





Anecdotal evidence provided by the WDEQ-WQD for surface water facilities permitted to receive CBM produced water provides few instances in which water infiltrating from the facilities has adversely impacted groundwater resources. Groundwater quality has been adversely affected and class of use has changed at only 16 out of 109 permitted impoundments due to infiltration from overlying reservoirs/infiltration pits. Typically, the class of use has changed due to increases in the concentrations of selenium, TDS or sulfate. These data represent nearly four years of data collection from 259 monitor wells installed at sites across the Powder River Basin. Based on the lack of change in groundwater chemistry in the 72 sand aquifer from 1980 to the present, there is no evidence to suggest that this aquifer is impacted.

Table 3.4.3-18 Estimated Linear Travel Times to the 72 Sand Aquifer System

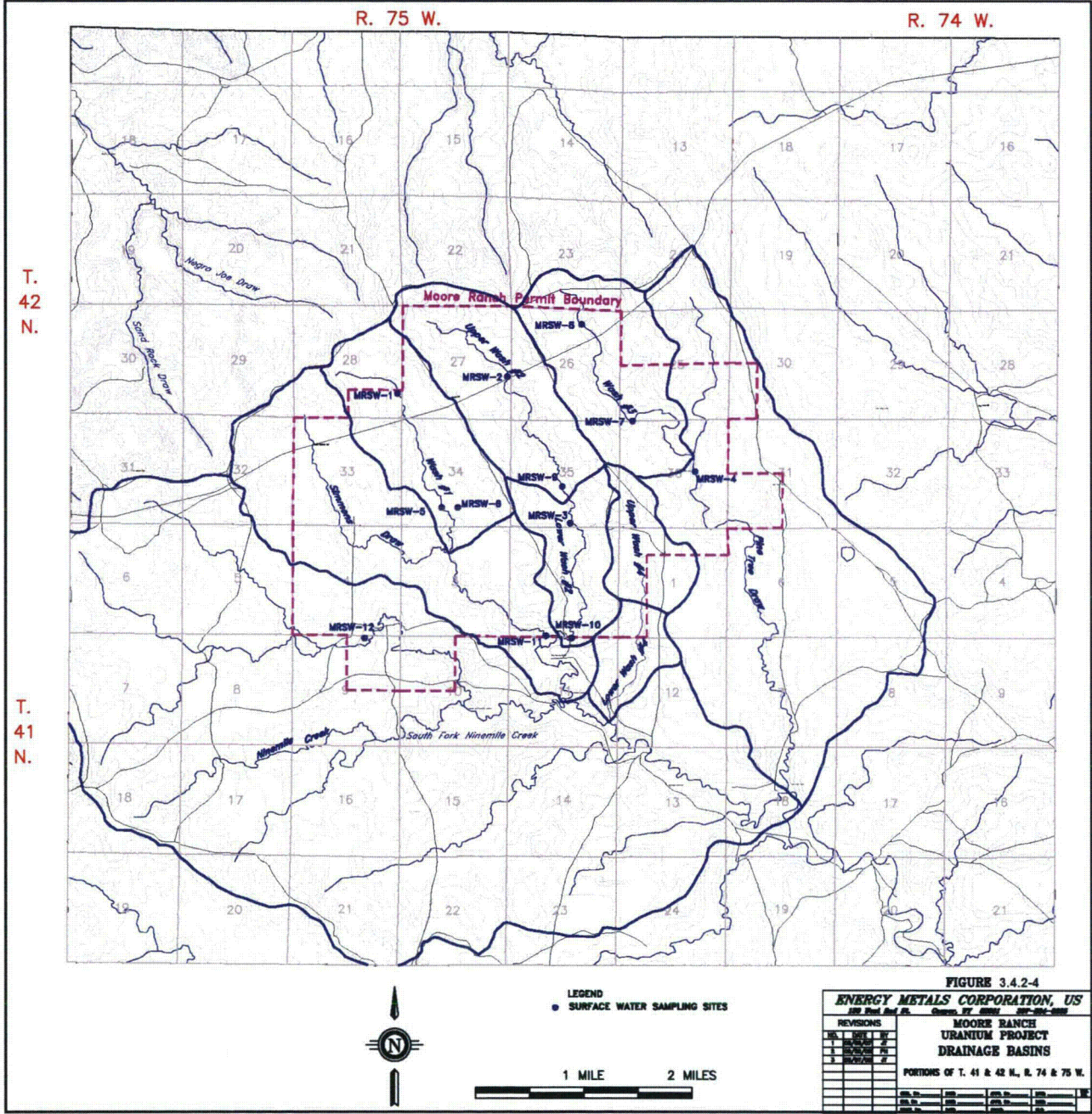
Unit	Thickness (ft)		Thickness (cm)	K (cm/sec)	Porosity (unitless)	(dh/dl)	Average Linear Velocity (cm/sec)	Average Linear Velocity (ft/day)	Travel Time (days)	Travel Time (years)
Overburden Siltstone	Minimum	30	914	1.0E-04	0.35	1	2.9E-04	0.810	37	0.1
		30	914	1.0E-05	0.35	1	2.9E-05	0.081	370	1.0
		30	914	1.0E-06	0.35	1	2.9E-06	0.008	3704	10.1
	Average	115	3505	1.0E-04	0.35	1	2.9E-04	0.810	142	0.4
		115	3505	1.0E-05	0.35	1	2.9E-05	0.081	1420	3.9
		115	3505	1.0E-06	0.35	1	2.9E-06	0.008	14199	38.9
	Maximum	200	6096	1.0E-04	0.35	1	2.9E-04	0.810	247	0.7
		200	6096	1.0E-05	0.35	1	2.9E-05	0.081	2469	6.8
		200	6096	1.0E-06	0.35	1	2.9E-06	0.008	24694	67.7

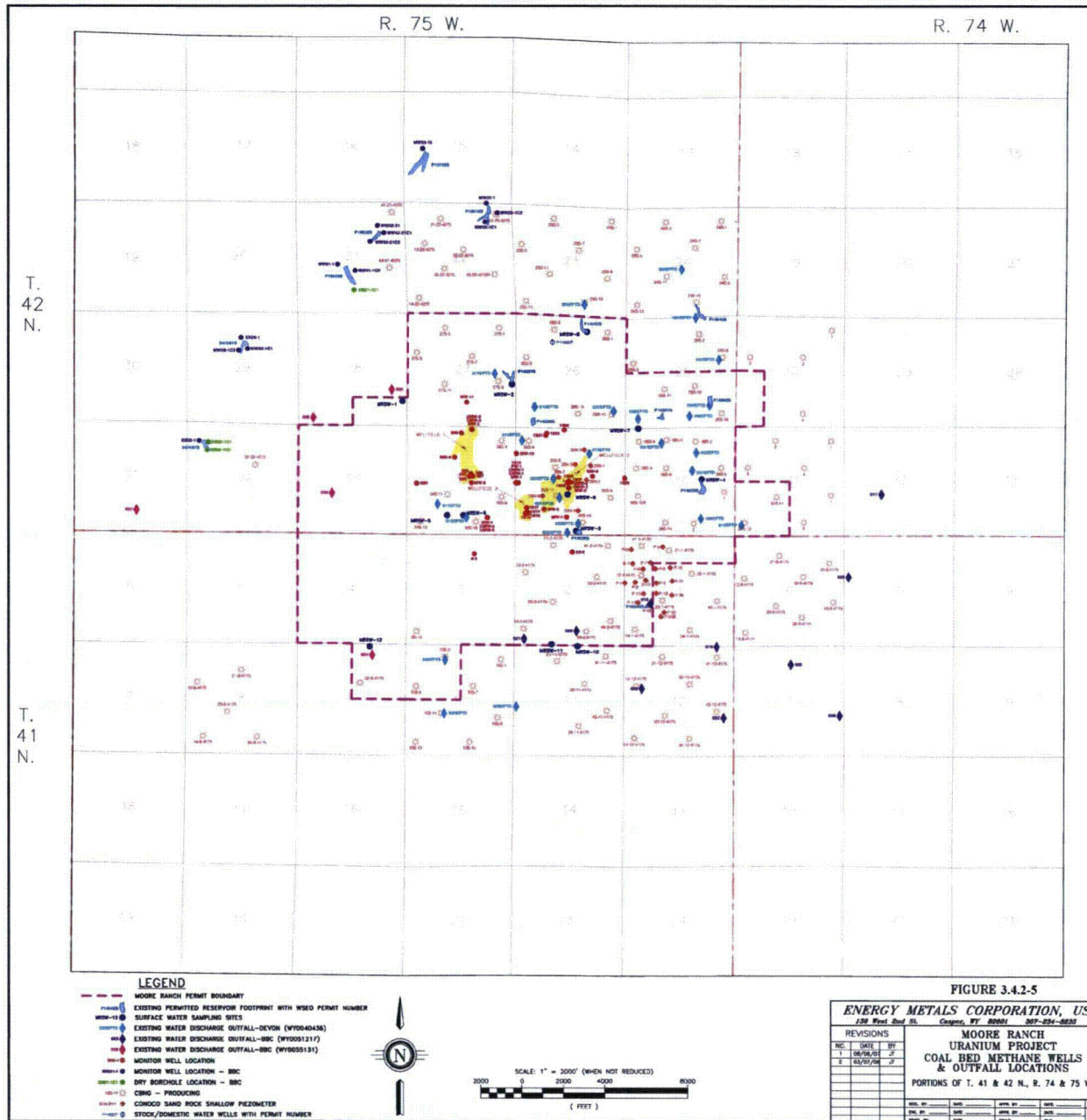
Unit	Distance to monitoring point (ft)	Distance (cm)	K (cm/sec)	Porosity (unitless)	(dh/dl)	Average Linear Velocity (cm/sec)	Average Linear Velocity (ft/day)	Travel Time (days)	Travel Time (years)
72 Sand	9151	2.8E+05	1.0E-06	0.25	0.004	1.6E-08	4.4E-05	2.1E+08	5.7E+05
	851	2.6E+04	1.0E-06	0.25	0.004	1.6E-08	4.4E-05	1.9E+07	5.3E+04

-  Indicates most conservative travel time and velocity estimate (thinnest overburden, highest K)
-  Indicates measured variables used in calculations. Values are from Conoco, 1981 and EMC, 2007
-  Distance is measured from approximate sandstone outcrop on South Fork Ninemile Creek (NESE, S10, T41N, R75W) to monitor well OMW-4
-  Distance is measured from outfall 020 EPTD to OMW-2 (area where overburden siltstone is thinnest)

Addendum 3.4-A

Ground Water Rights within a 2-Mile Radius





ERA	SYSTEM, SERIES AND OTHER SUBDIVISIONS		STRATIGRAPHIC UNIT		HYDROGEOLOGIC UNIT
Cenozoic	Quaternary		Alluvium		Not Included As An Aquifer System
	Tertiary	Pliocene	(Absent in Powder River Basin)		
		Miocene			
		Oligocene			
	Lower	Eocene	White River Formation		
Paleocene		Wasatch Formation			
Mesozoic	Cretaceous	Upper	Lance Formation		Upper Cretaceous Aquifers
			Fox Hills Sandstone		
			Lewis Shale		
			Mesaverde Formation*		
			Steele Shale		
			Cody Shale		
			Frontier Formation*		
			Mowry Shale		
			Muddy Sandstone*		
			Thermopolis Shale		
	Lower	Inyan Kara Group	Fall River Formation	Lower Cretaceous Aquifers	
			Lakota Formation		
	Jurassic		Morrison Formation		Confining Unit
			Sundance Formation*		
			Gypsum Spring Formation		
Triassic		Chugwater Formation			
		Goose Egg Formation			
Paleozoic	Permian	Goose Egg Formation			
		Pennsylvanian	Tensleep Sandstone	Upper Paleozoic Aquifers	
	Amsden Formation				
	Mississippian	Madison Formation			

* Can be a local source of groundwater where permeable

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Figure 3.4.3-1 Regional Hydrostratigraphic Section Northern Great Plains Aquifer System, Powder River Basin (after USGS)

Project: 312-7

Date: September 2007

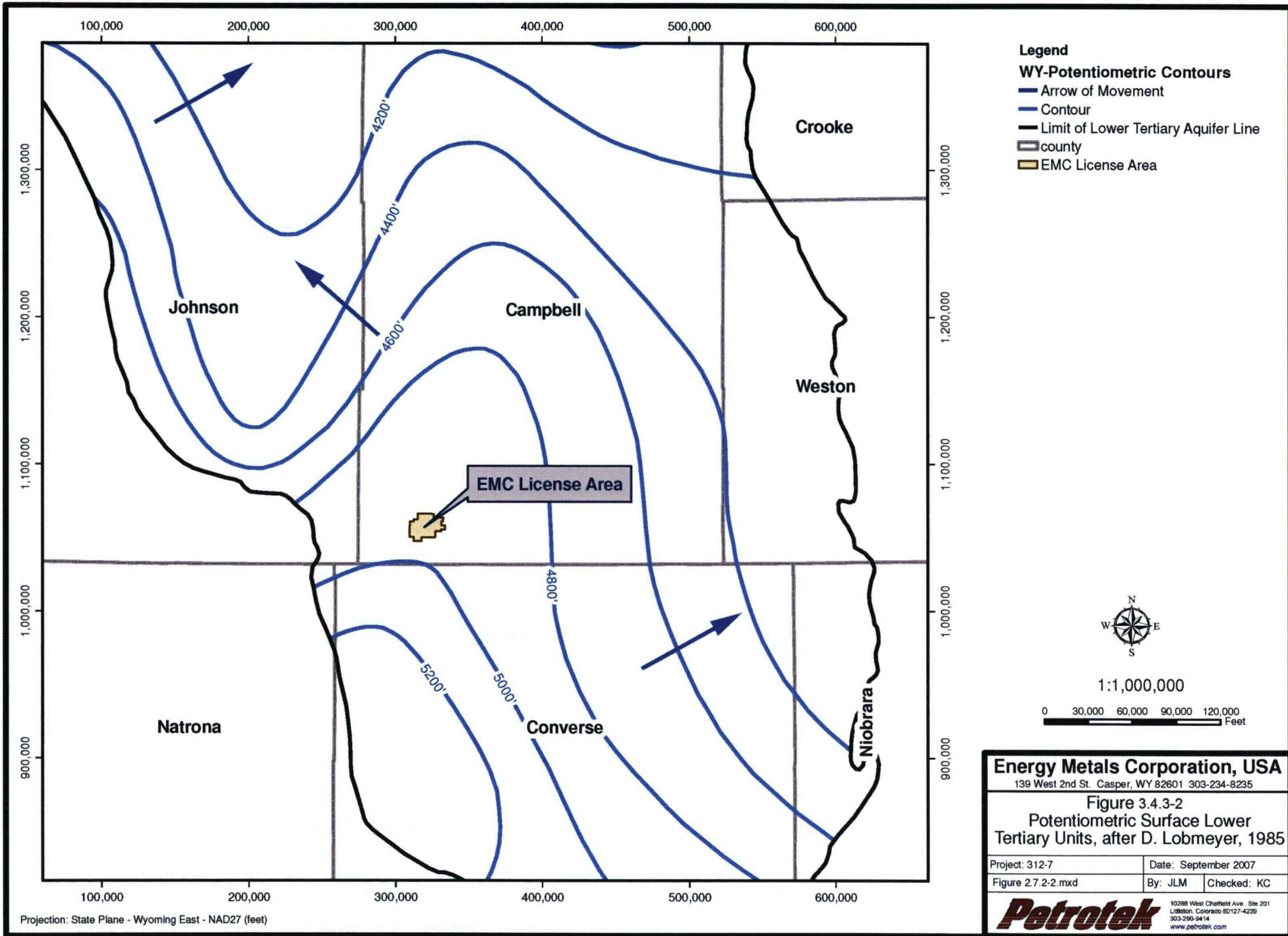
Figure D6.3-1.mxd

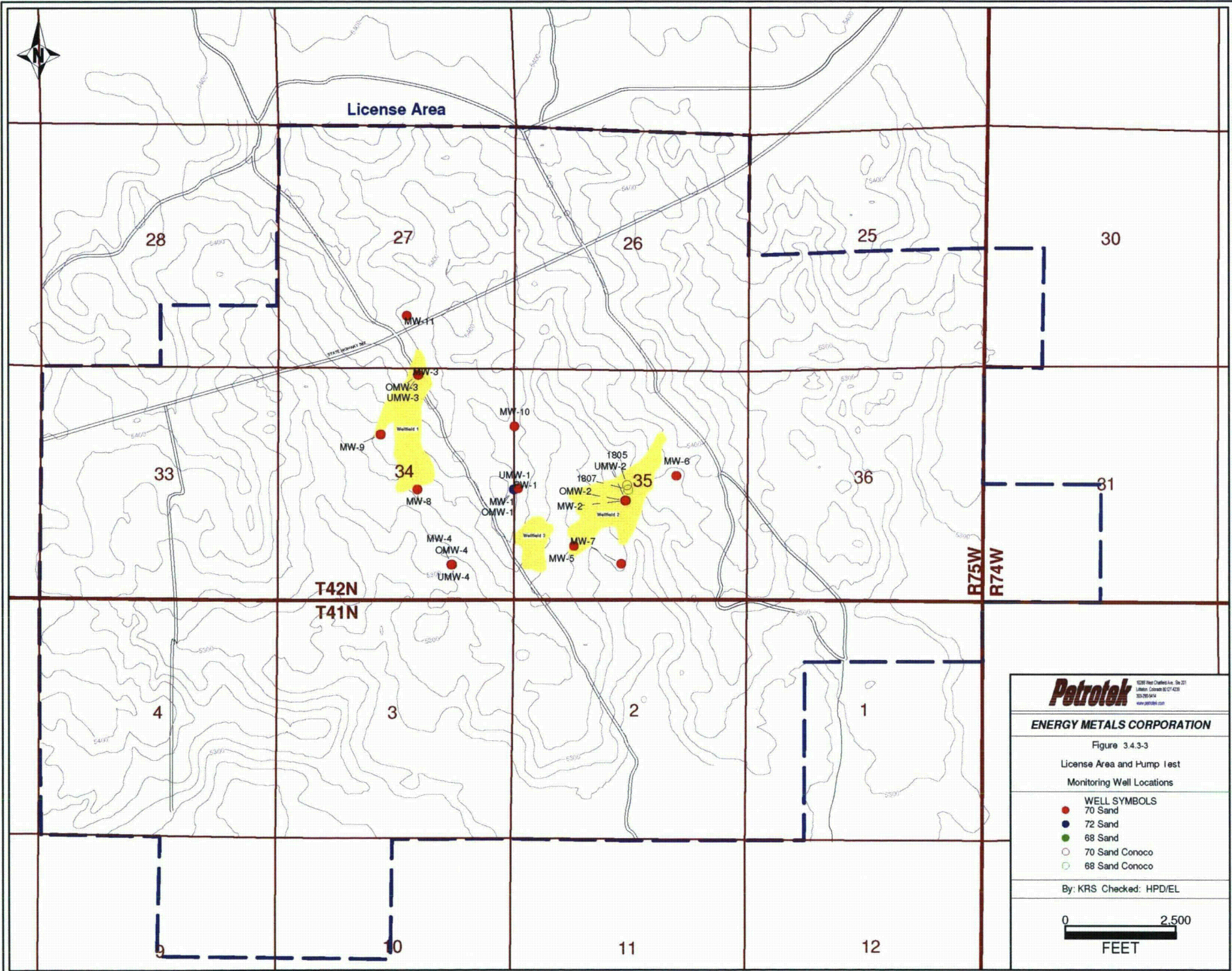
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Checked: KC

