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_055_GW_sulfate_shallow.mxd 08/27/12

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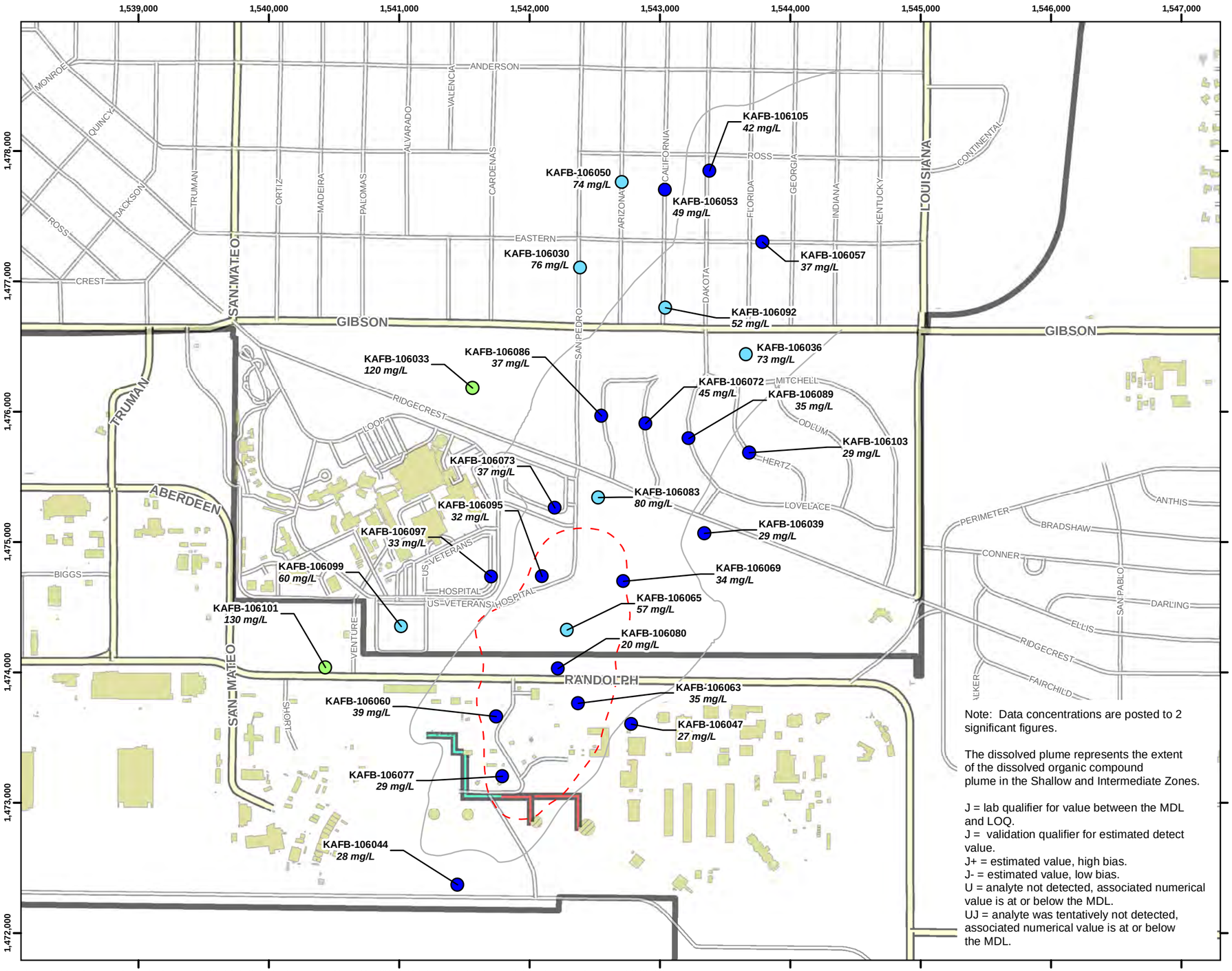
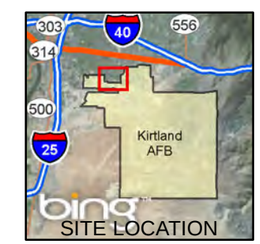


Legend

Sulfate Concentration (mg/L)

- 20 - 50
- 51 - 100
- 110 - 130
- Historical Area of Observed NAPL (July 2009)
- Dissolved Plume May 2012



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Note: Data concentrations are posted to 2 significant figures.

The dissolved plume represents the extent of the dissolved organic compound plume in the Shallow and Intermediate Zones.

J = lab qualifier for value between the MDL and LOQ.
J = validation qualifier for estimated detect value.
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J- = estimated value, low bias.
U = analyte not detected, associated numerical value is at or below the MDL.
UJ = analyte was tentatively not detected, associated numerical value is at or below the MDL.

N

Revision Date: 08/21/12

0 400 800 1,600

Feet
1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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FIGURE 5-50

SULFATE CONCENTRATIONS
IN INTERMEDIATE GROUNDWATER

H:\Kirtland_AFB\GIS_Documents\Project_Maps\2001BB_2012_QTR_Monitor_SVE_OM\2012_Q2\KAFB_056_GW_sulfate_intermediate.mxd 08/21/12

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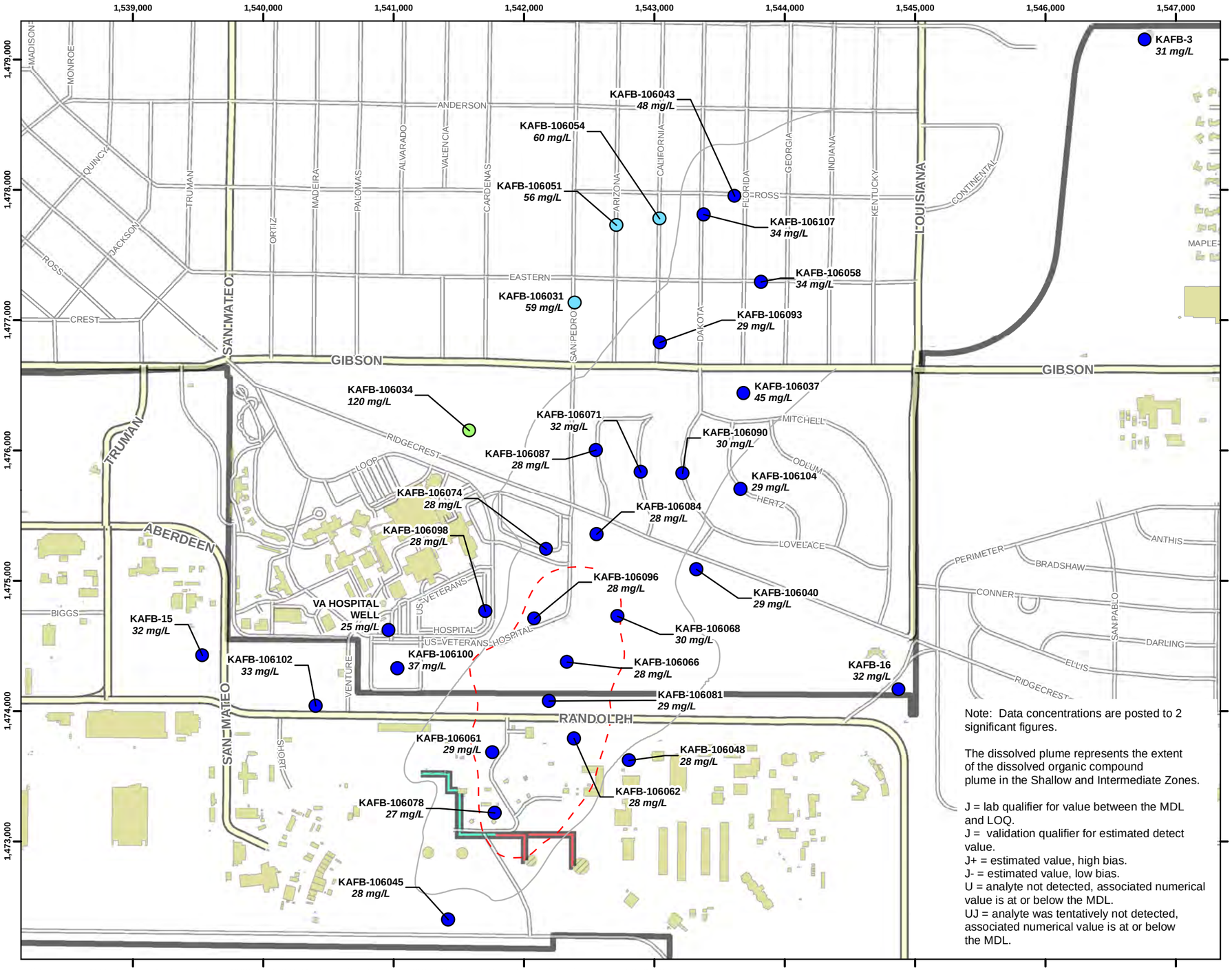
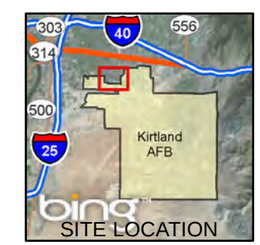


Legend

Sulfate Concentration (mg/L)

- 20 - 50
- 51 - 100
- 110 - 120
- Historical Area of Observed NAPL (July 2009)
- Dissolved Plume May 2012



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Note: Data concentrations are posted to 2 significant figures.

The dissolved plume represents the extent of the dissolved organic compound plume in the Shallow and Intermediate Zones.

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J = validation qualifier for estimated detect value.
J+ = estimated value, high bias.
J- = estimated value, low bias.
U = analyte not detected, associated numerical value is at or below the MDL.
UJ = analyte was tentatively not detected, associated numerical value is at or below the MDL.