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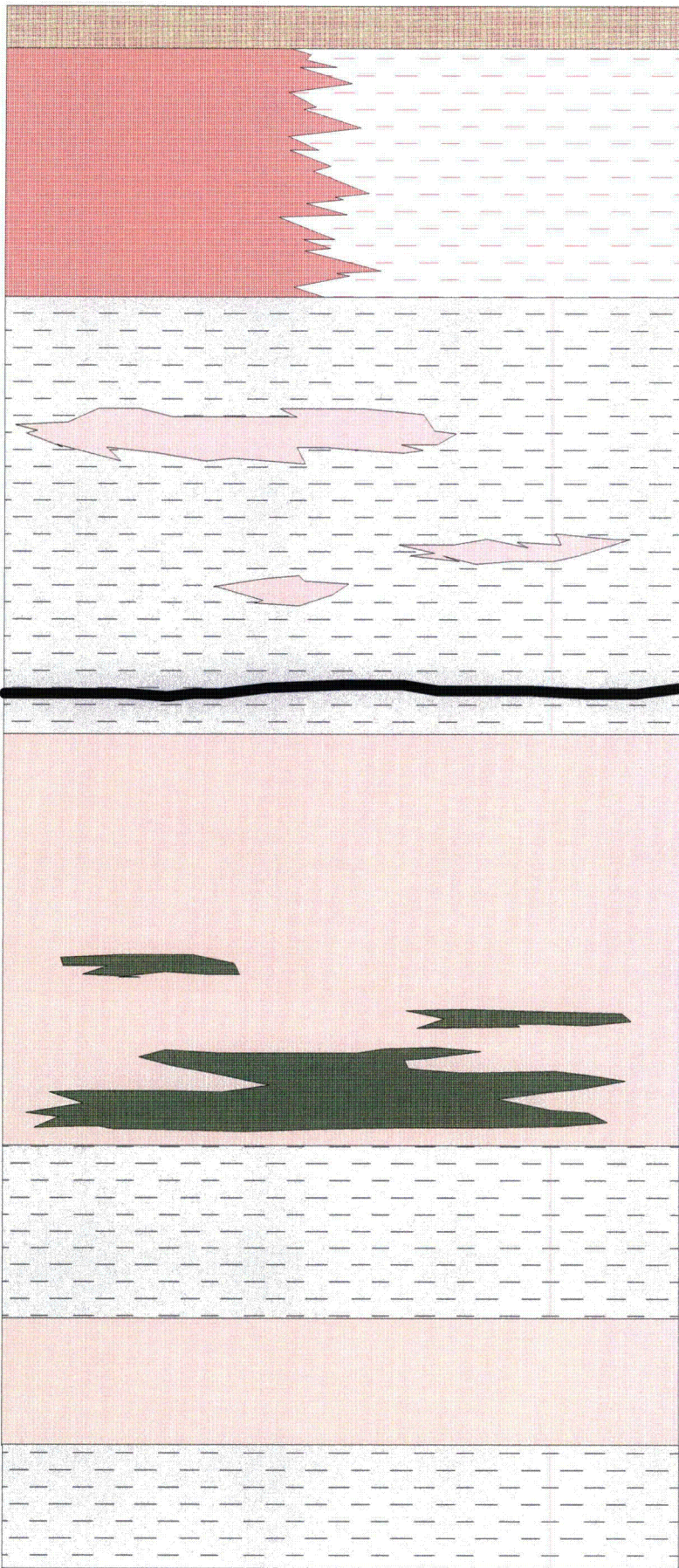
Figure 3.4.3-3
 License Area and Pump Test
 Monitoring Well Locations

WELL SYMBOLS

- 70 Sand
- 72 Sand
- 68 Sand
- 70 Sand Conoco
- 68 Sand Conoco

By: KRS Checked: HPD/EL

0 2,500
 FEET



Alluvium - 0 to 10 ft thick
only in drainages and low lying areas

Altered Sandstone and Clays
20 to 70 ft thick
More Clay to South and East

Clays and Silts
with discontinuous Sand Lenses
15 to 150 ft thick
Unit Thickens to the North
(Overlying Confining Zone)

"E" Coal-(lignite), < 5 ft thick

70 Sand - 50 to 120 ft thick
Uranium Ore Zone in Lower Portion
Mineralization typically 5 to 25 ft thick

Clays and Silts
3 to 50 ft thick

68 Sand
30 - 70 ft thick

Clays and Silts
(Underlying Confining Zone)

Not to Scale



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Figure 3.4.3-4
Moore Ranch Generalized Stratigraphic Section

Project: 312-4-3

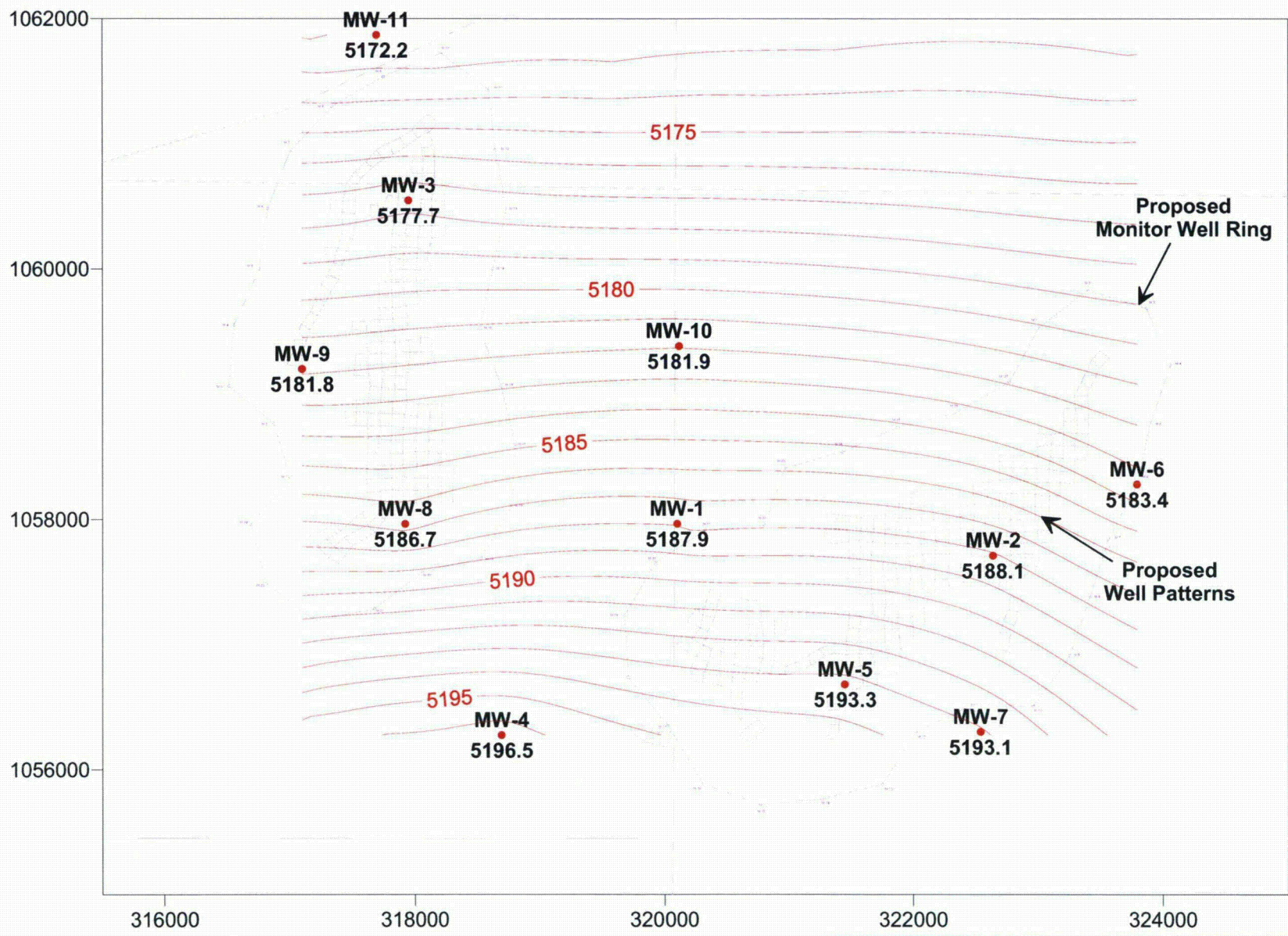
Date: September 2007

Dwg: EMC TR Fig 2.7.2-4.SRF

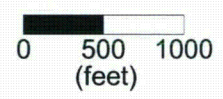
By: KRS Checked: HPD



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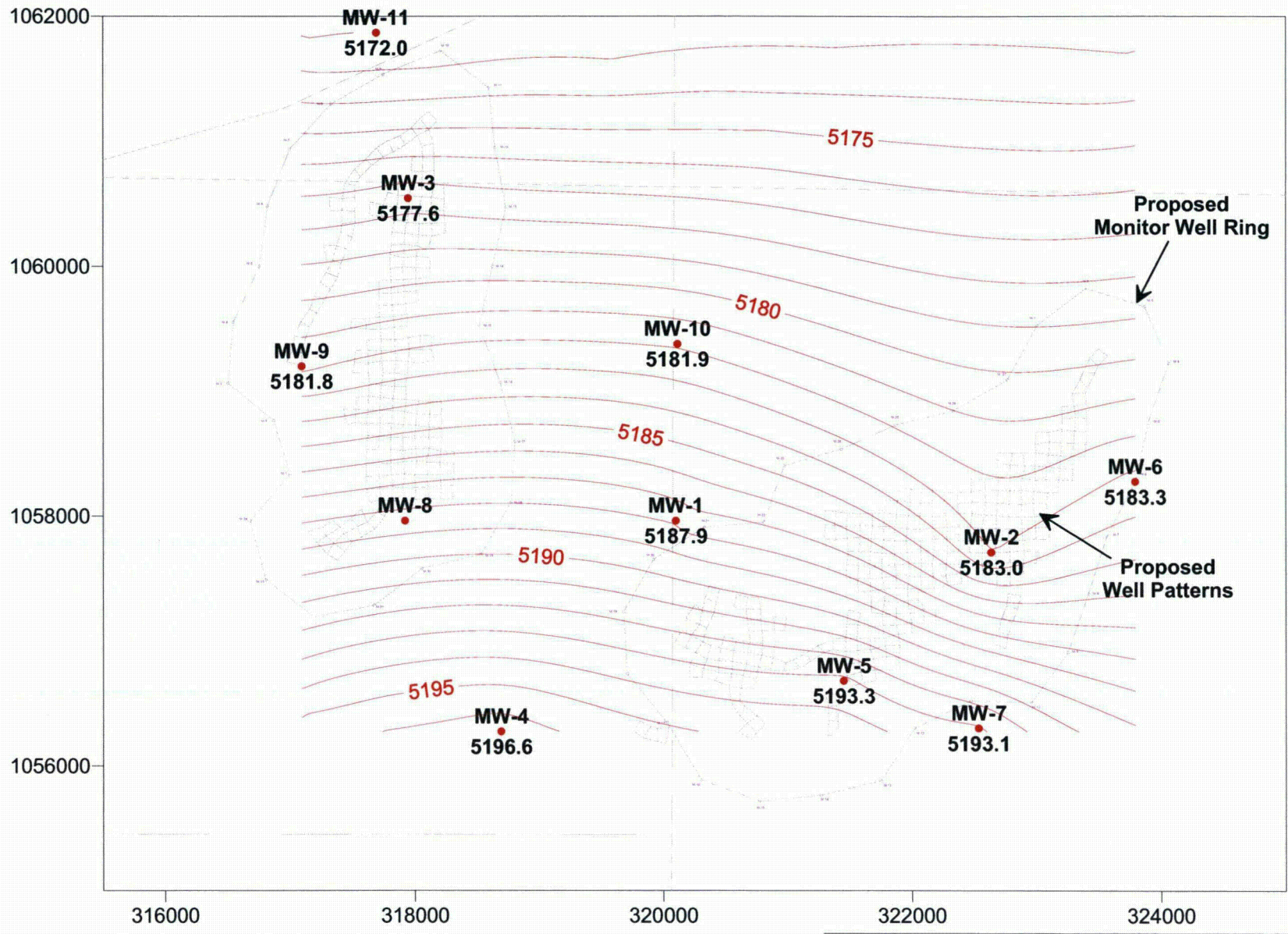
MW1 Well ID
 ● Baseline Monitor Well
5116.4 Water Level Elevation
 — Potentiometric Surface
 Contour Interval = 1 ft



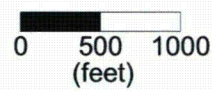
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**Figure 3.4.3-5a. 02/14/07 Potentiometric Surface, 70 Sand
 Moore Ranch Uranium Project, Wyoming**



MW1 Well ID
 ● Baseline Monitor Well
5116.4 Water Level Elevation
 — Potentiometric Surface
 Contour Interval = 1 ft

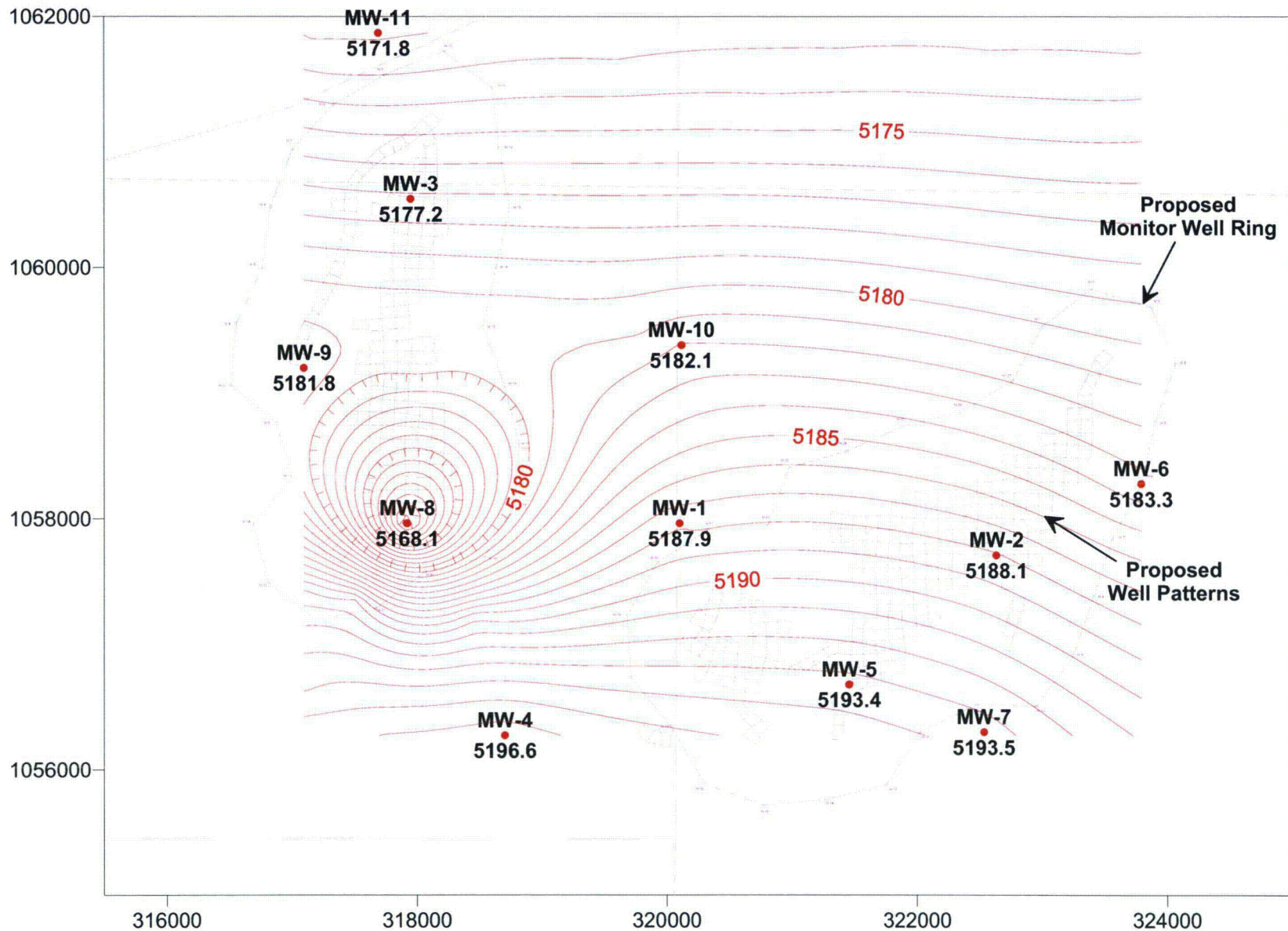



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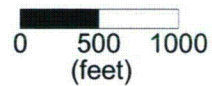
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URANIUM ONE

**Figure 3.4.3-5b 06/12/07 Potentiometric Surface, 70 Sand
 Moore Ranch Uranium Project, Wyoming**



MW1 Well ID
 ● Baseline Monitor Well
5116.4 Water Level Elevation
 Potentiometric Surface
 Contour Interval = 1 ft

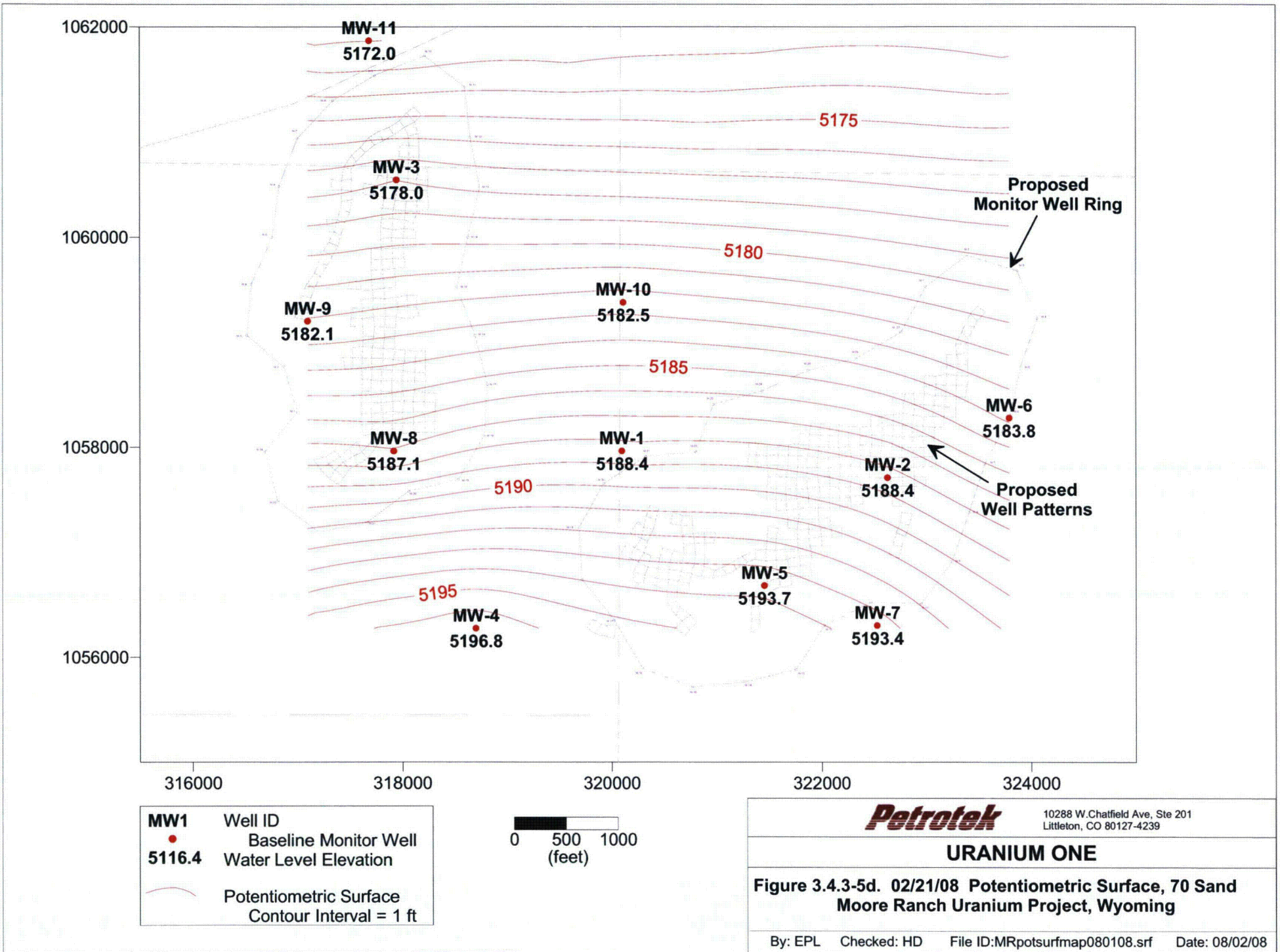


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**Figure 3.4.3-5c 07/17/07 Potentiometric Surface, 70 Sand
Moore Ranch Uranium Project, Wyoming**

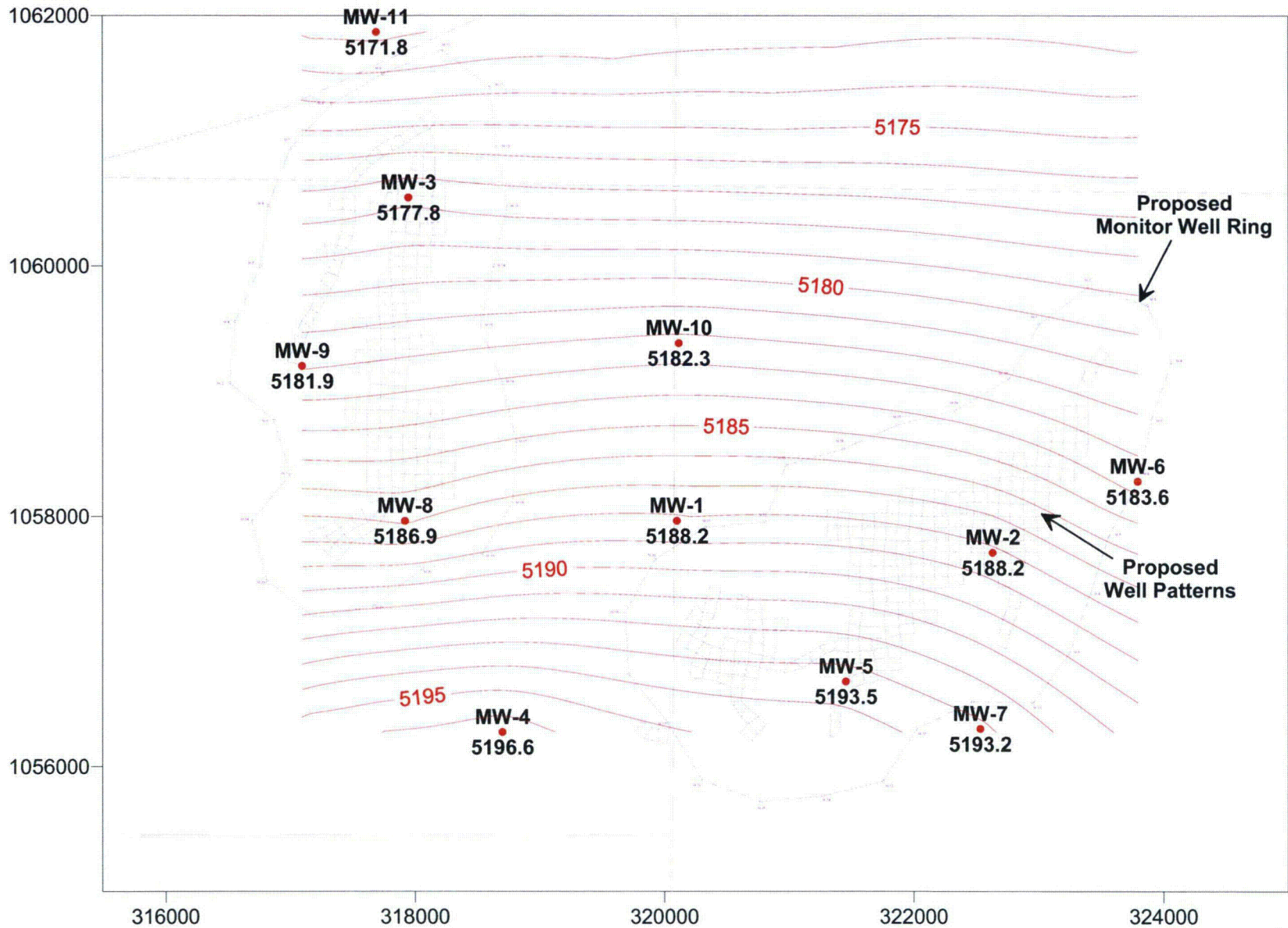



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Figure 3.4.3-5d. 02/21/08 Potentiometric Surface, 70 Sand Moore Ranch Uranium Project, Wyoming



MW1 Well ID
 ● Baseline Monitor Well
5116.4 Water Level Elevation
 Potentiometric Surface
 Contour Interval = 1 ft



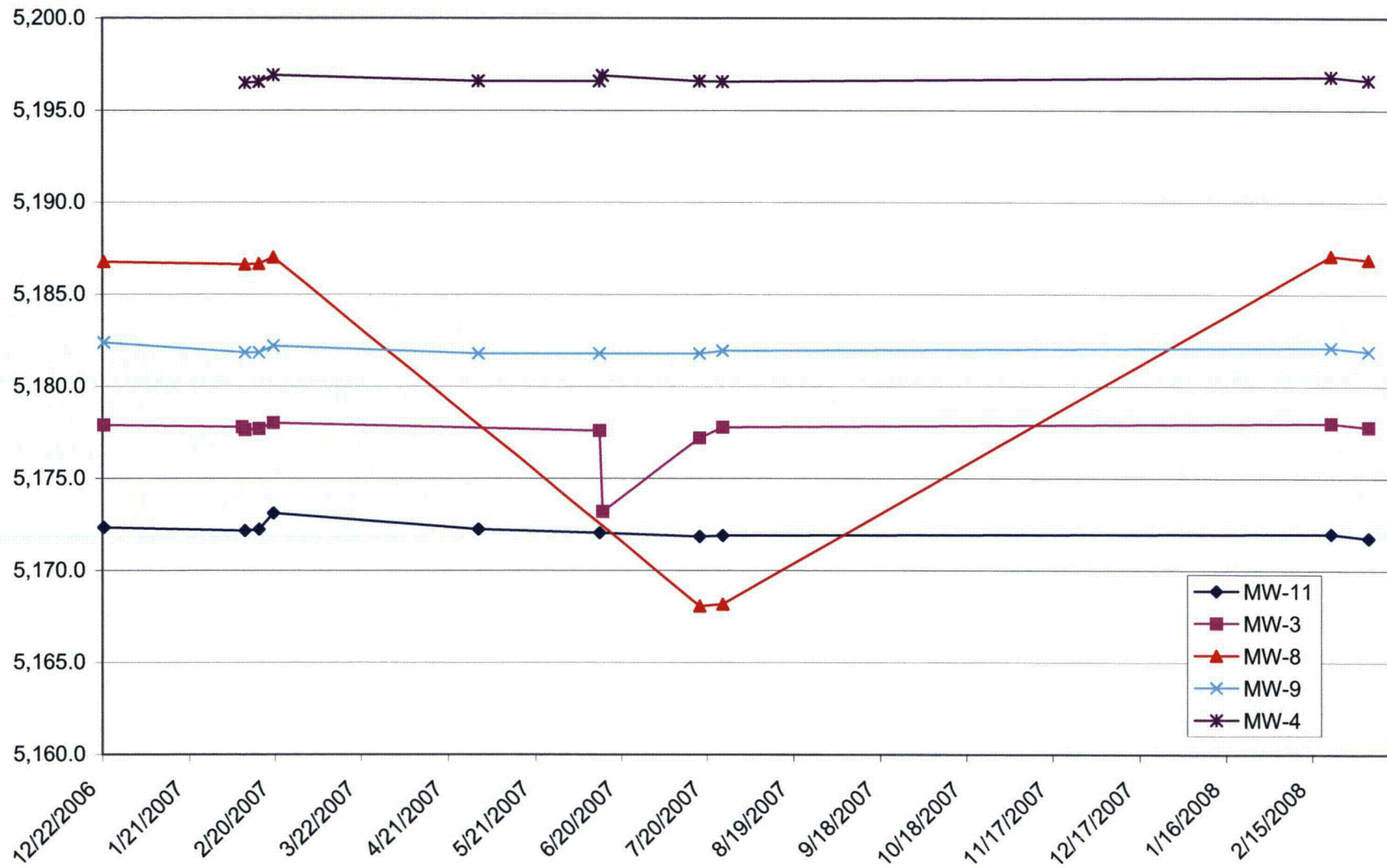
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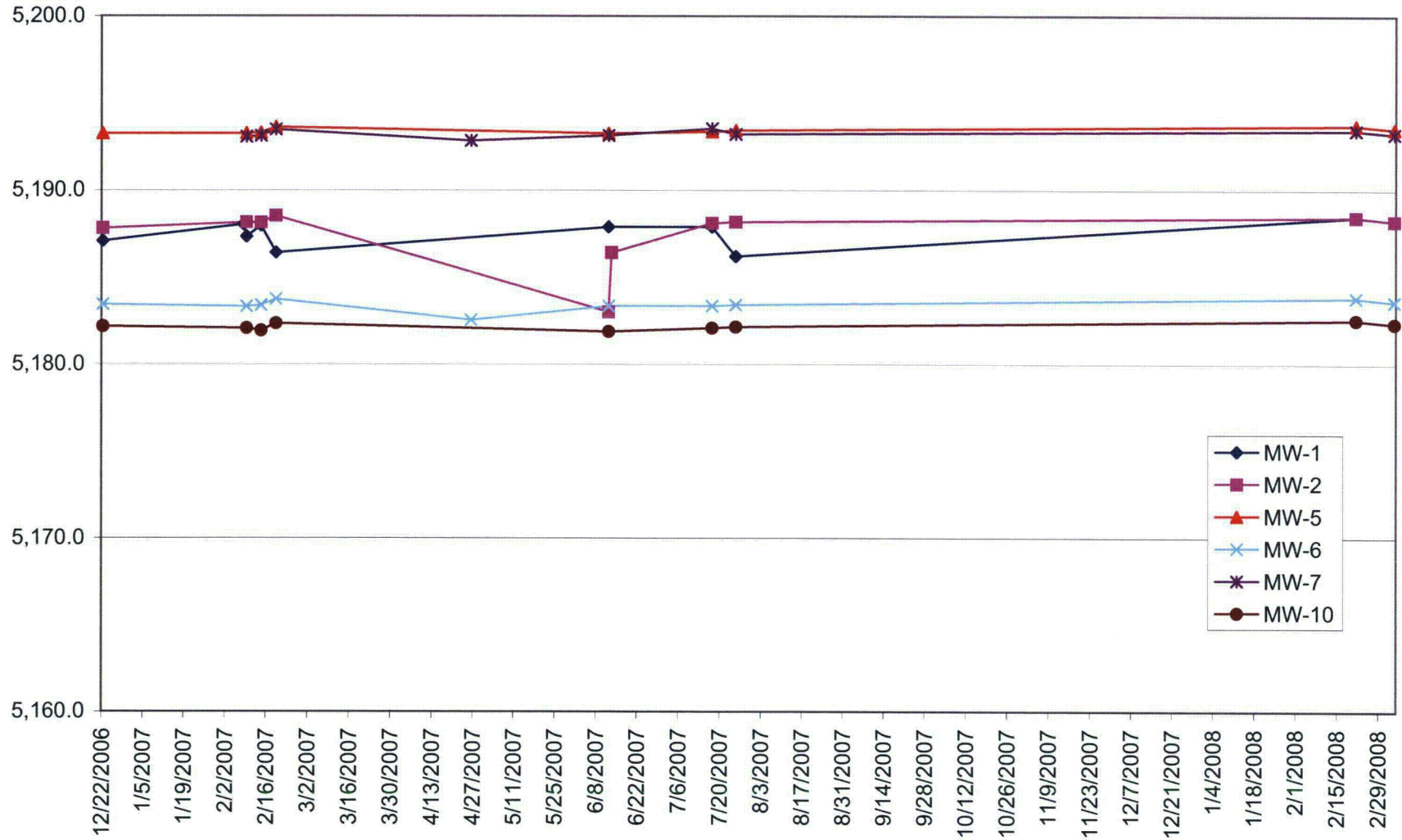
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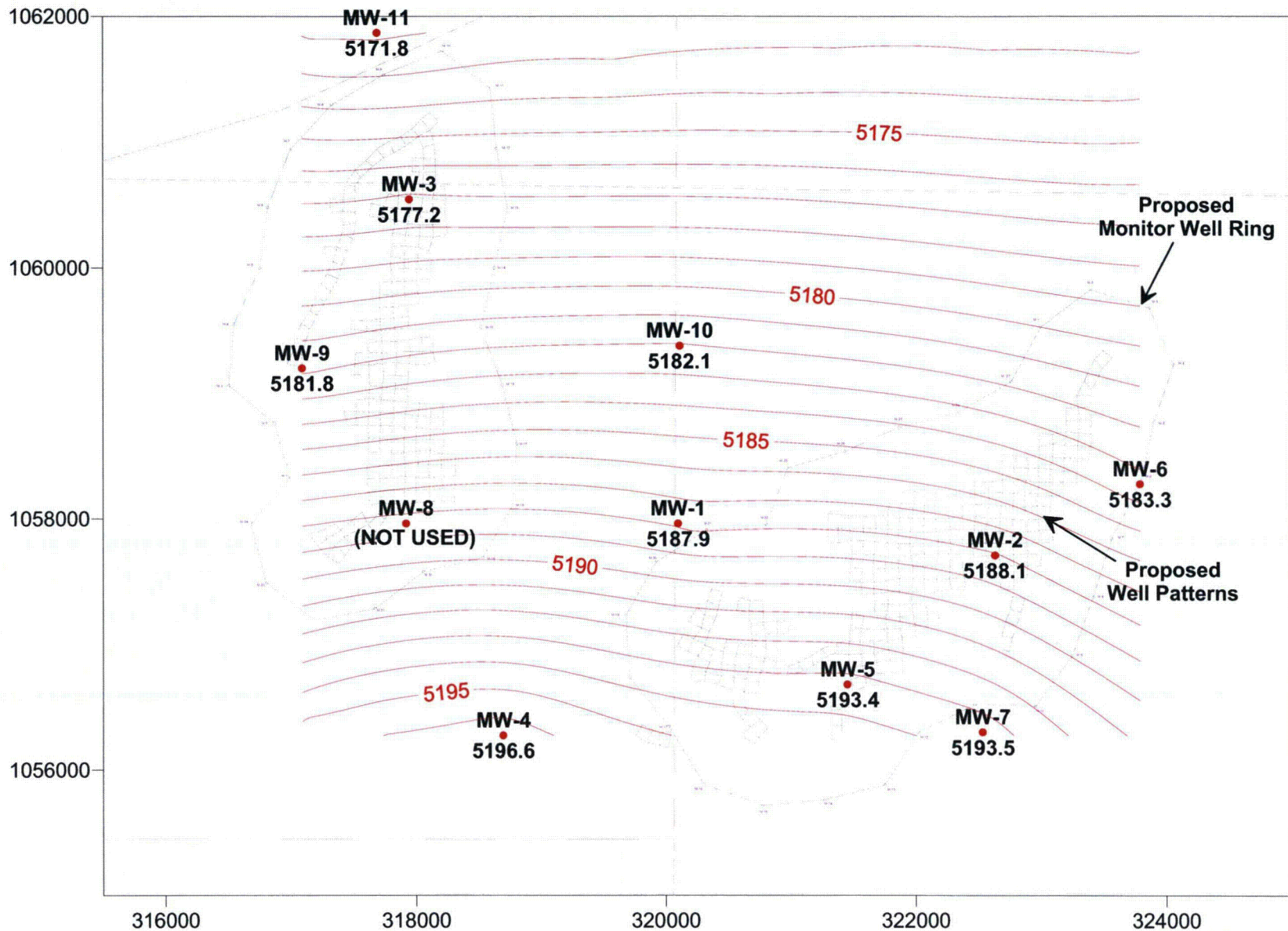
**Figure 3.4.3-5e. 03/05/08 Potentiometric Surface, 70 Sand
 Moore Ranch Uranium Project, Wyoming**


**Figure 3.4.3-5f Hydrographs of 70 Sand Baseline Wells, West Permit Area
Moore Ranch, Wyoming**

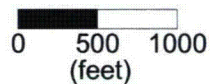


**Figure 3.4.3-5g. Hydrographs of 70 Sand Baseline Wells, East Permit Area
Moore Ranch, Wyoming**





MW1 Well ID
 ● Baseline Monitor Well
5116.4 Water Level Elevation
 Potentiometric Surface
 Contour Interval = 1 ft