N

Revision Date: 08/21/12

0 400 800 1,600

Feet
1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

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KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 5-51

SULFATE CONCENTRATIONS
IN DEEP GROUNDWATER

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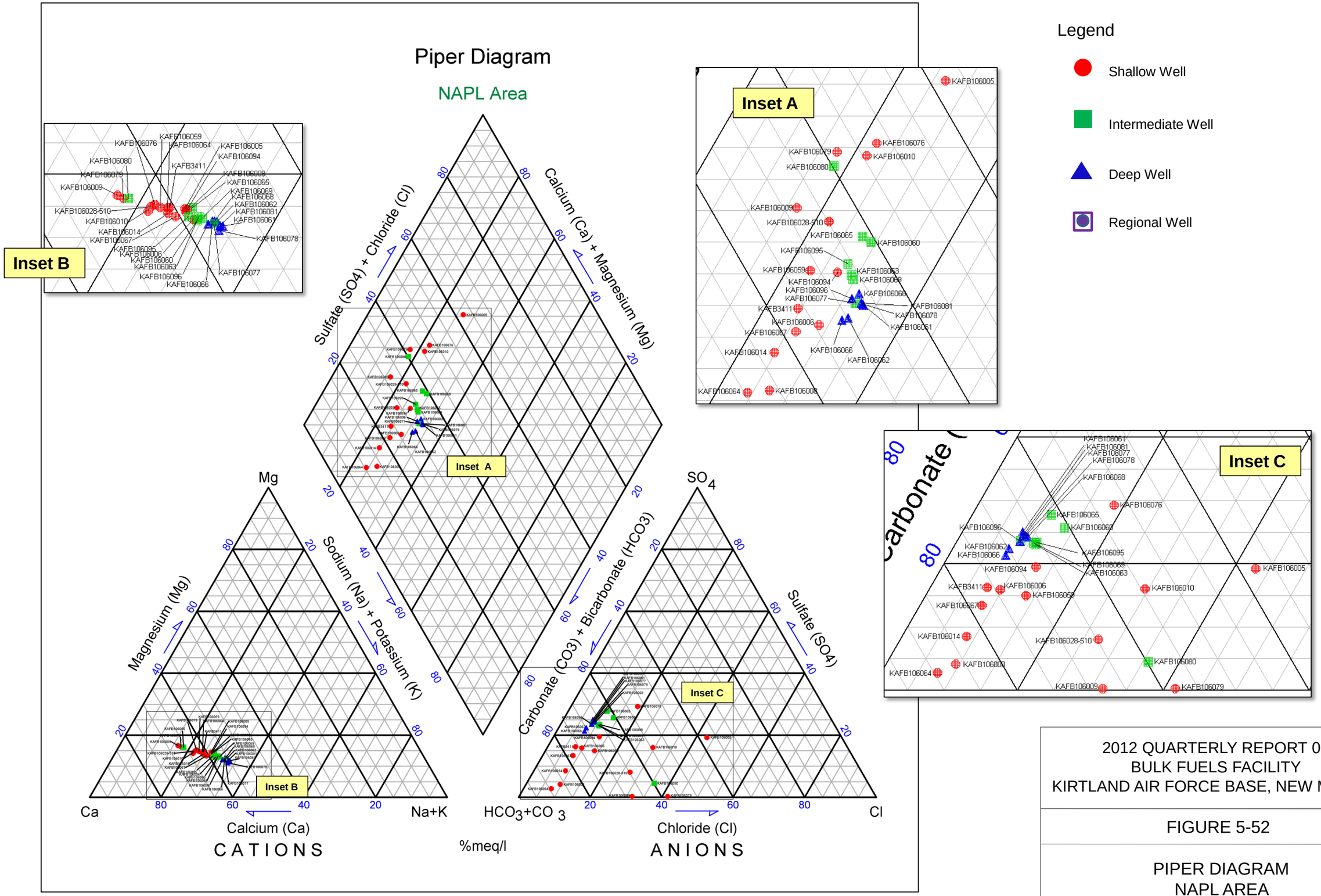

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FIGURE 5-52

PIPER DIAGRAM
NAPL AREA

KAFB_071_Piper_Stiff.ppt

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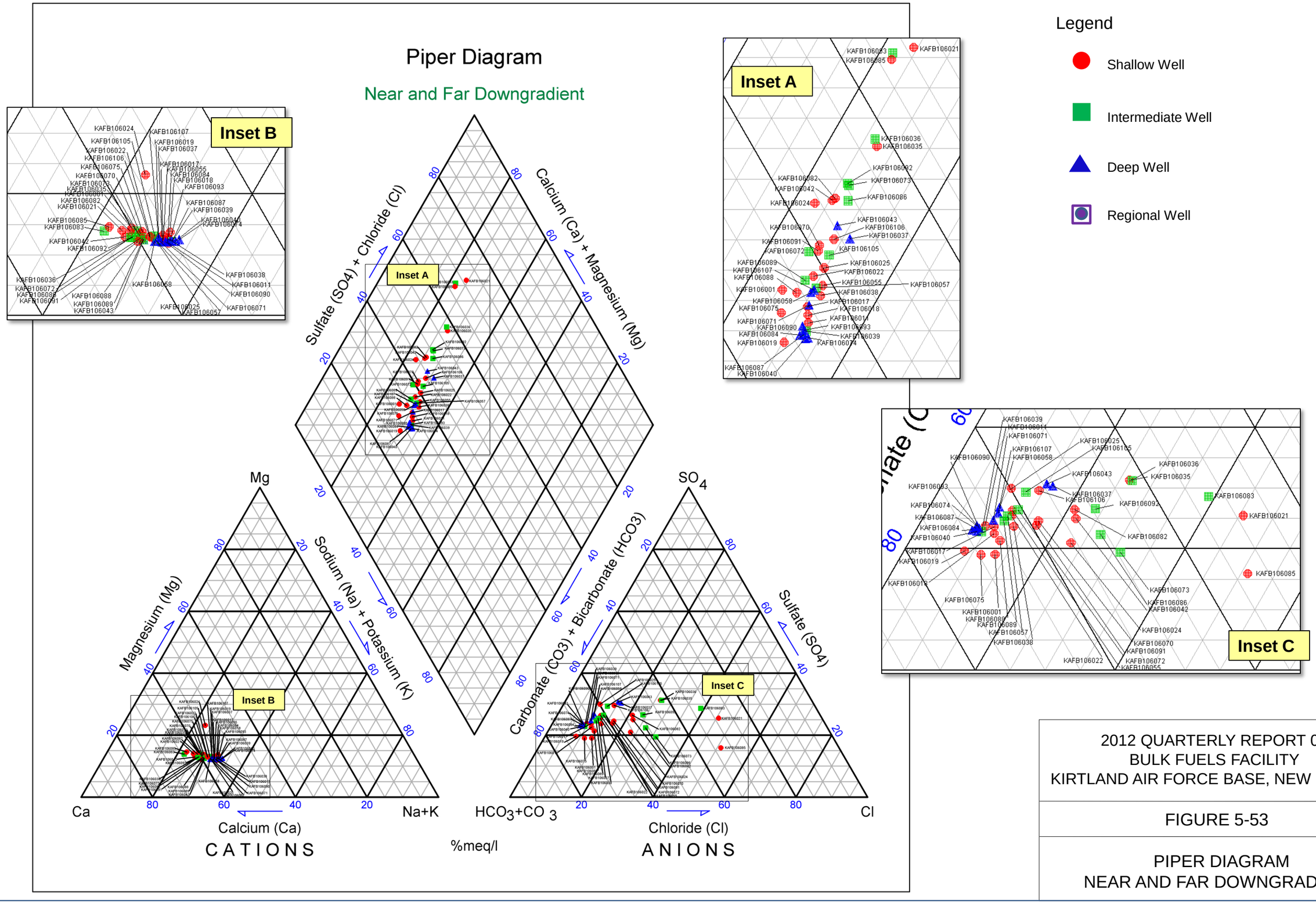

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FIGURE 5-53

PIPER DIAGRAM
NEAR AND FAR DOWNGRADIENT

KAFB_071_Piper_Stiff.ppt

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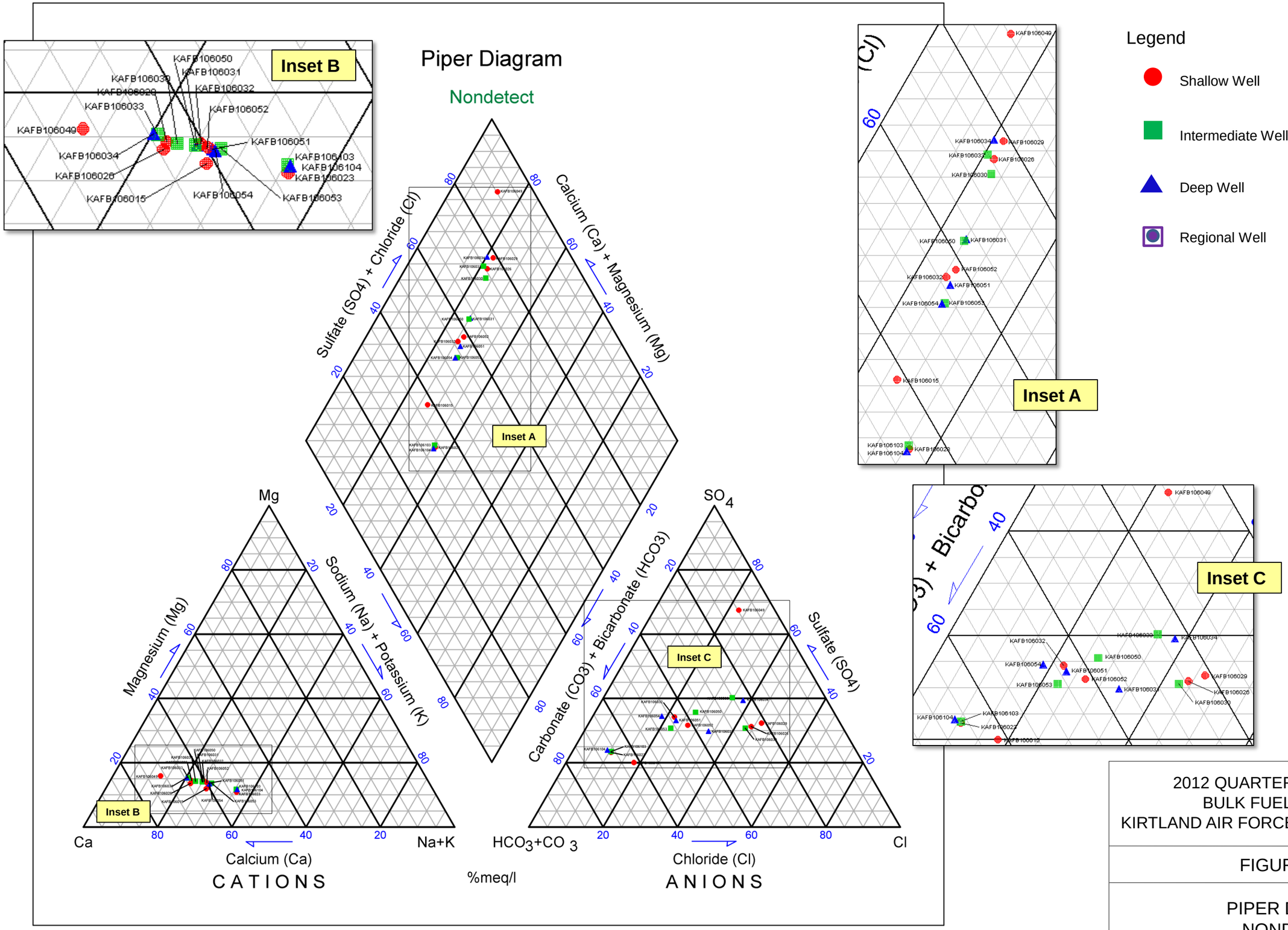