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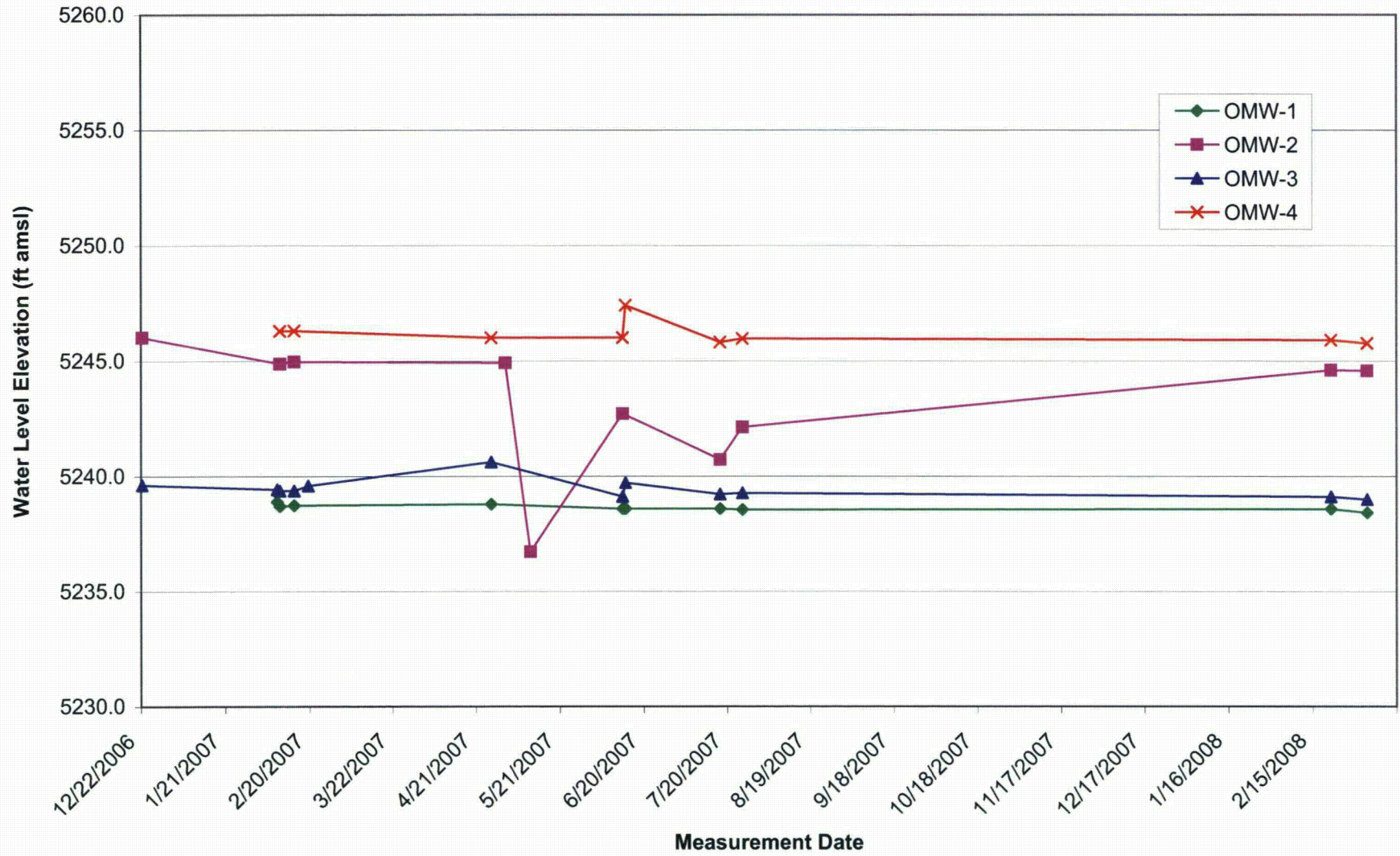
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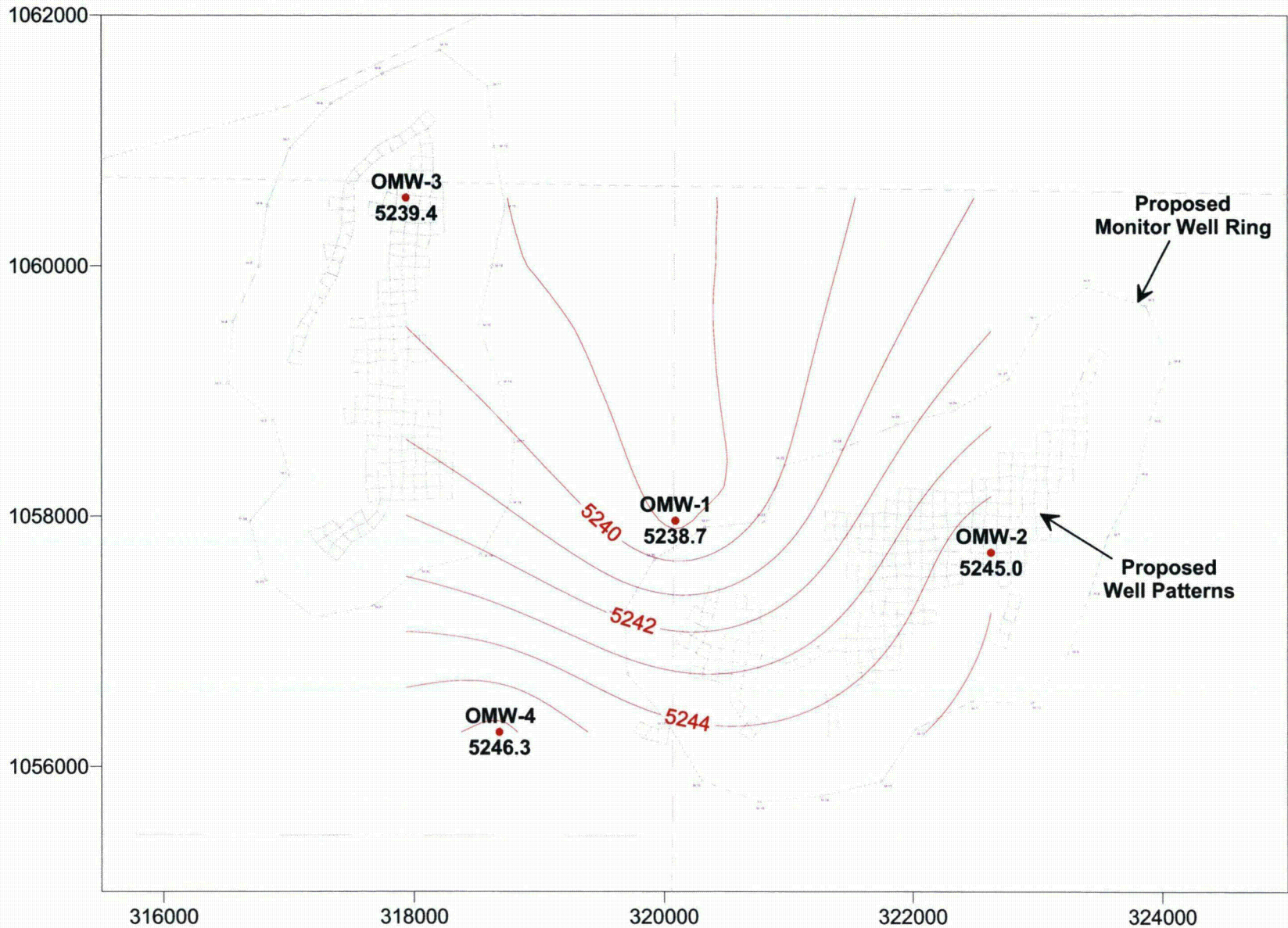
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**Figure 3.4.3-5h. 07/17/07 Potentiometric Surface, 70 Sand
 Without MW8 Data
 Moore Ranch Uranium Project, Wyoming**

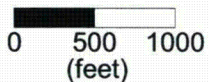
By: EPL Checked: HD File ID: MRpotsurfmap080108.srf Date: 08/02/08

Figure 3.4.3-6a Hydrographs of 72 Sand Baseline Wells, Moore Ranch, Wyoming





MW1 Well ID
 ● Baseline Monitor Well
5116.4 Water Level Elevation
 — Potentiometric Surface
 Contour Interval = 1 ft

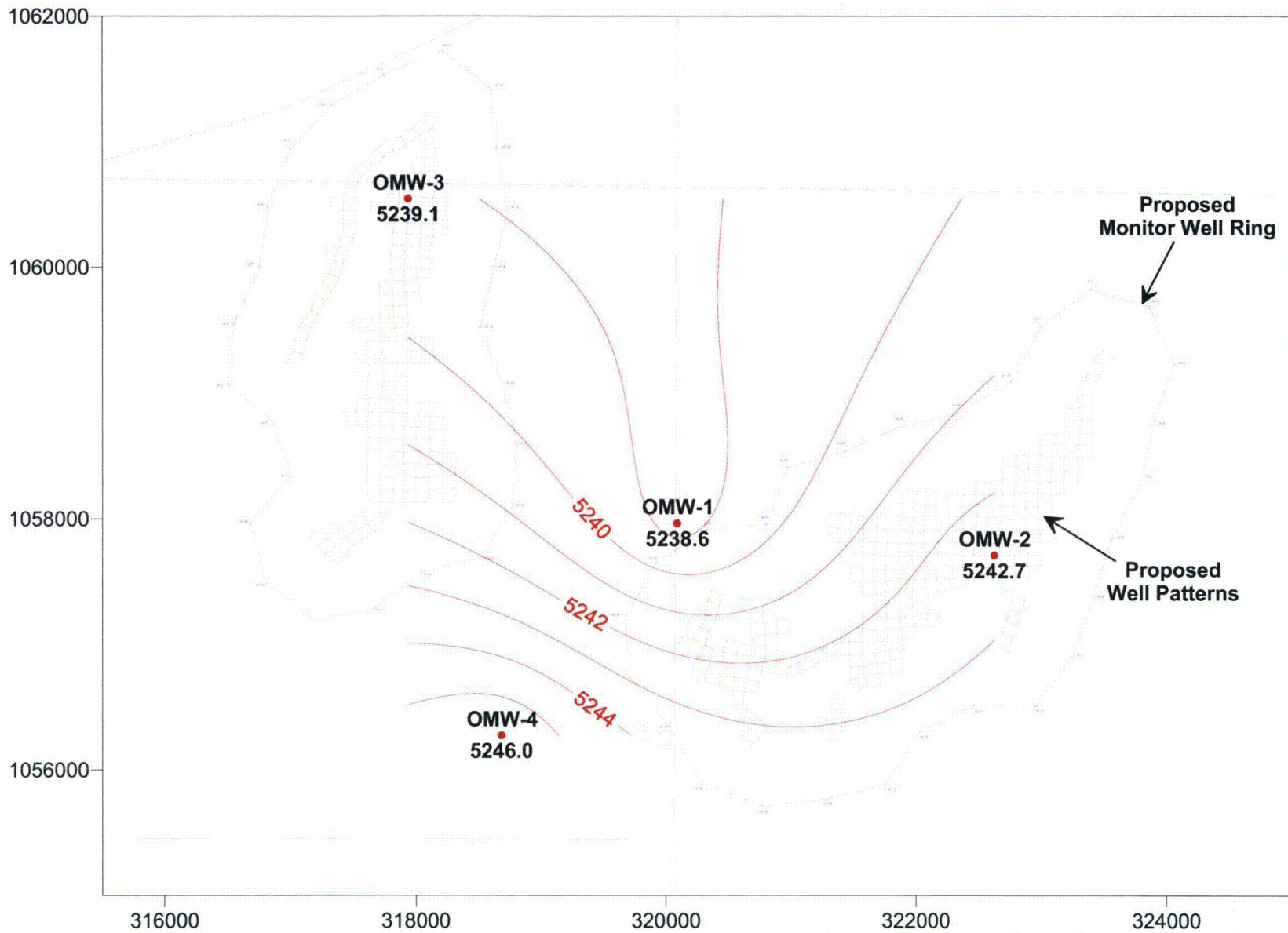


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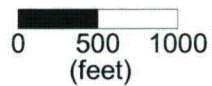
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**Figure 3.4.3-6b. 02/14/07 Potentiometric Surface, 72 Sand
 Moore Ranch Uranium Project, Wyoming**



MW1	Well ID
●	Baseline Monitor Well
5116.4	Water Level Elevation
	Potentiometric Surface
	Contour Interval = 1 ft



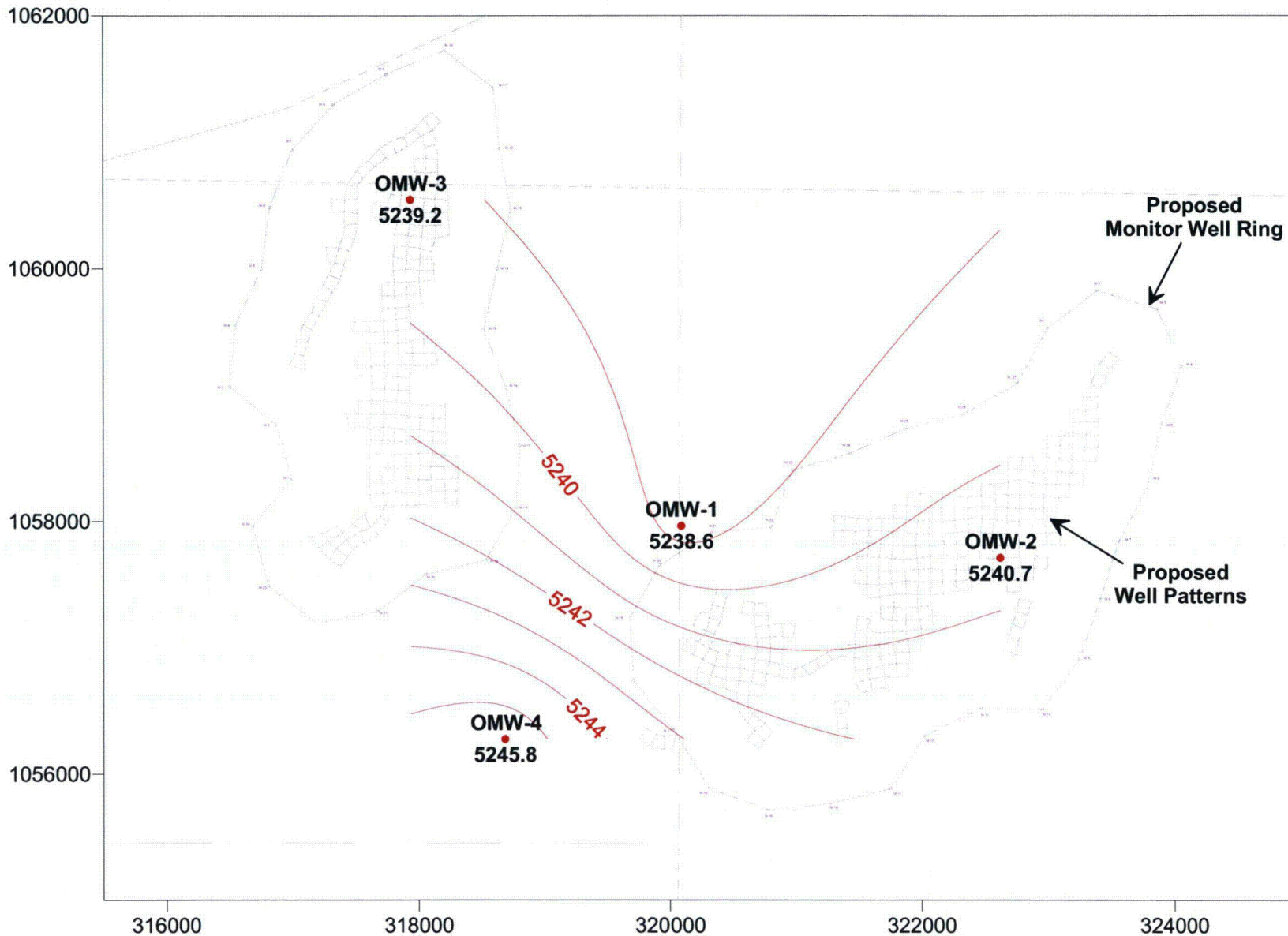
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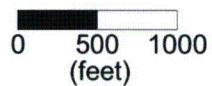
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**Figure 3.4.3-6c. 06/12/07 Potentiometric Surface, 72 Sand
Moore Ranch Uranium Project, Wyoming**

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MW1	Well ID
•	Baseline Monitor Well
5116.4	Water Level Elevation
	Potentiometric Surface
	Contour Interval = 1 ft

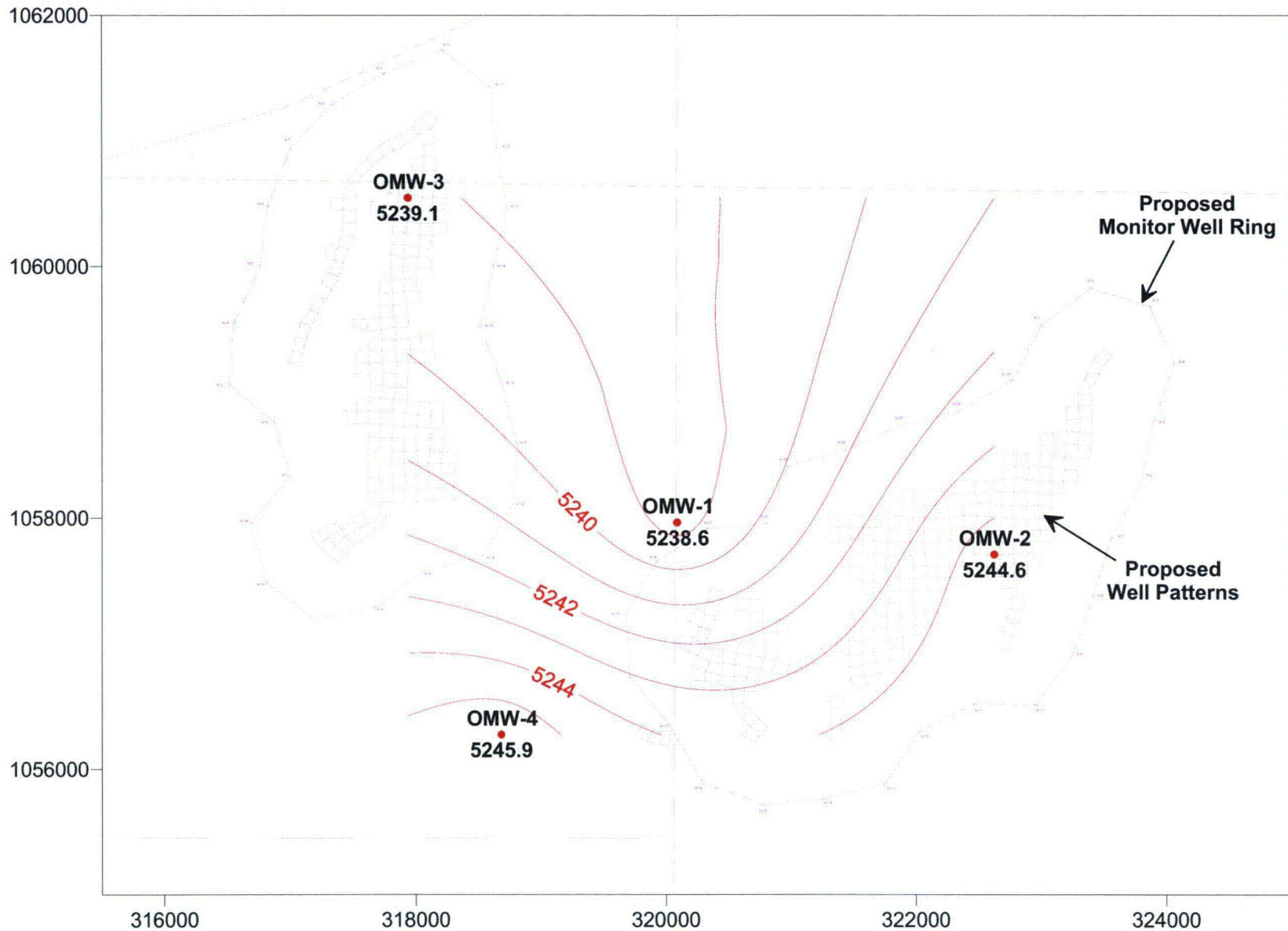



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**Figure 3.4.3-6d. 07/17/07 Potentiometric Surface, 72 Sand
Moore Ranch Uranium Project, Wyoming**



MW1	Well ID
●	Baseline Monitor Well
5116.4	Water Level Elevation
	Potentiometric Surface
	Contour Interval = 1 ft

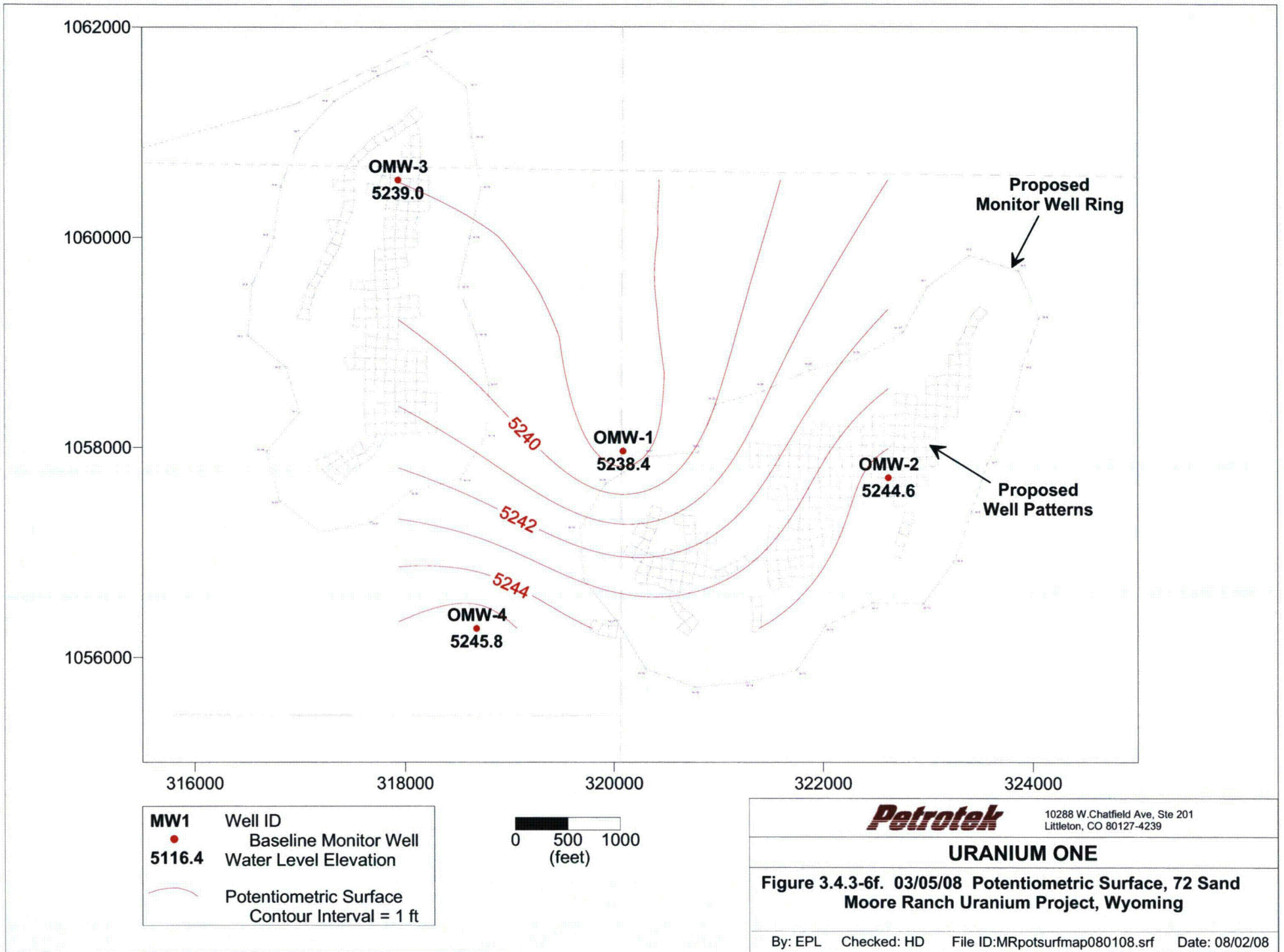


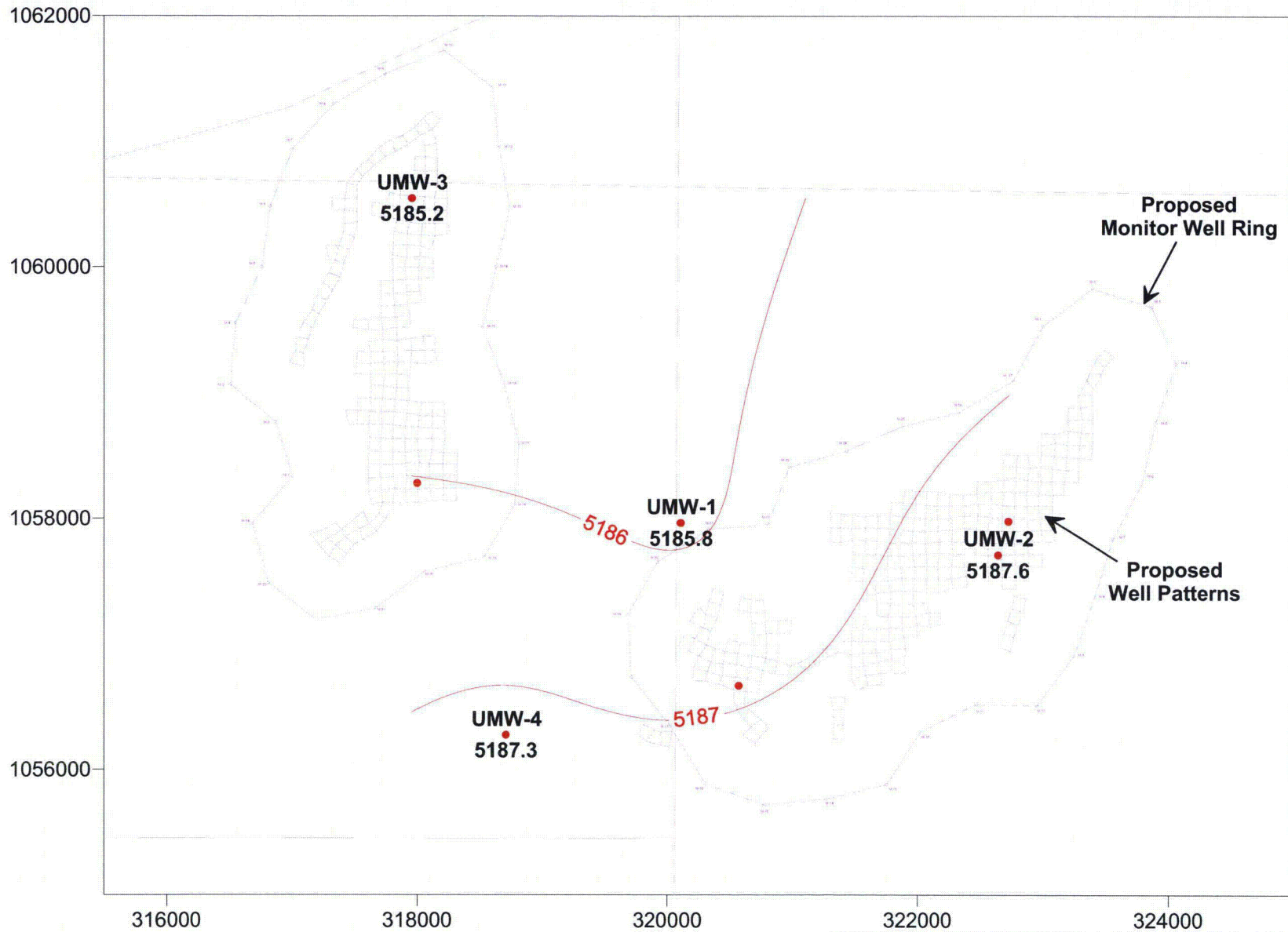
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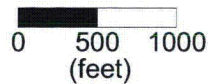
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**Figure 3.4.3-6e. 02/21/08 Potentiometric Surface, 72 Sand
Moore Ranch Uranium Project, Wyoming**





MW1	Well ID
●	Baseline Monitor Well
5116.4	Water Level Elevation
	Potentiometric Surface
	Contour Interval = 1 ft

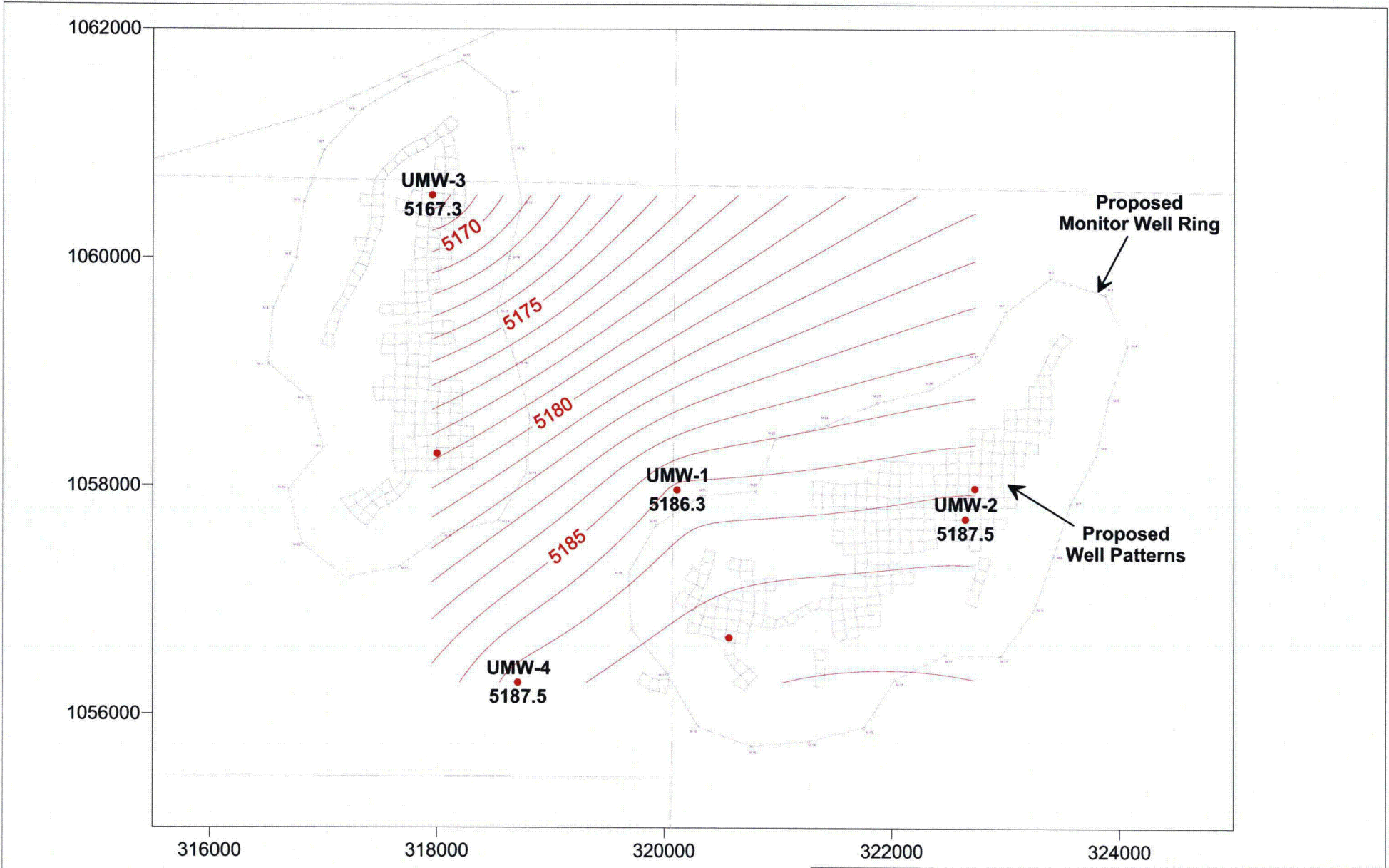


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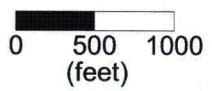
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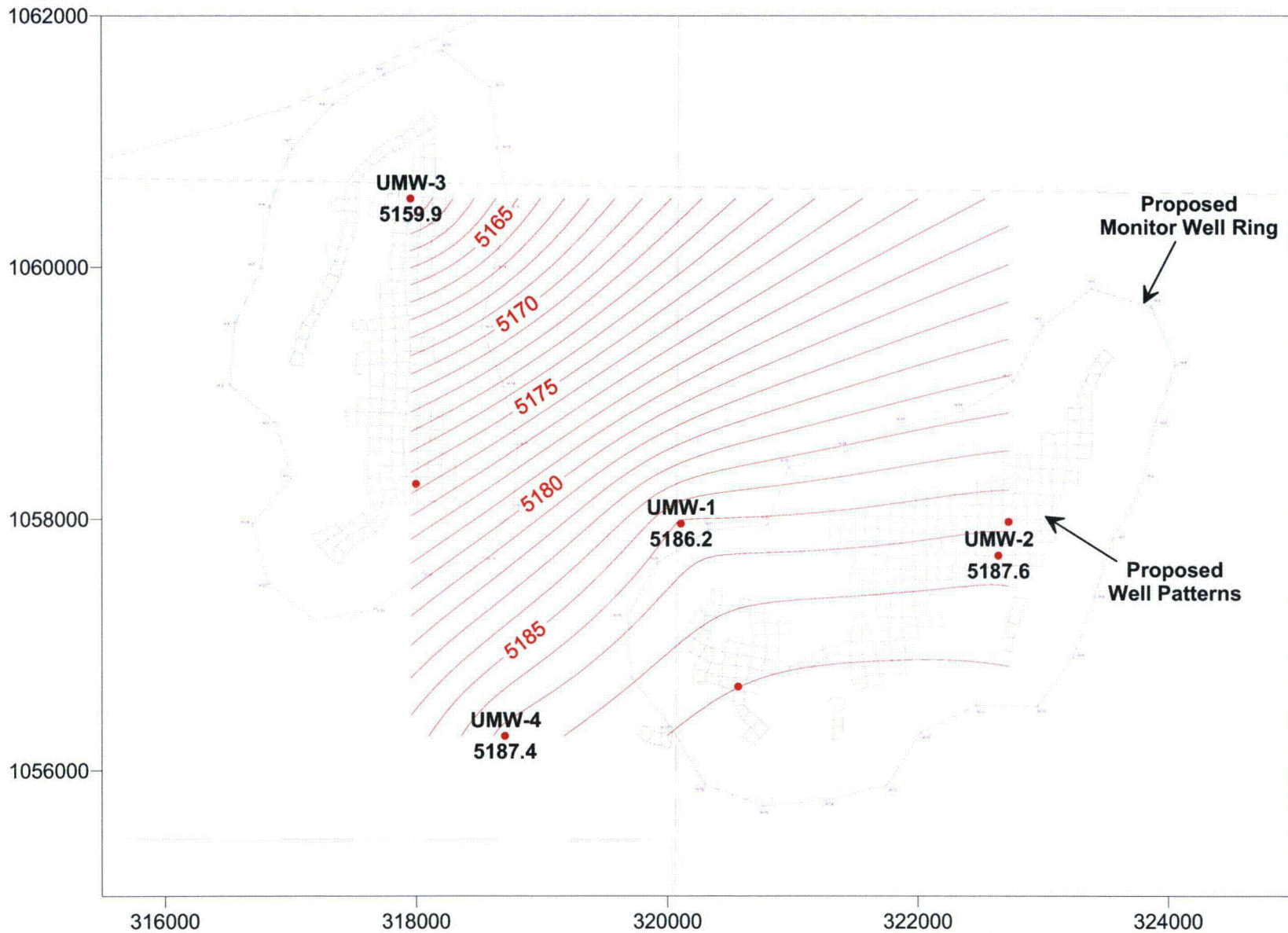
**Figure 3.4.3-7a. 02/14/07 Potentiometric Surface, 68 Sand
Moore Ranch Uranium Project, Wyoming**




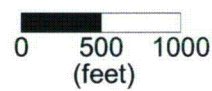
MW1	Well ID
●	Baseline Monitor Well
5116.4	Water Level Elevation
—	Potentiometric Surface
	Contour Interval = 1 ft



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Figure 3.4.3-7b. 06/12/07 Potentiometric Surface, 68 Sand Moore Ranch Uranium Project, Wyoming		
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MW1 Well ID
 ● Baseline Monitor Well
5116.4 Water Level Elevation
 Potentiometric Surface
 Contour Interval = 1 ft