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FIGURE 5-54

PIPER DIAGRAM
NONDETECT

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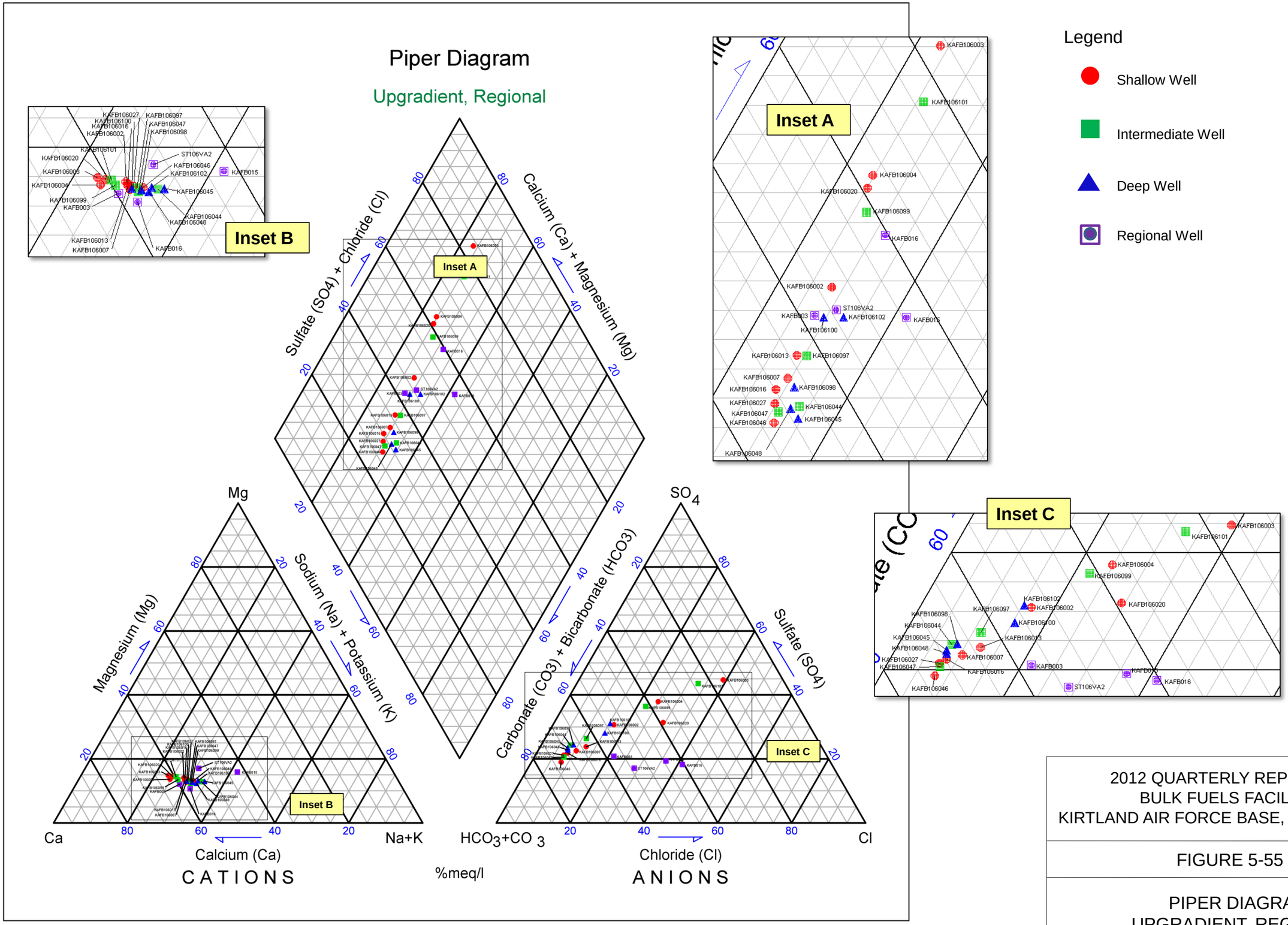

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FIGURE 5-55

PIPER DIAGRAM
UPGRADIENT, REGIONAL

KAFB_071_Piper_Stiff.ppt

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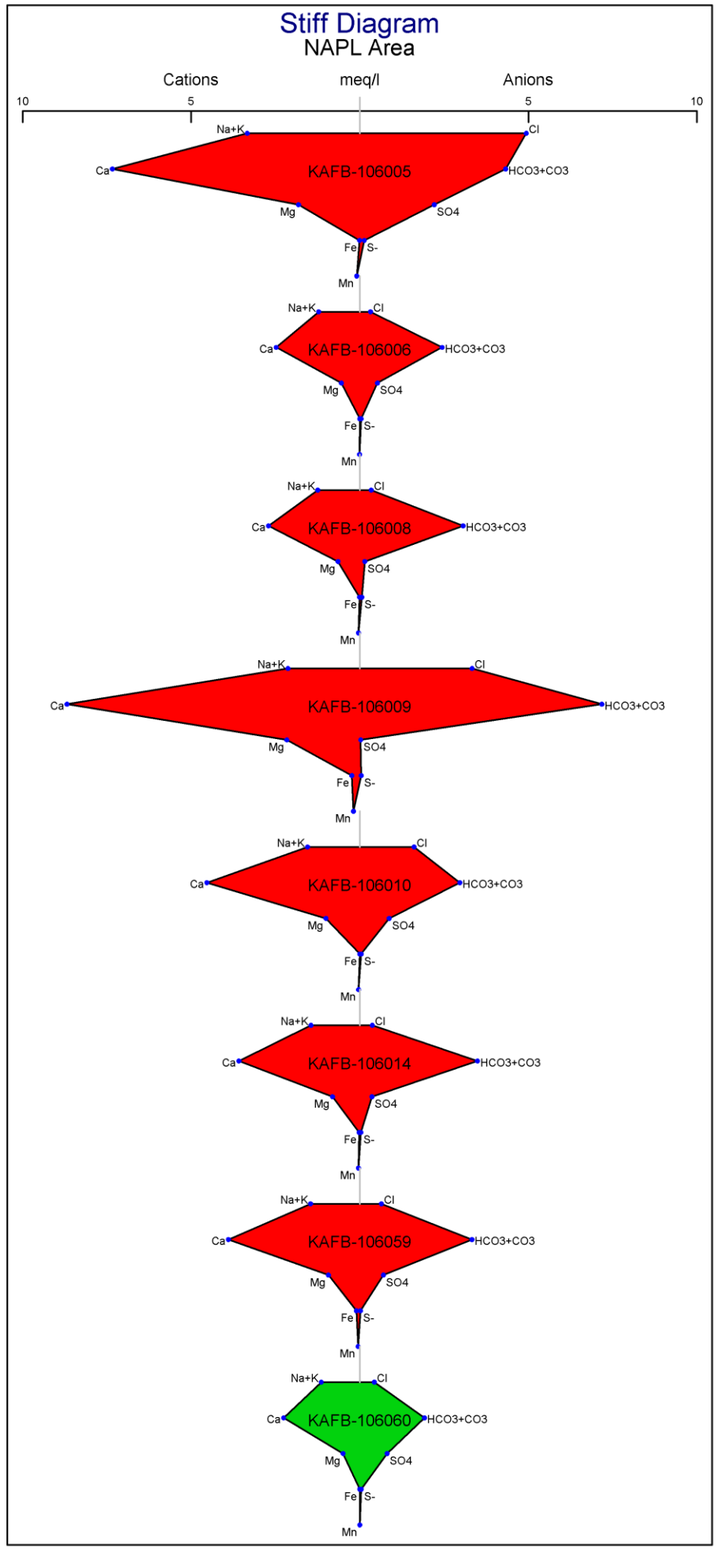

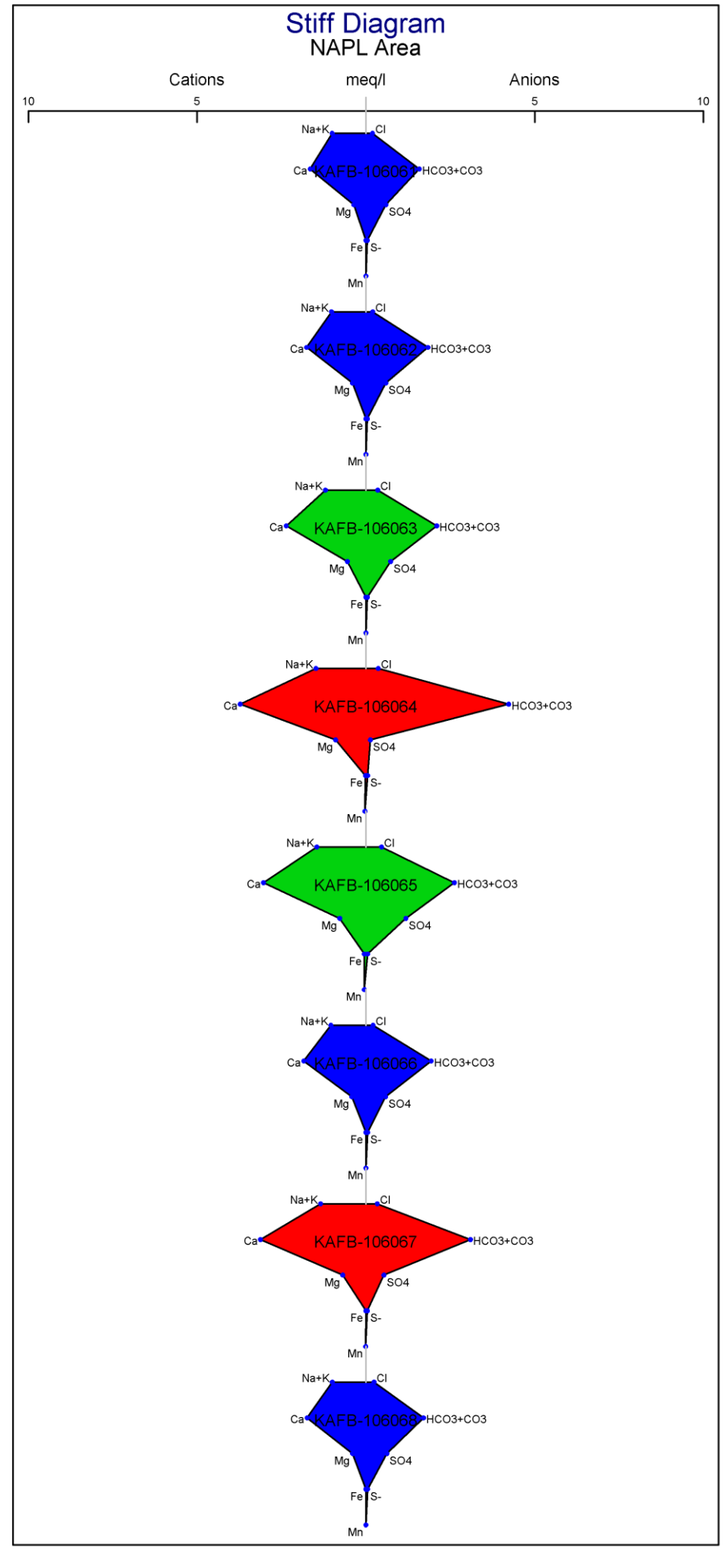

Legend

- Shallow Well
- Intermediate Well
- Deep Well
- Regional Well

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FIGURE 5-56

STIFF DIAGRAMS
NAPL AREA
PART 1

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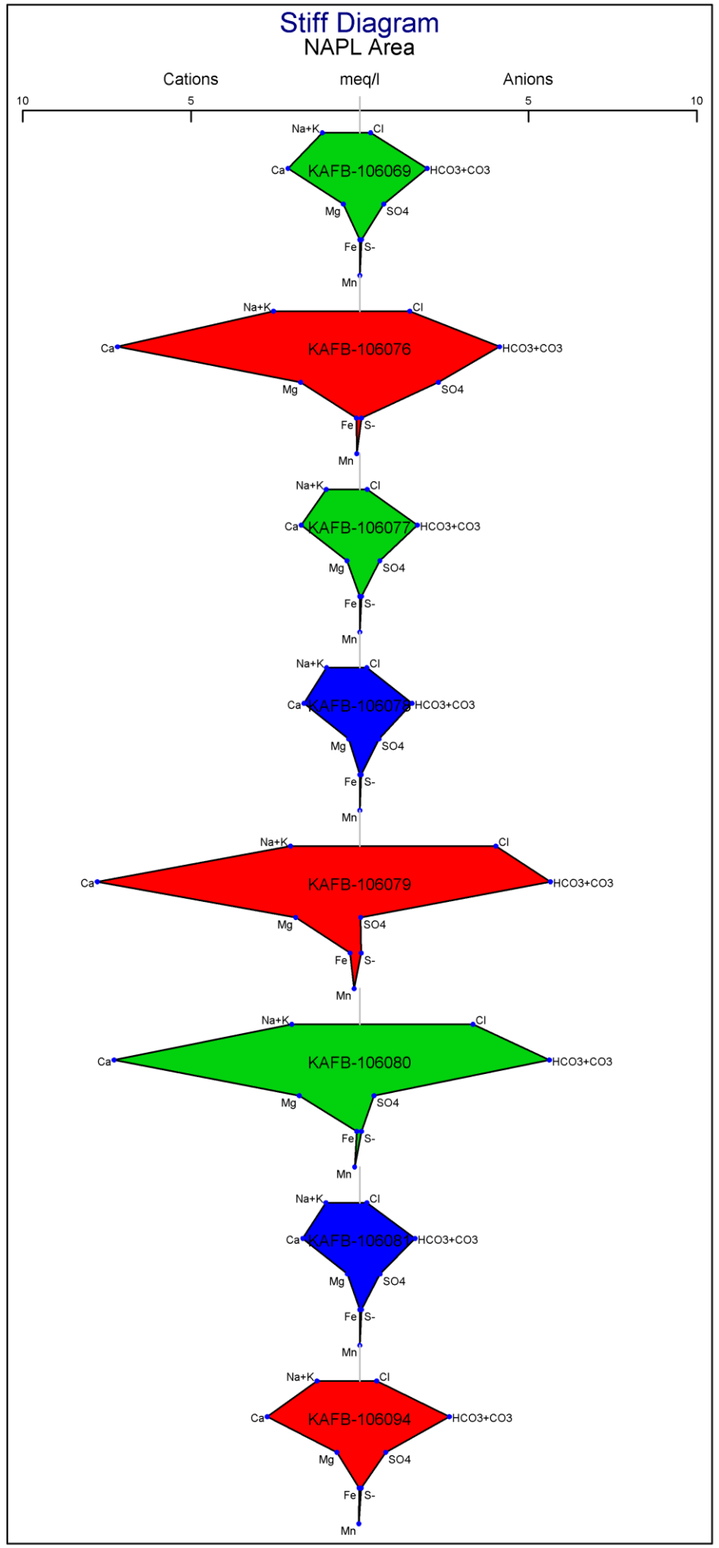