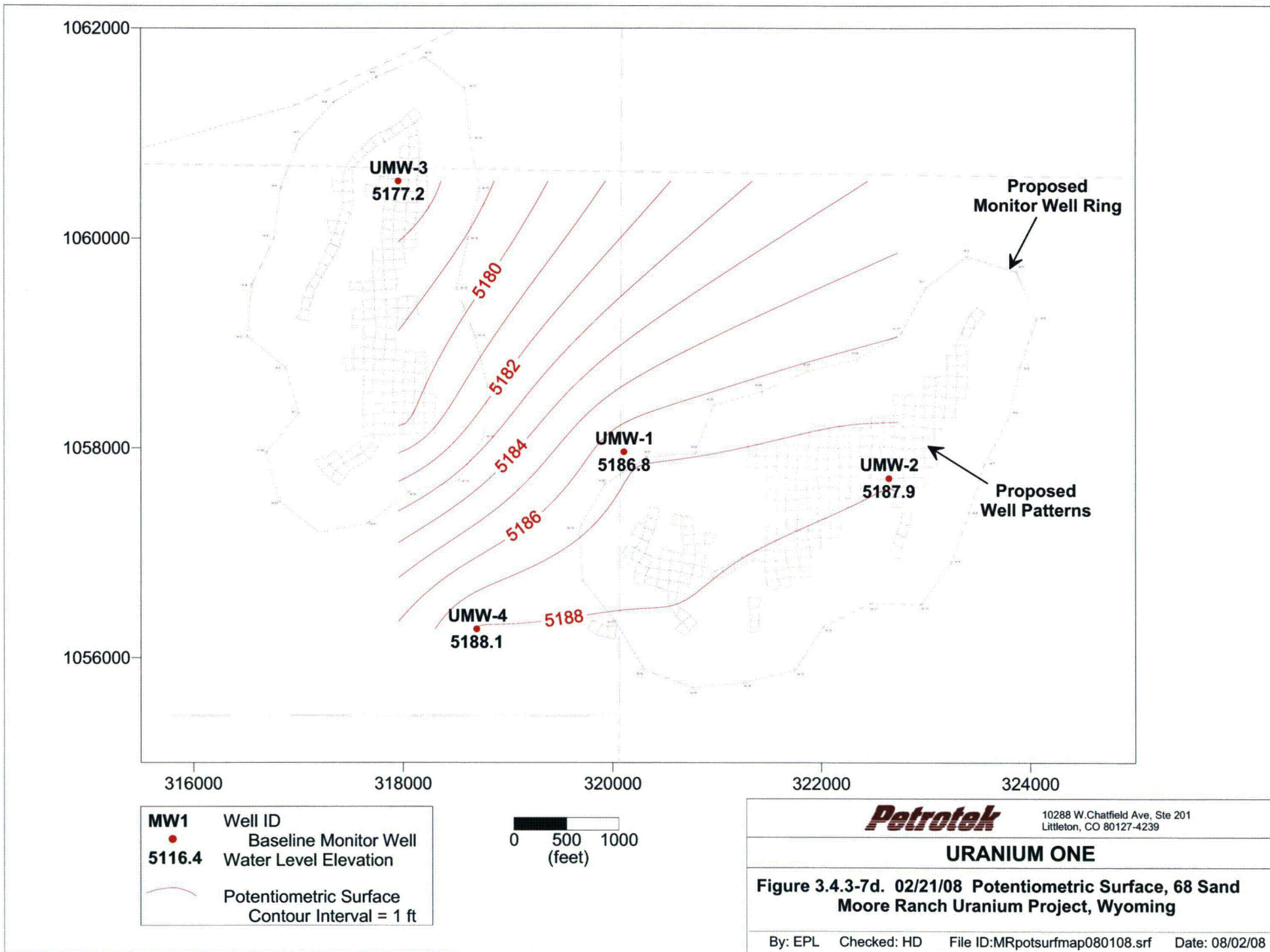


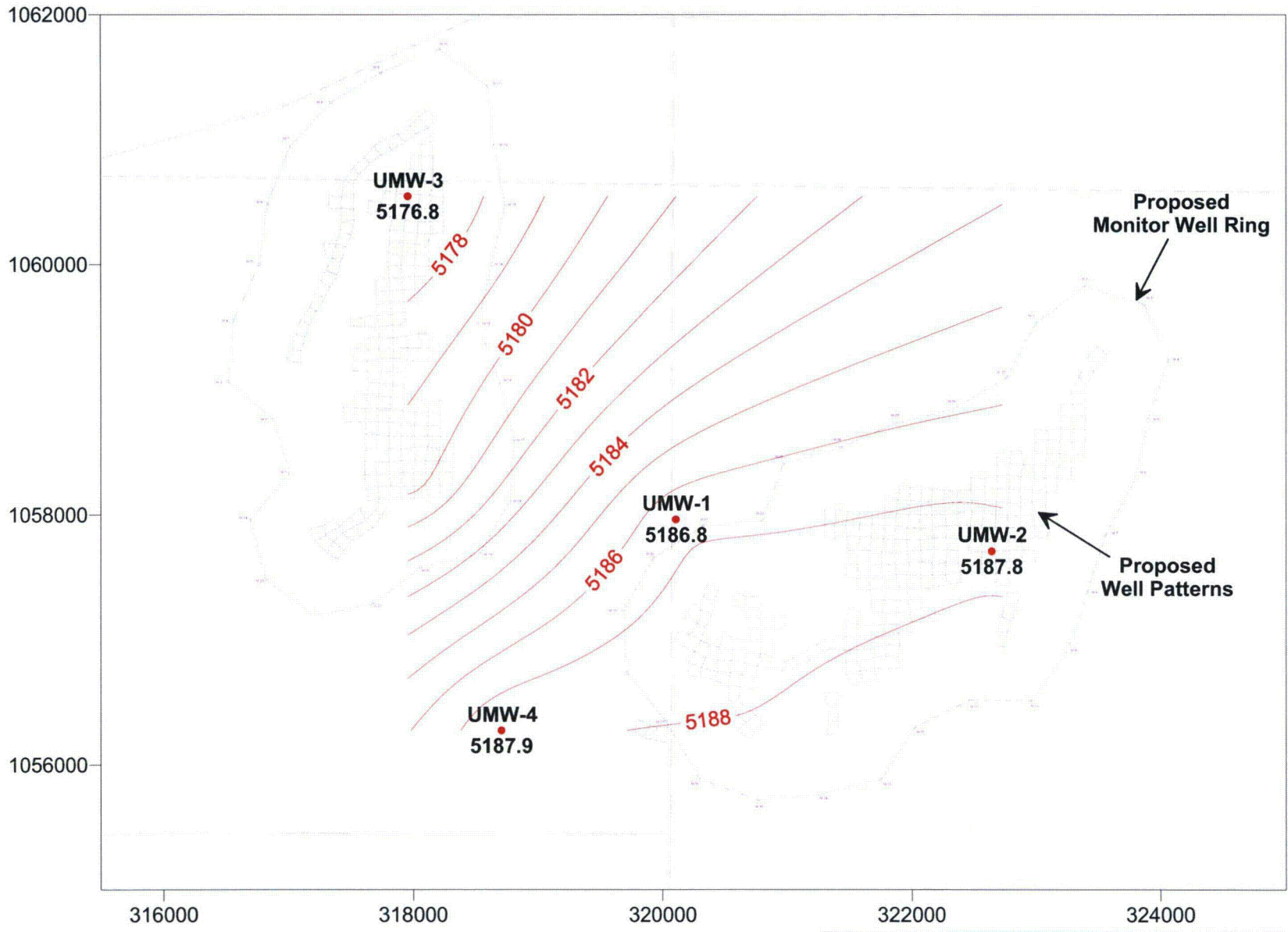
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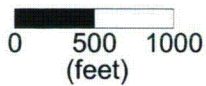
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**Figure 3.4.3-7c. 07/17/07 Potentiometric Surface, 68 Sand
Moore Ranch Uranium Project, Wyoming**





MW1 Well ID
 ● Baseline Monitor Well
5116.4 Water Level Elevation
 — Potentiometric Surface
 Contour Interval = 1 ft



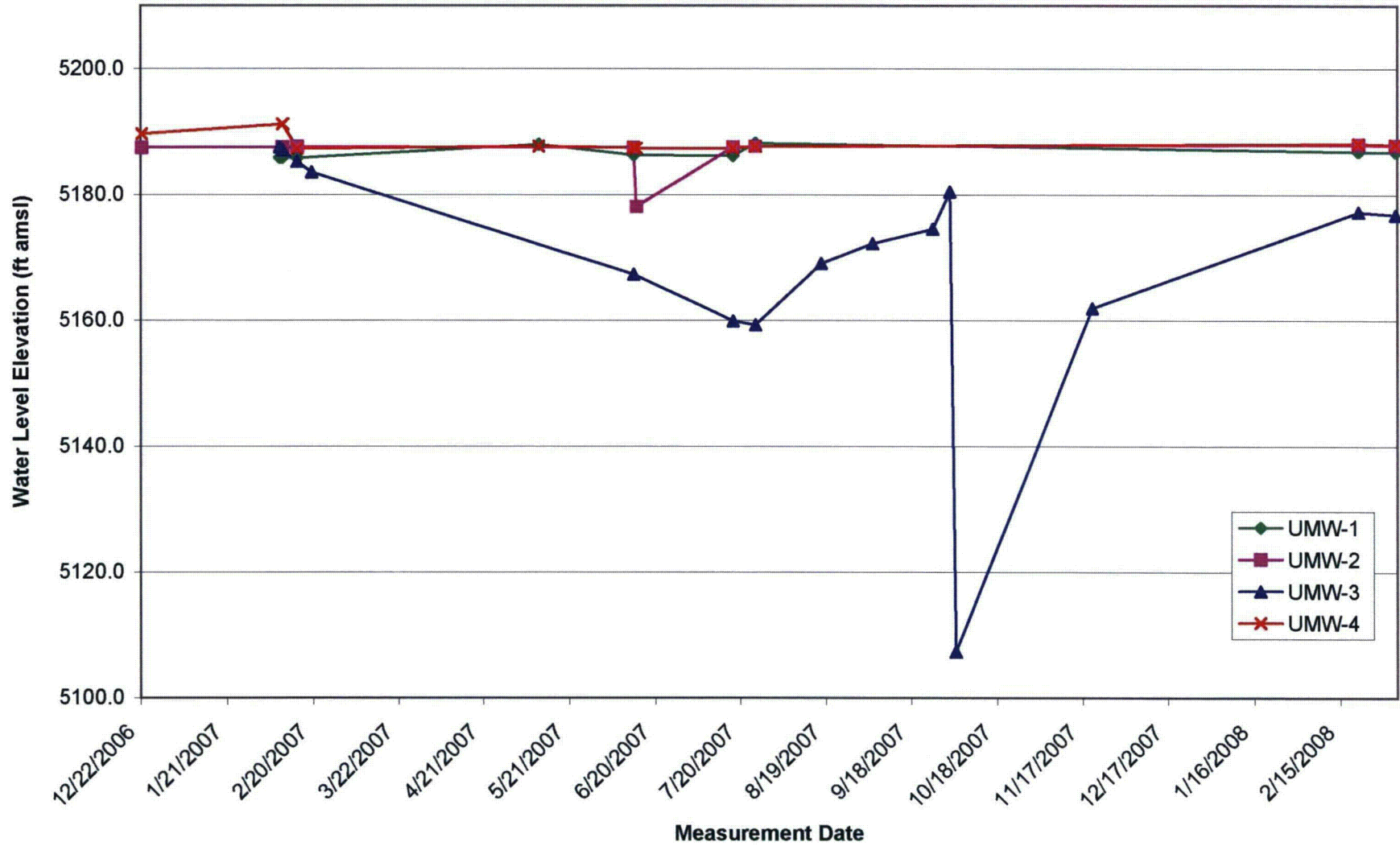
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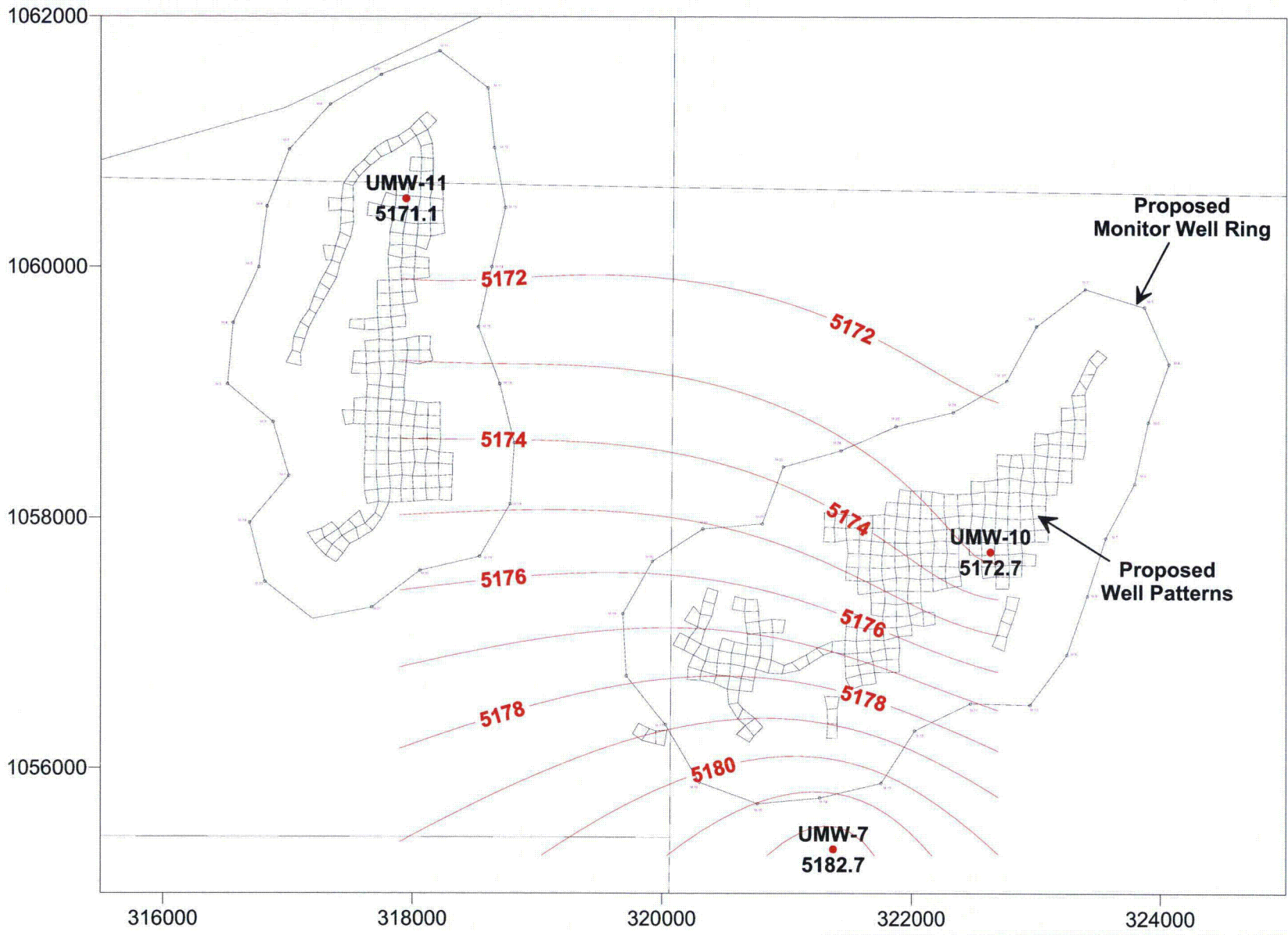
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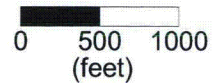
**Figure 3.4.3-7e. 03/05/08 Potentiometric Surface, 68 Sand
 Moore Ranch Uranium Project, Wyoming**

Figure 3.4.3-7f Hydrographs of 68 Sand Baseline Wells, Moore Ranch, Wyoming

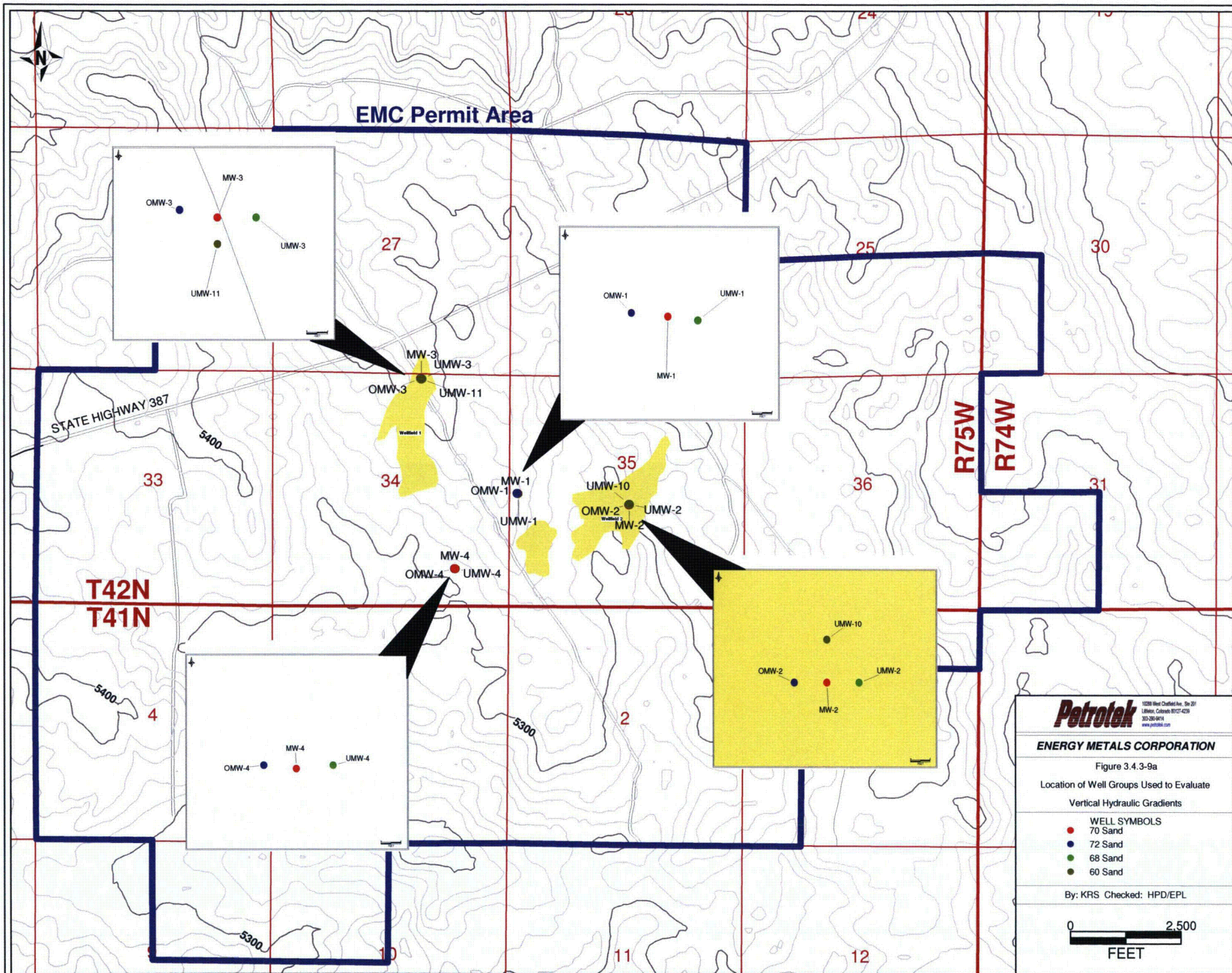




UMW11 Well ID
 ● Monitor Well
5171.1 Water Level Elevation (ft amsl)
 Potentiometric Surface
 Contour Interval = 1 ft