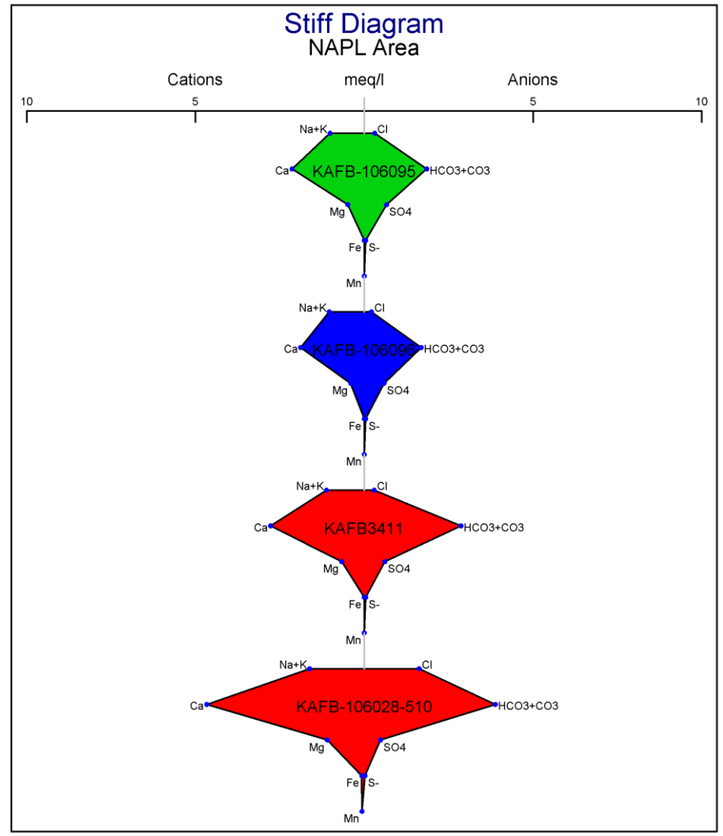

Legend

- Shallow Well
- Intermediate Well
- Deep Well
- Regional Well

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FIGURE 5-57

STIFF DIAGRAMS
NAPL AREA
PART 2

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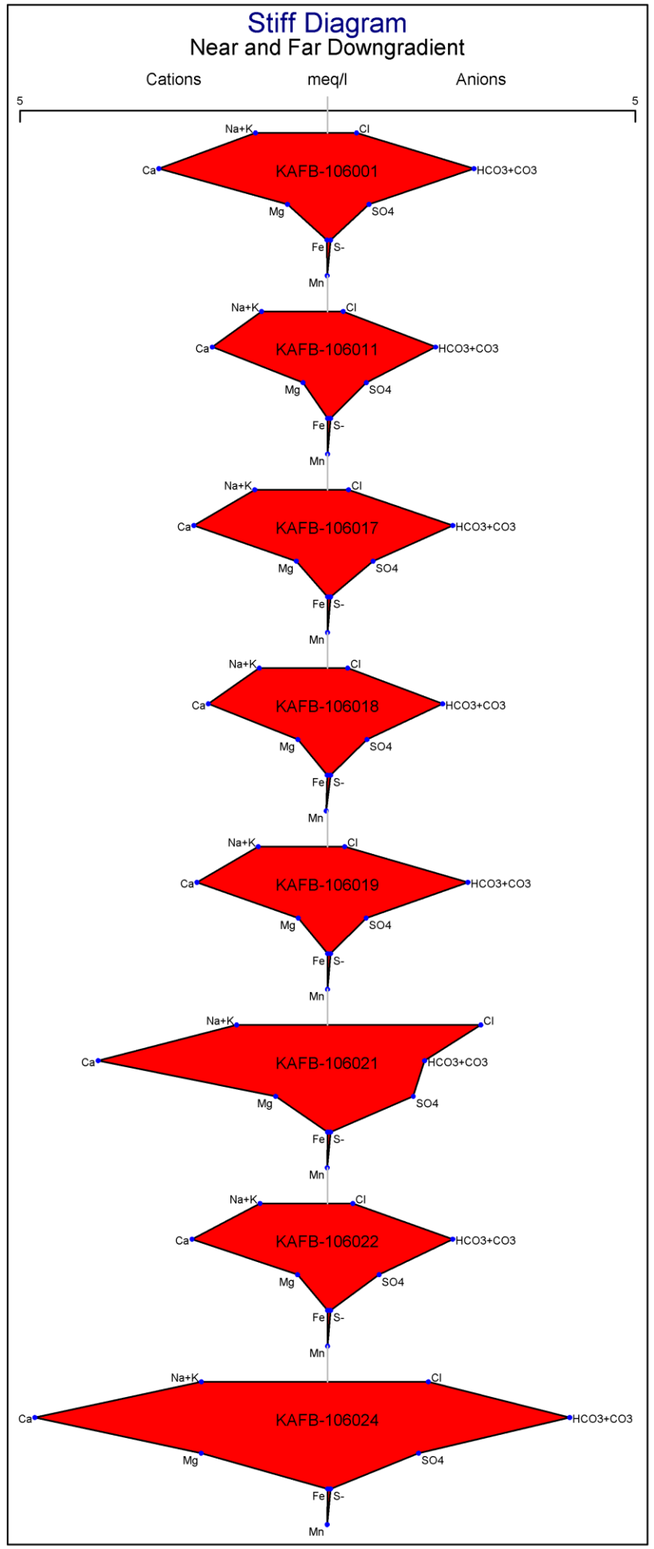

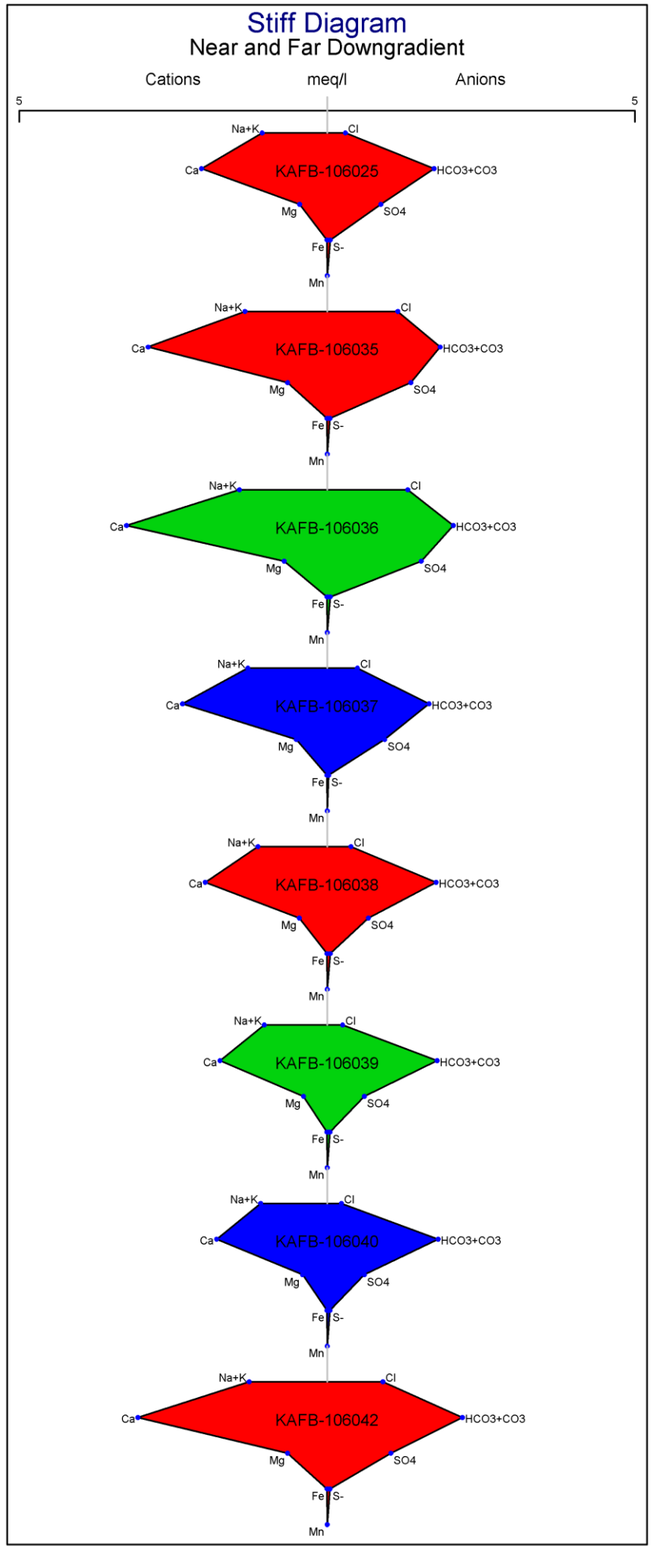

Legend

- Shallow Well
- Intermediate Well
- Deep Well
- Regional Well

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FIGURE 5-58

STIFF DIAGRAMS
NEAR AND FAR DOWNGRADIENT
PART 1

KAFB_071_Piper_Stiff_Diagrams.ppt

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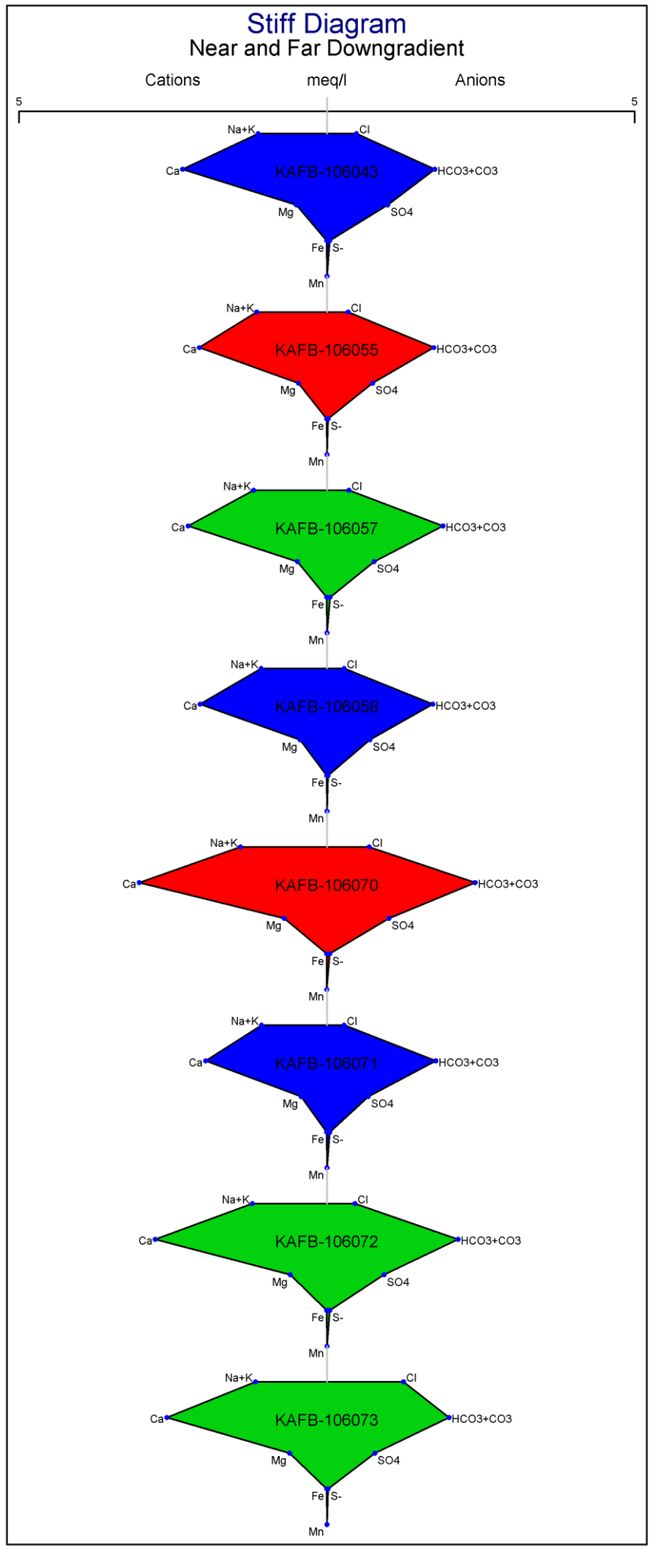

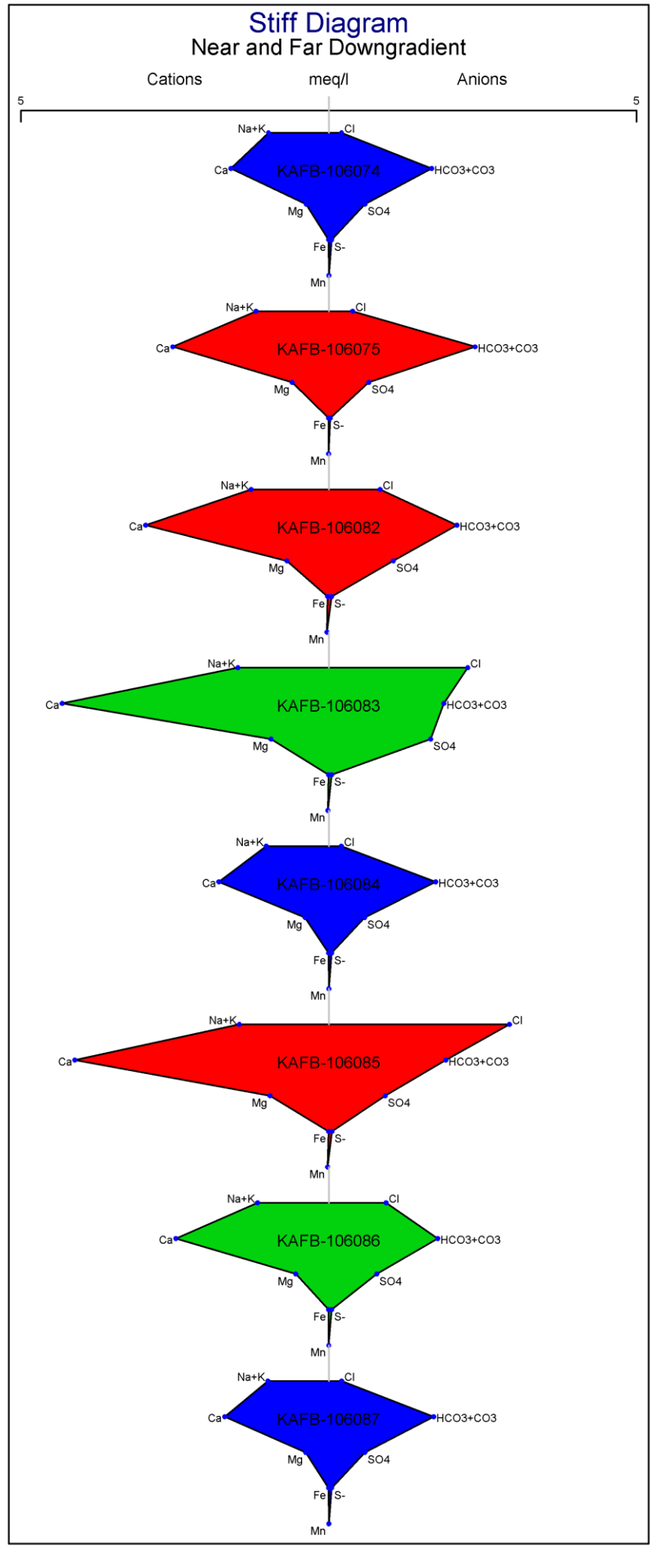

Legend

- Shallow Well
- Intermediate Well
- Deep Well
- Regional Well

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FIGURE 5-59

STIFF DIAGRAMS
NEAR AND FAR DOWNGRADIENT
PART 2

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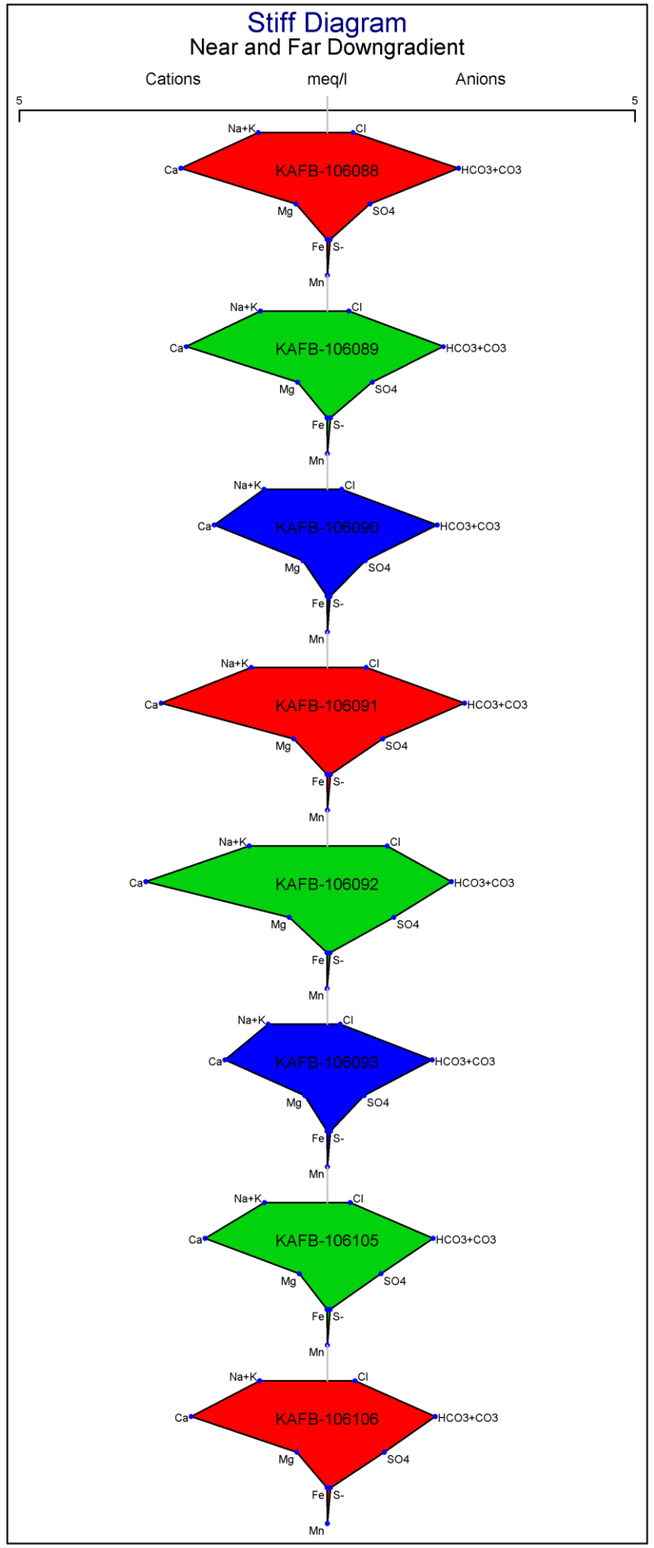

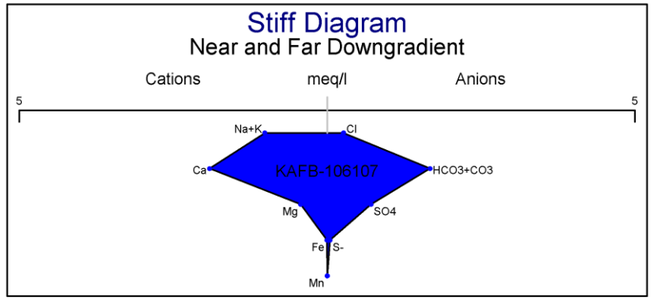

Legend

- Shallow Well
- Intermediate Well
- Deep Well
- Regional Well

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KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 5-60

STIFF DIAGRAMS
NEAR AND FAR DOWNGRADIENT
PART 3

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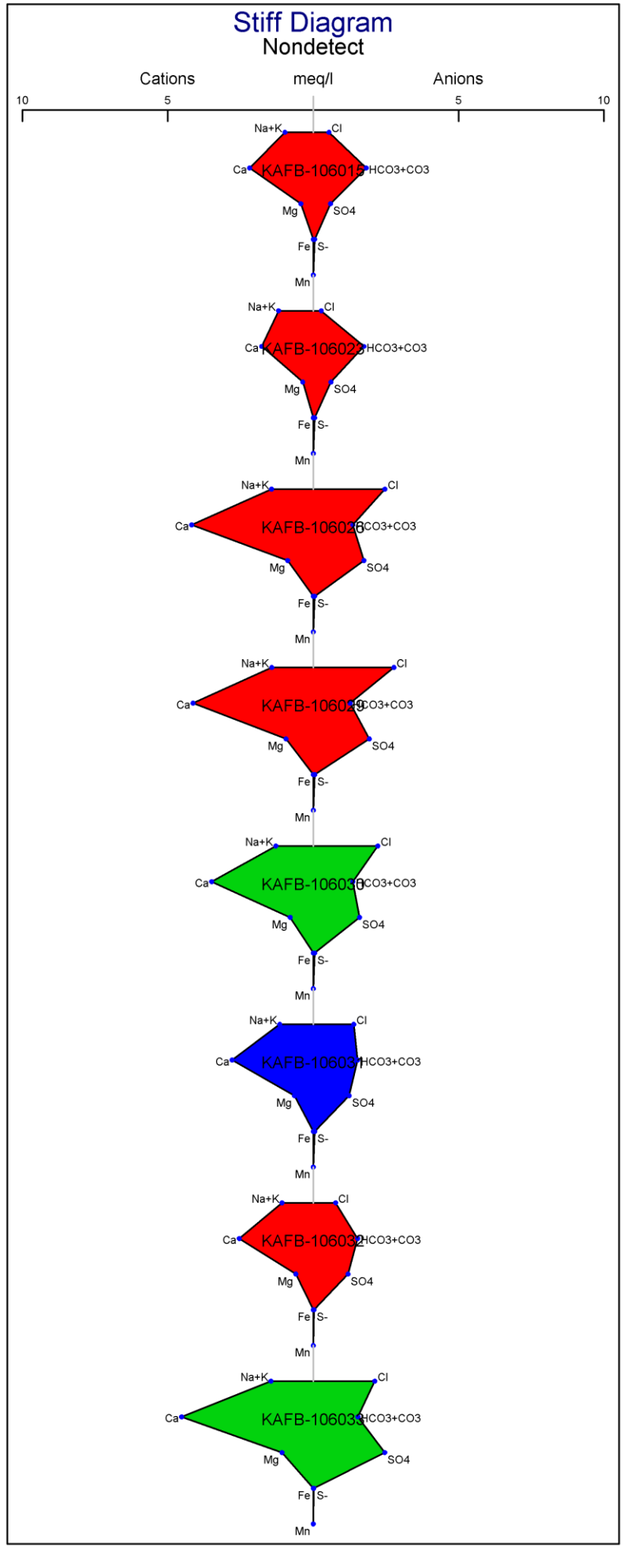