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Figure 3.4.3-8. 08/11/09 Potentiometric Surface, 60 Sand Moore Ranch Uranium Project, Wyoming		
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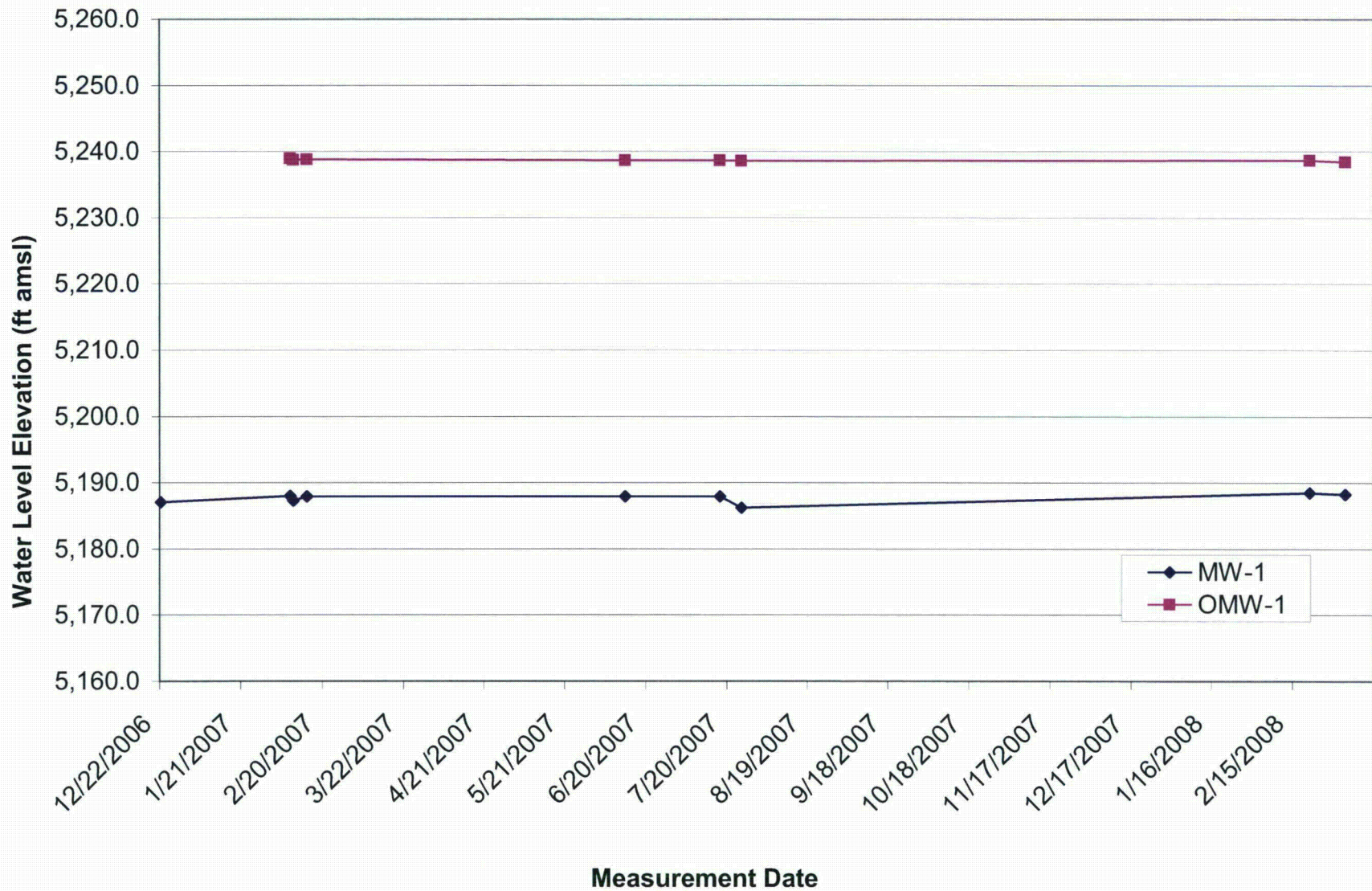
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Figure 3.4.3-9a
 Location of Well Groups to Evaluate
 Vertical Hydraulic Gradients

WELL SYMBOLS
 ● 70 Sand
 ● 72 Sand
 ● 68 Sand
 ● 60 Sand

By: KRS Checked: HPD/EPL

0 2,500
 FEET

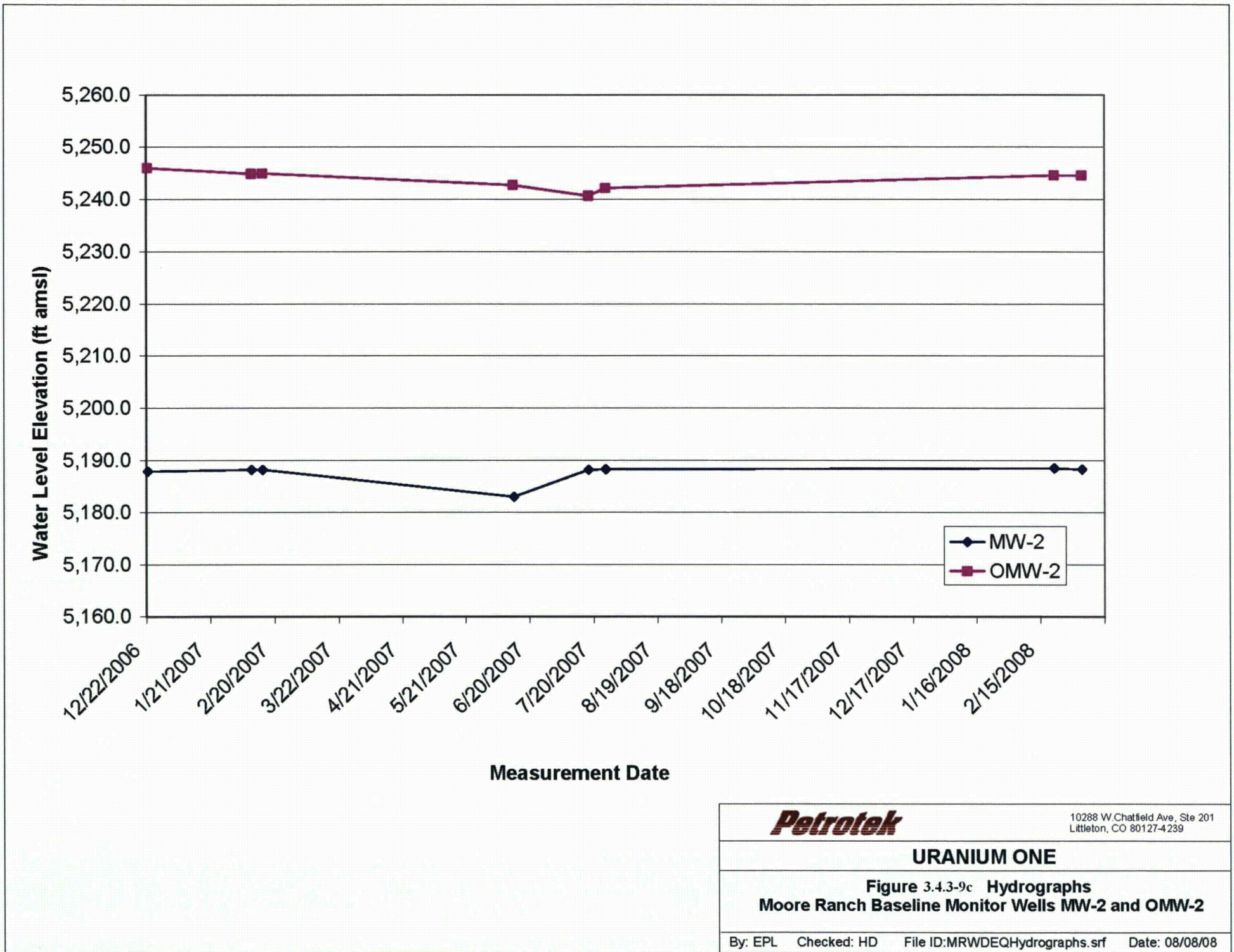


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**Figure 3.4.3-9b Hydrographs
Moore Ranch Baseline Monitor Wells MW-1 and OMW-1**

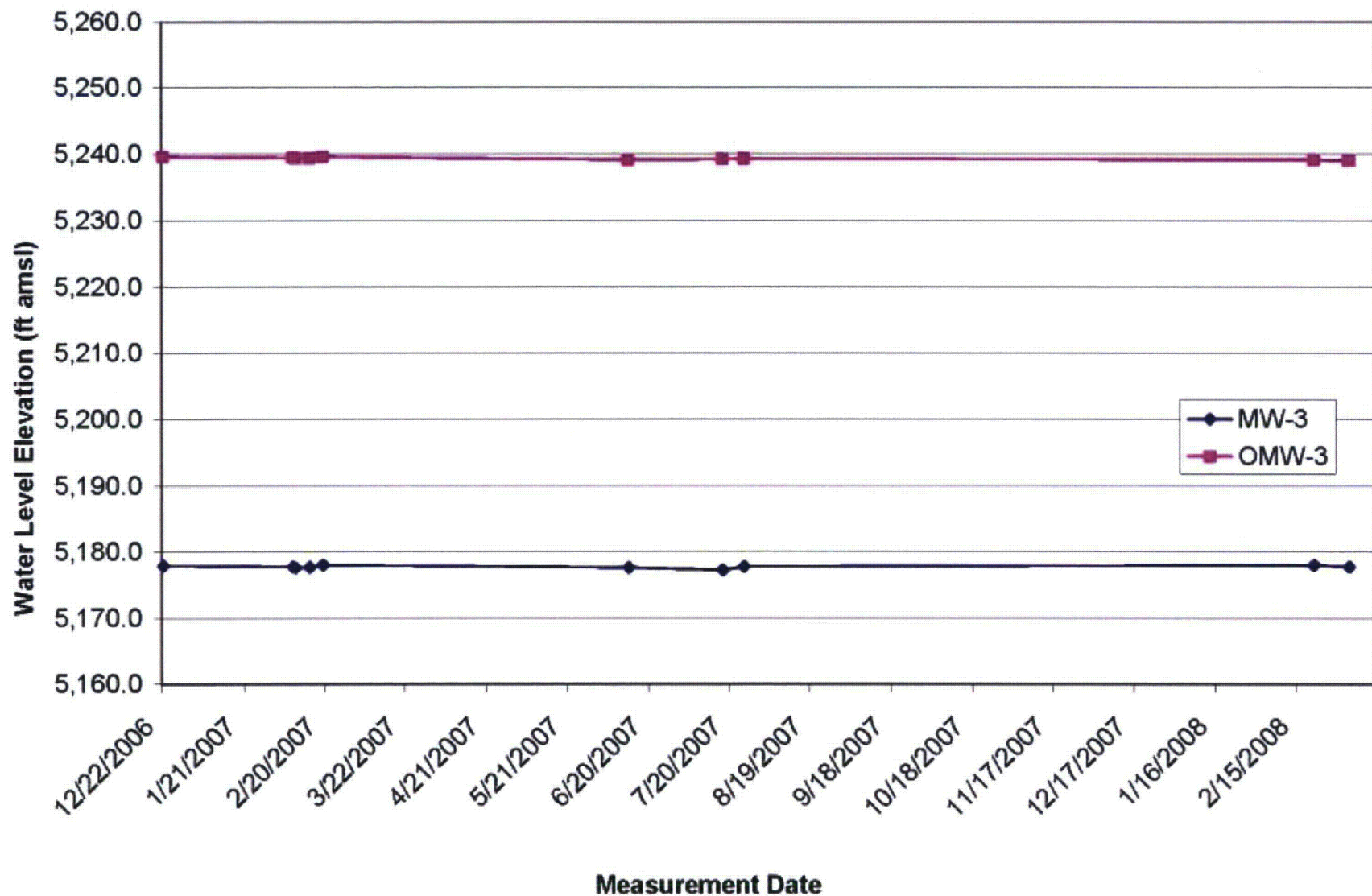


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**Figure 3.4.3-9c Hydrographs
Moore Ranch Baseline Monitor Wells MW-2 and OMW-2**

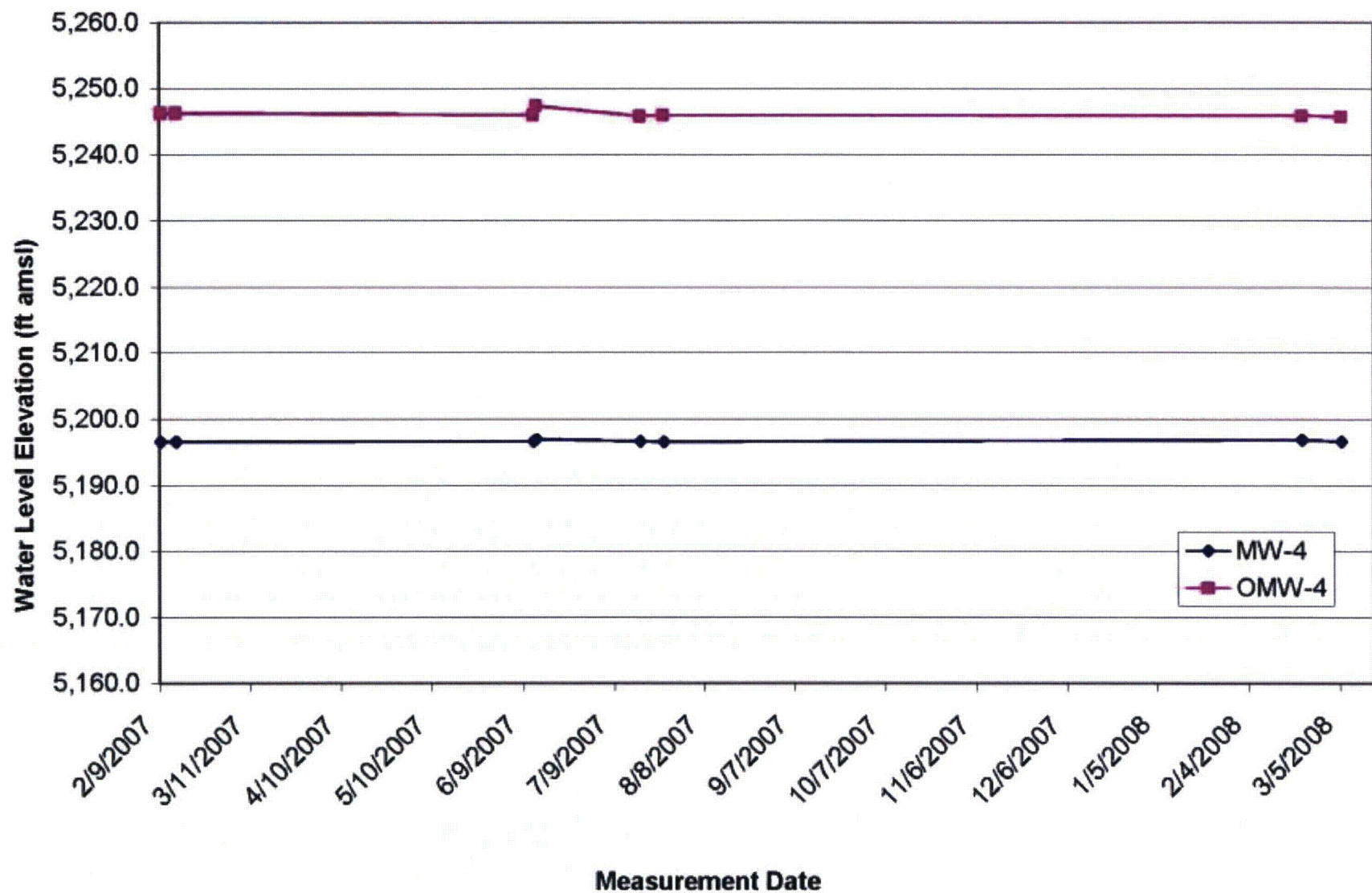


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**Figure 3.4.3-9d Hydrographs
Moore Ranch Baseline Monitor Wells MW-3 and OMW-3**

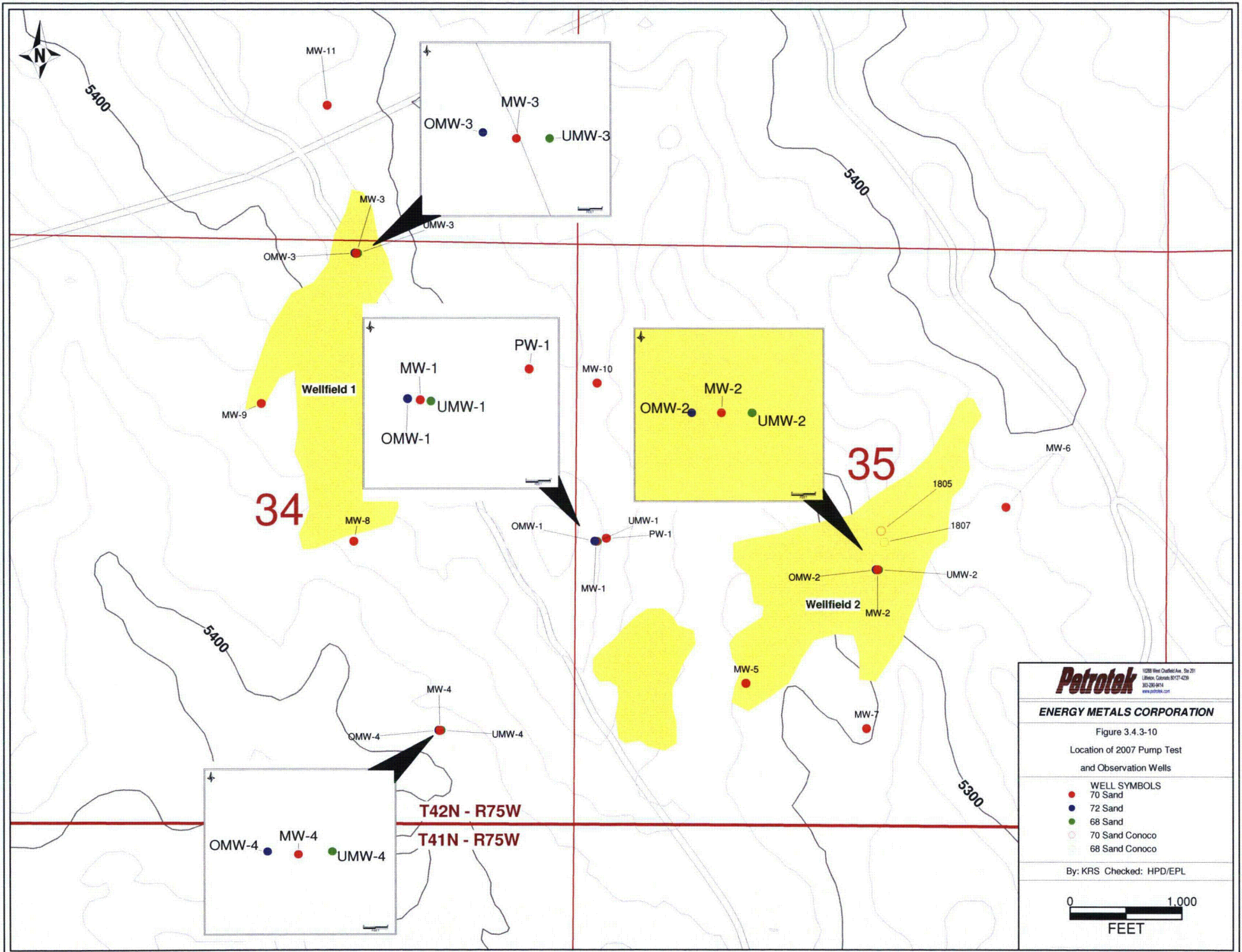


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**Figure 3.4.3-9e Hydrographs
Moore Ranch Baseline Monitor Wells MW-4 and OMW-4**