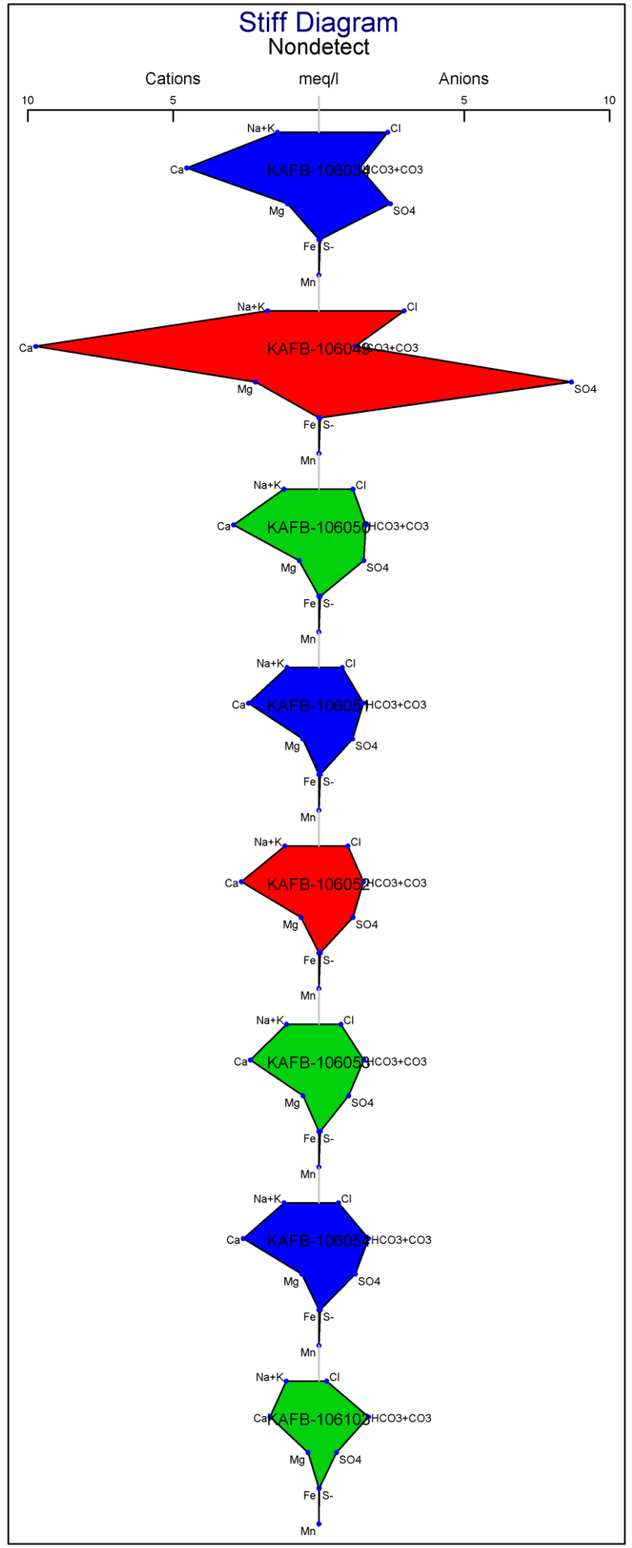

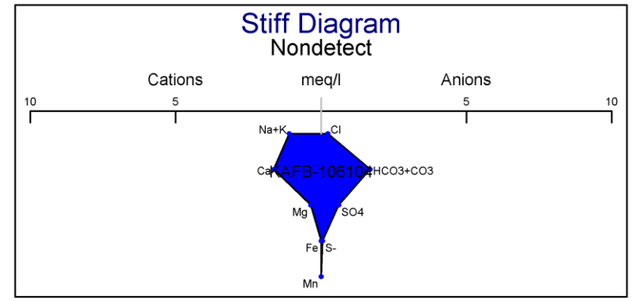

Legend

- Shallow Well
- Intermediate Well
- Deep Well
- Regional Well

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KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 5-61

STIFF DIAGRAMS
NONDETECT

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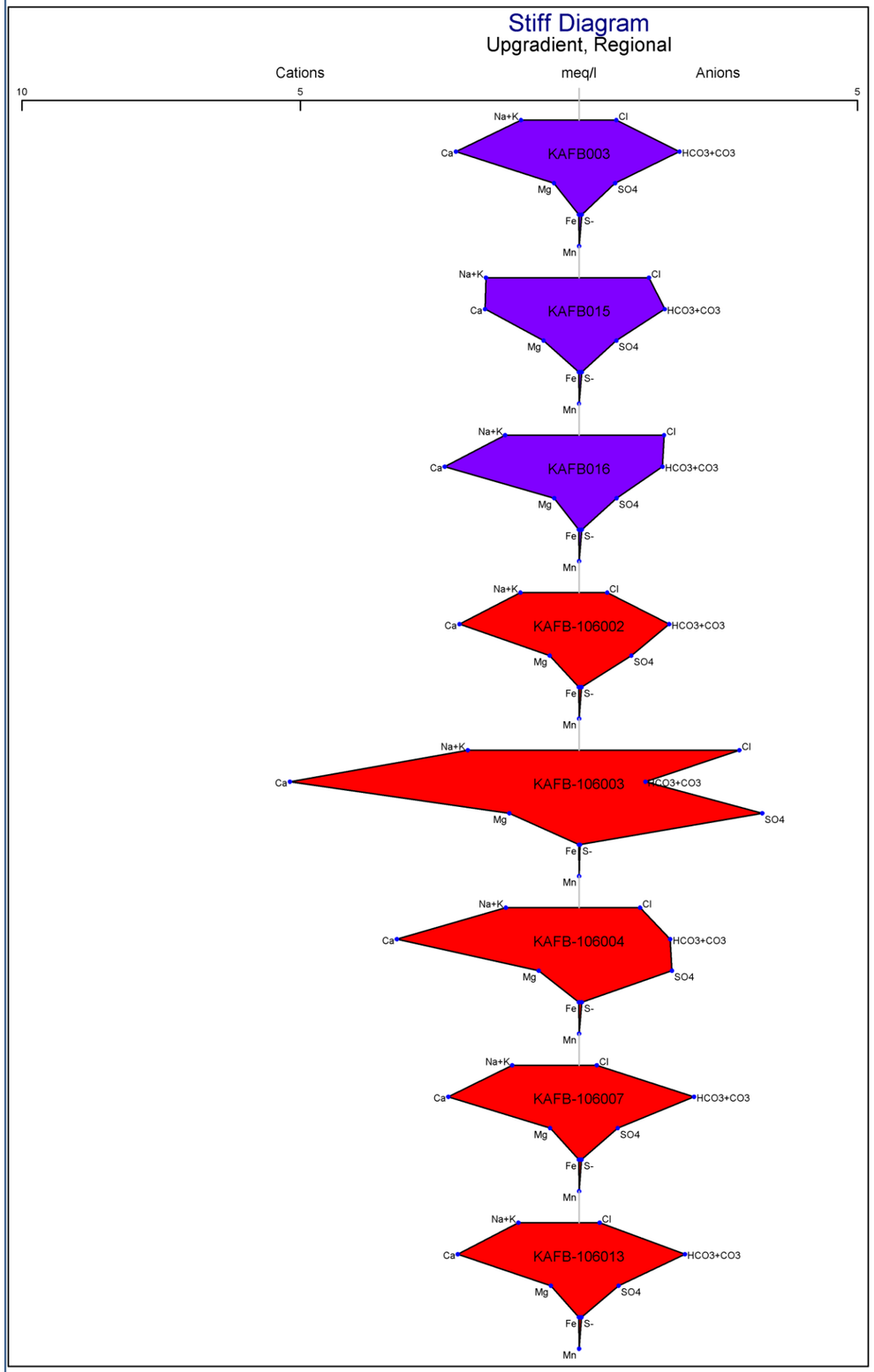

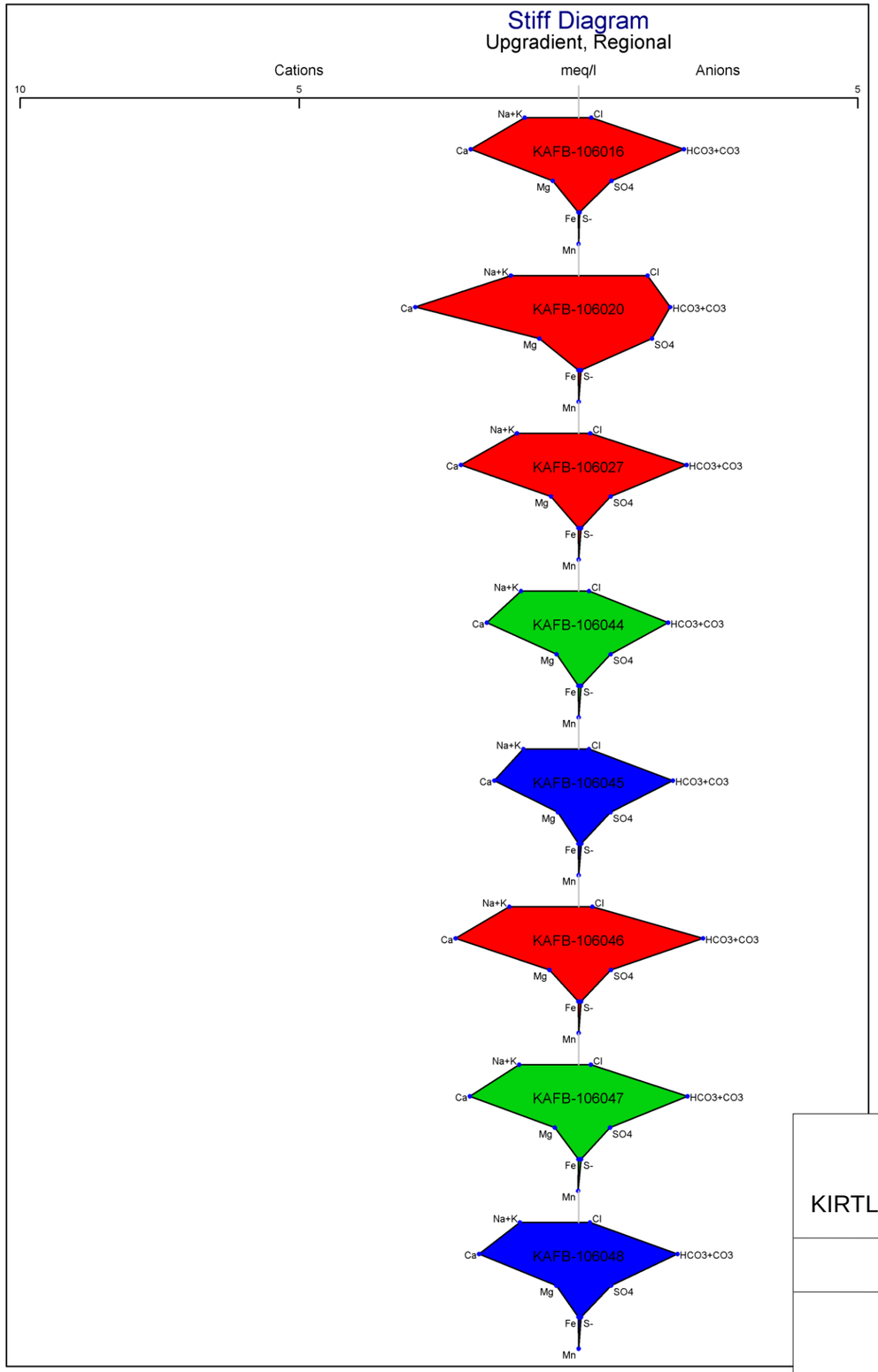

Legend

- Shallow Well
- Intermediate Well
- Deep Well
- Regional Well

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KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 5-62

STIFF DIAGRAMS
UPGRADIENT, REGIONAL
PART 1

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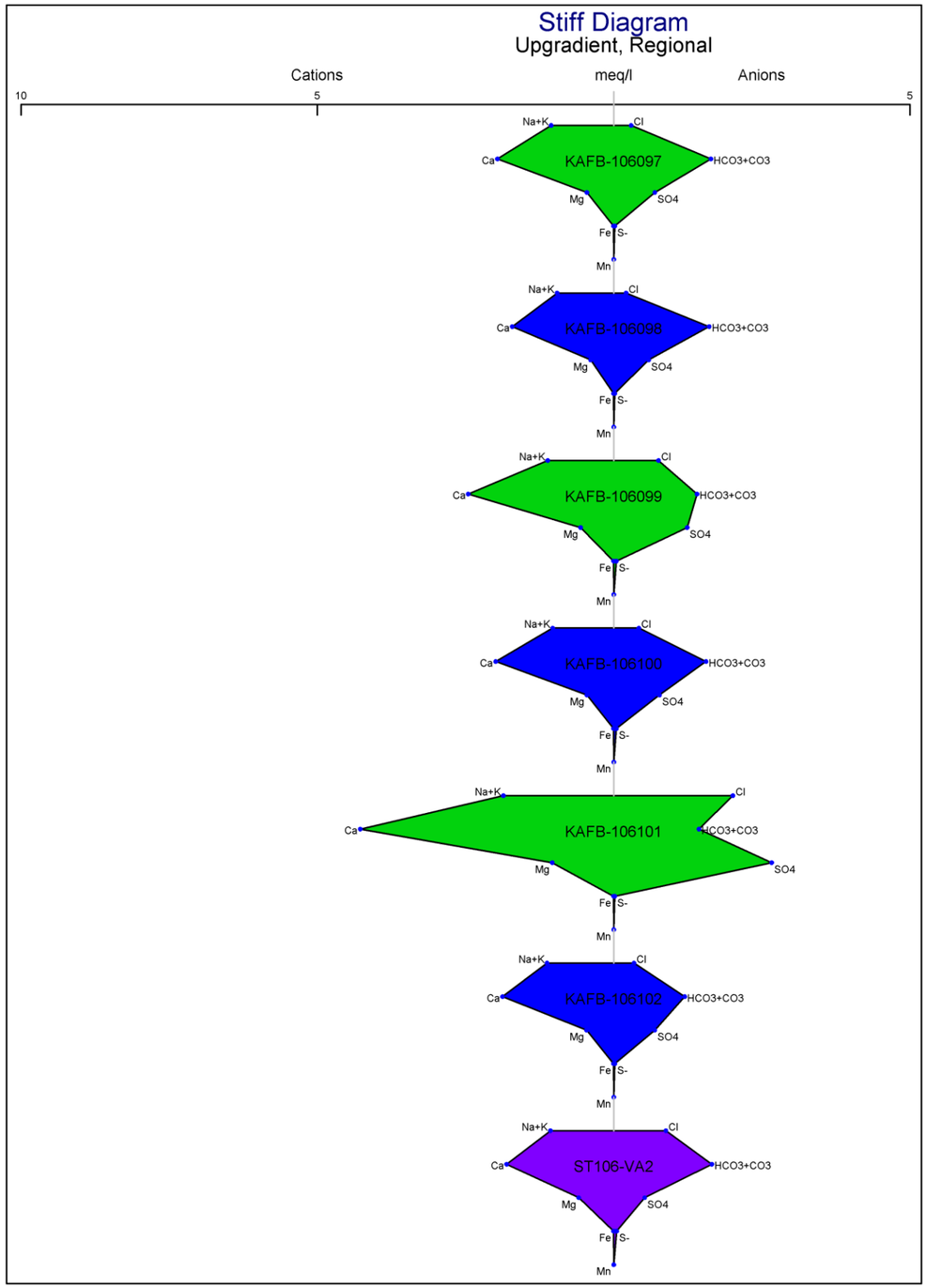

Legend

- Shallow Well
- Intermediate Well
- Deep Well
- Regional Well

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KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 5-63

STIFF DIAGRAMS
UPGRADIENT, REGIONAL
PART 2

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SECTION 7 FIGURES
CROSS-SECTIONS

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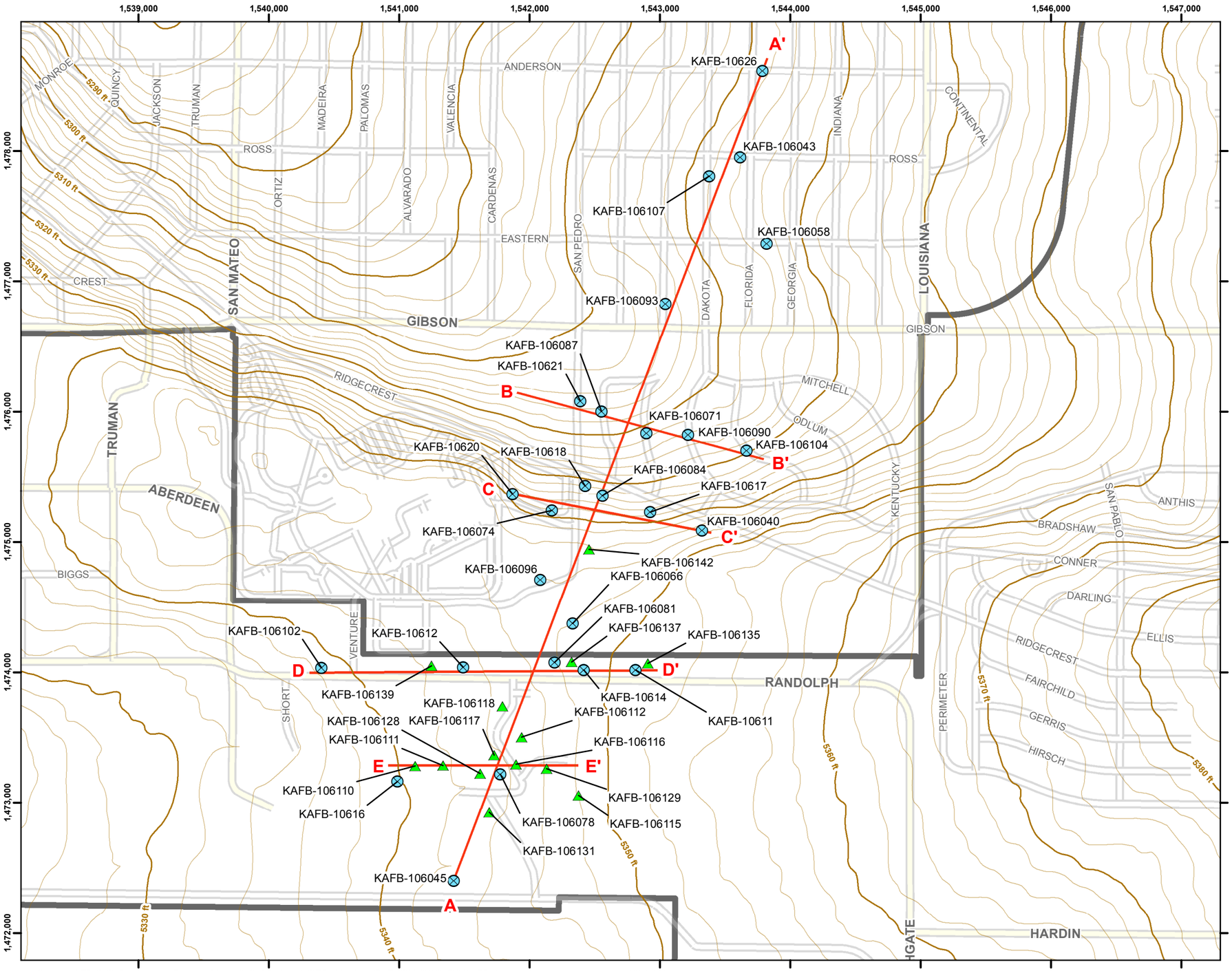
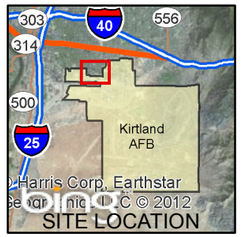


Legend

- Monitor Well
- SVM Cluster
- Topographic Contour 2' Interval
- Topographic Contour 10' Interval
- Cross Section Transect
- Interstate
- Major Road
- Road
- Installation Boundary



N

Revision Date: 09/10/12

0 400 800 1,600

Feet

1 inch = 800 feet

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

2012 QUARTERLY REPORT 02
BULK FUELS FACILITY
KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 7-1

NMED CROSS SECTION TRANSECTS

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