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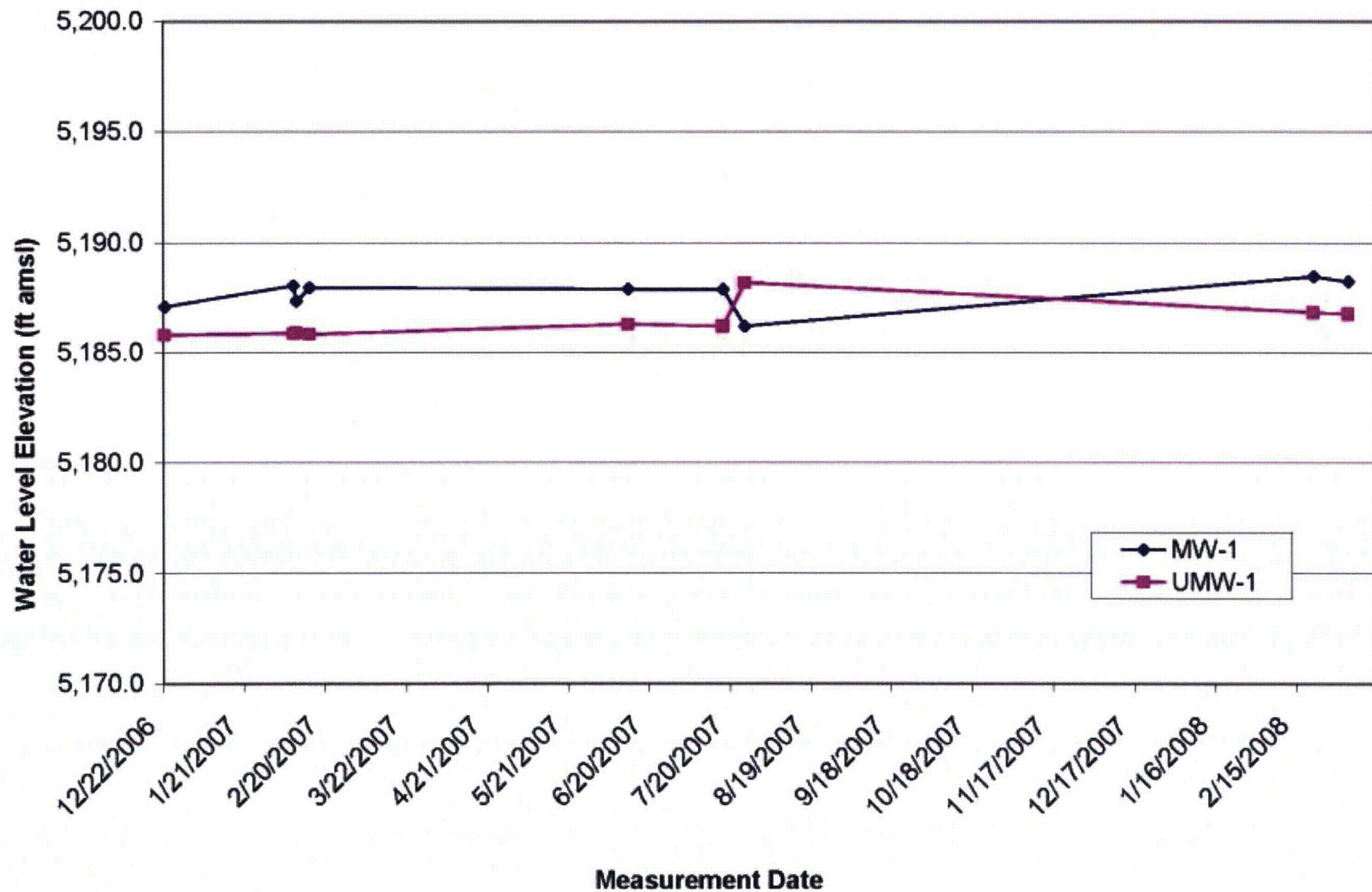
ENERGY METALS CORPORATION

Figure 3.4.3-10
 Location of 2007 Pump Test
 and Observation Wells

- WELL SYMBOLS**
- 70 Sand
 - 72 Sand
 - 68 Sand
 - 70 Sand Conoco
 - 68 Sand Conoco

By: KRS Checked: HPD/EPL



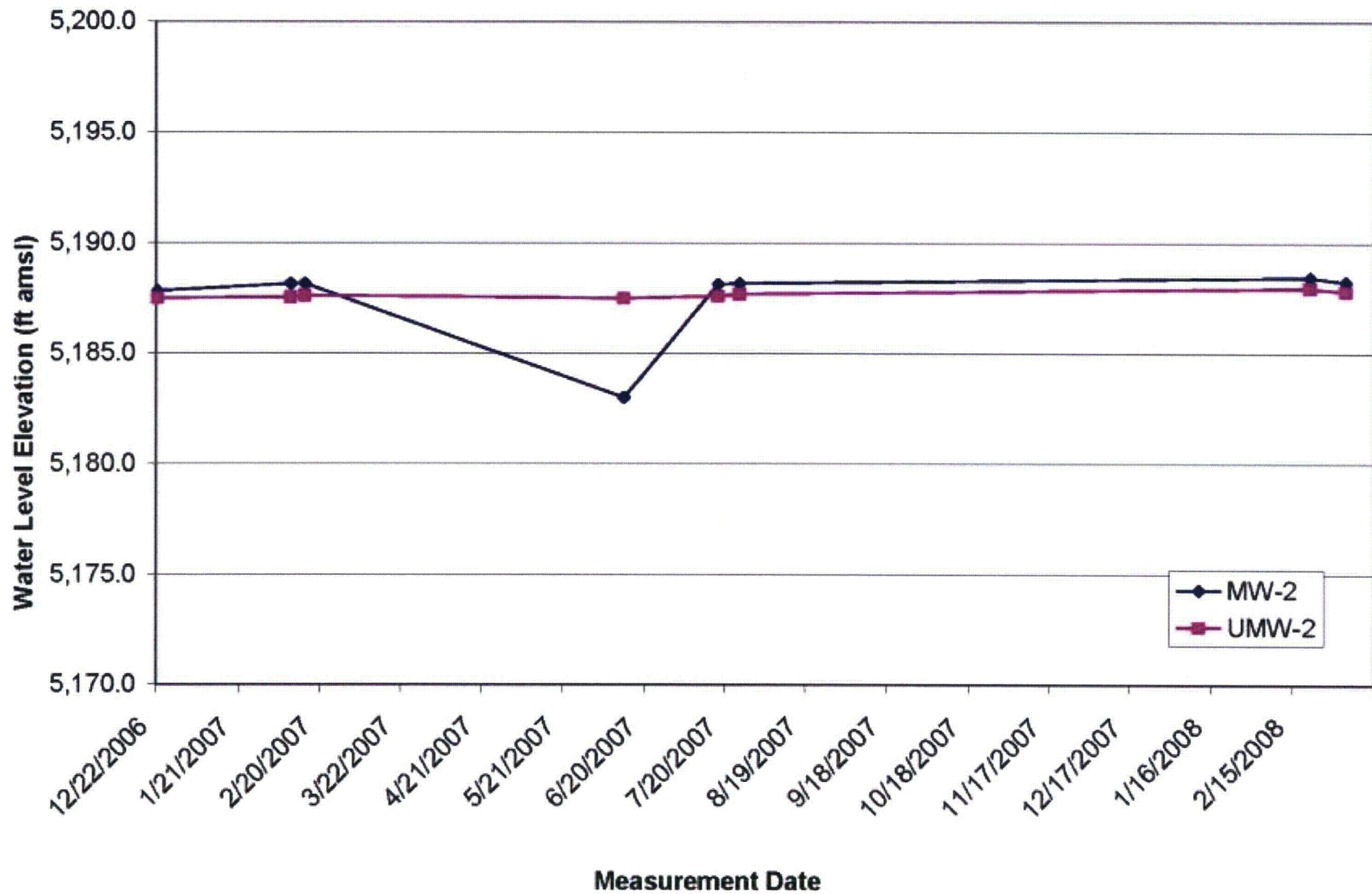


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**Figure 3.4.3-10a Hydrographs
Moore Ranch Baseline Monitor Wells MW-1 and UMW-1**

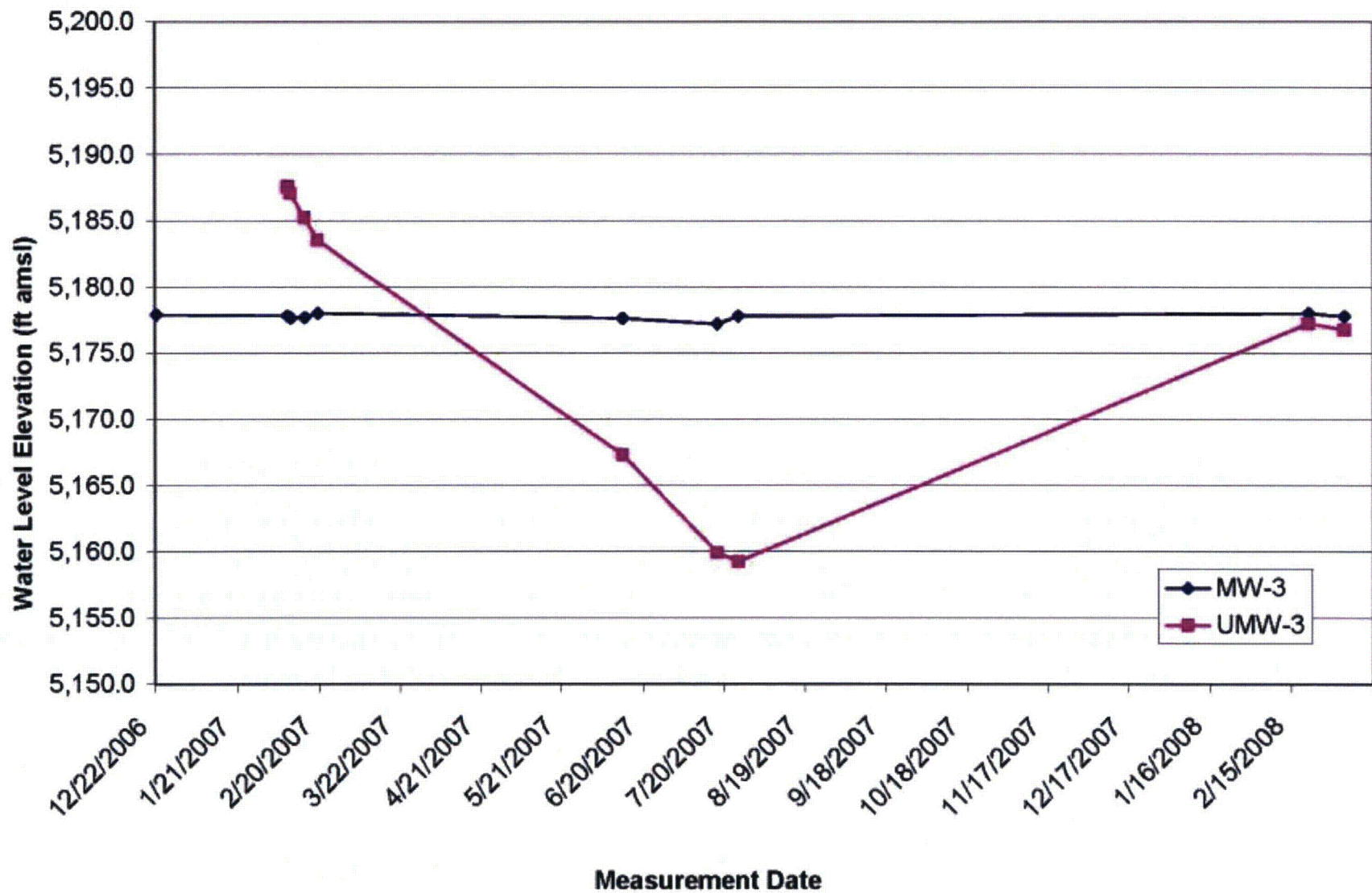


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**Figure 3.4.3-10b Hydrographs
Moore Ranch Baseline Monitor Wells MW-2 and UMW-2**

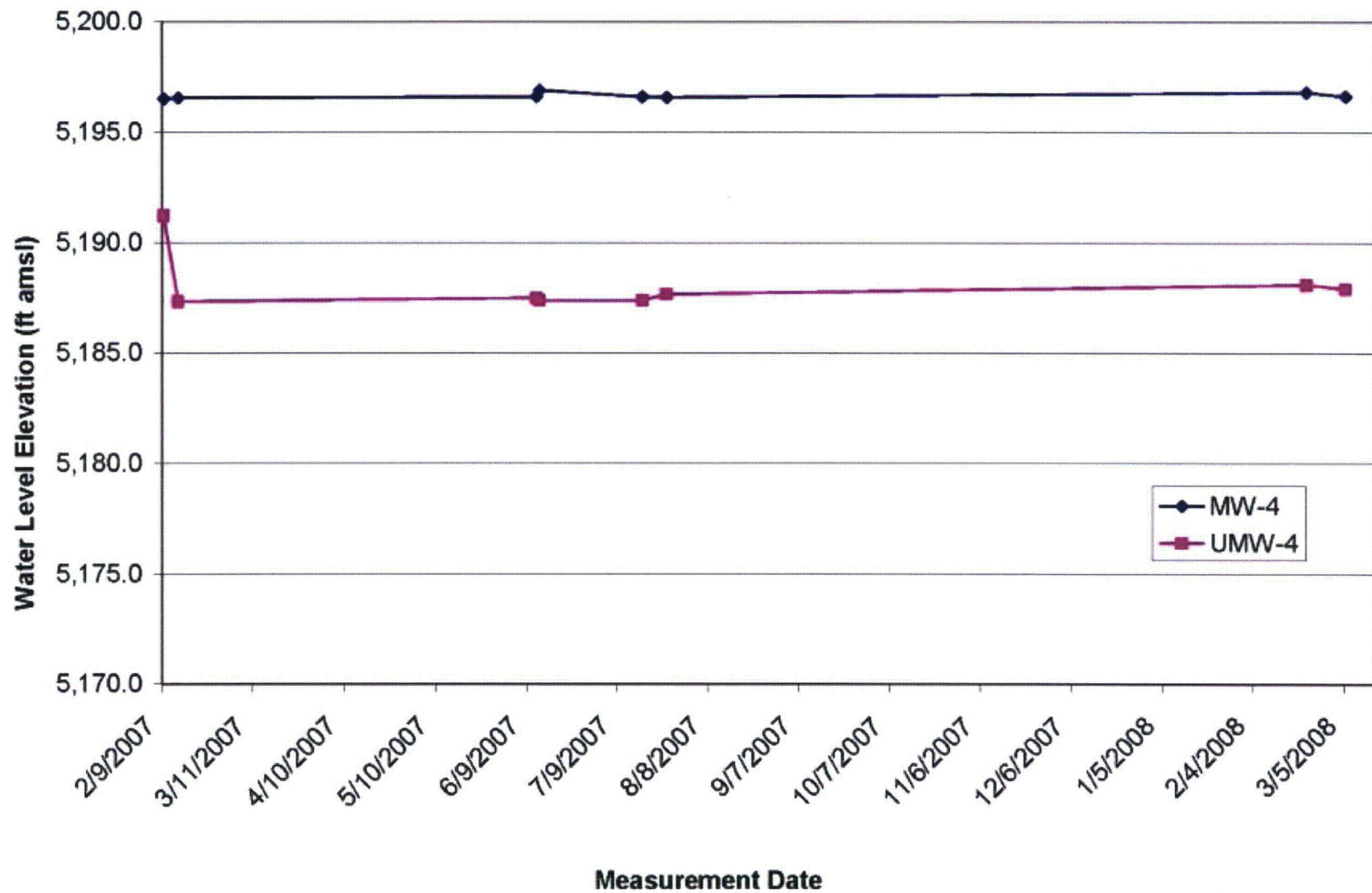


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**Figure 3.4.3-10c Hydrographs
Moore Ranch Baseline Monitor Wells MW-3 and UMW-3**

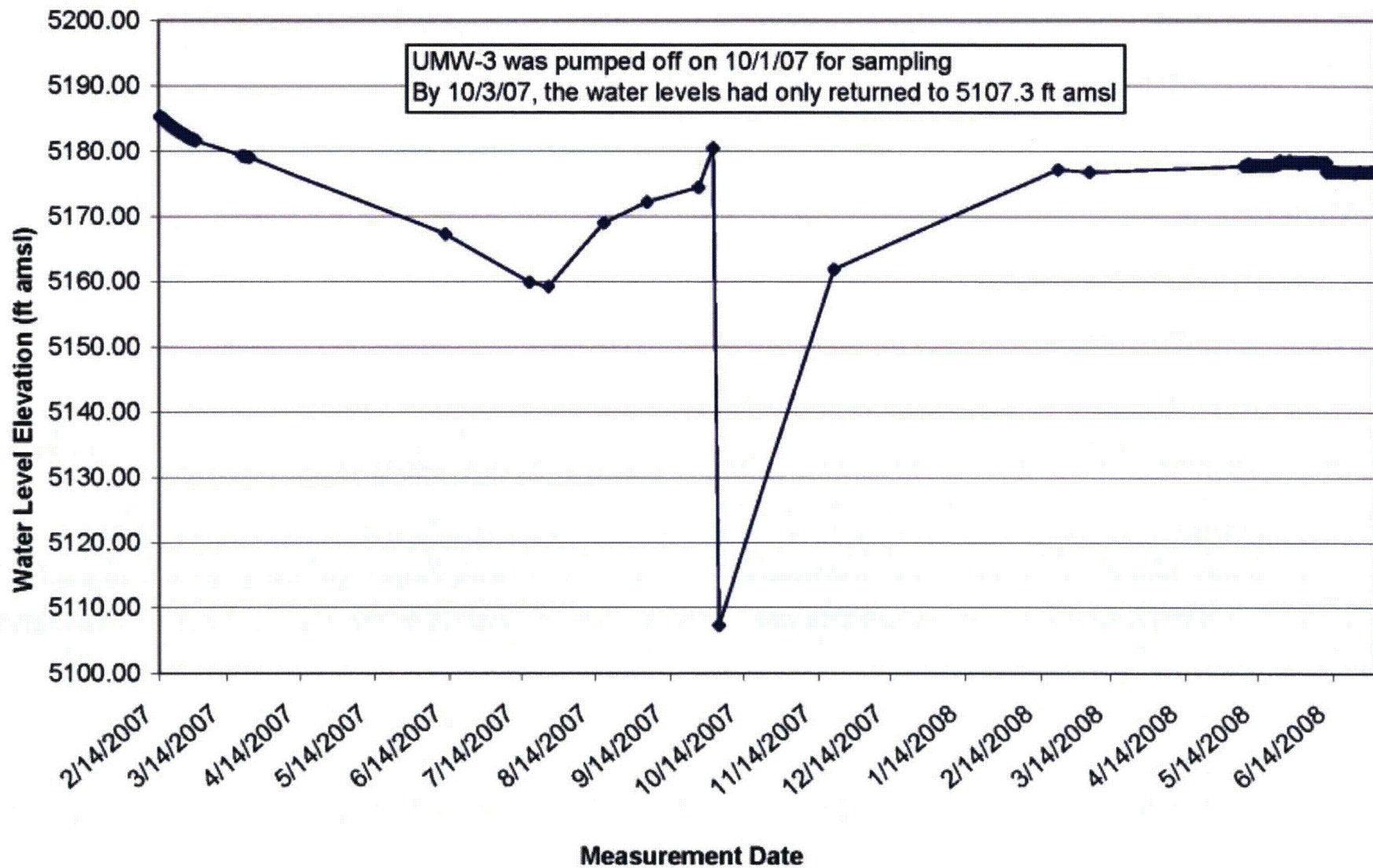


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**Figure 3.4.3-10d Hydrographs
Moore Ranch Baseline Monitor Wells MW-4 and UMW-4**

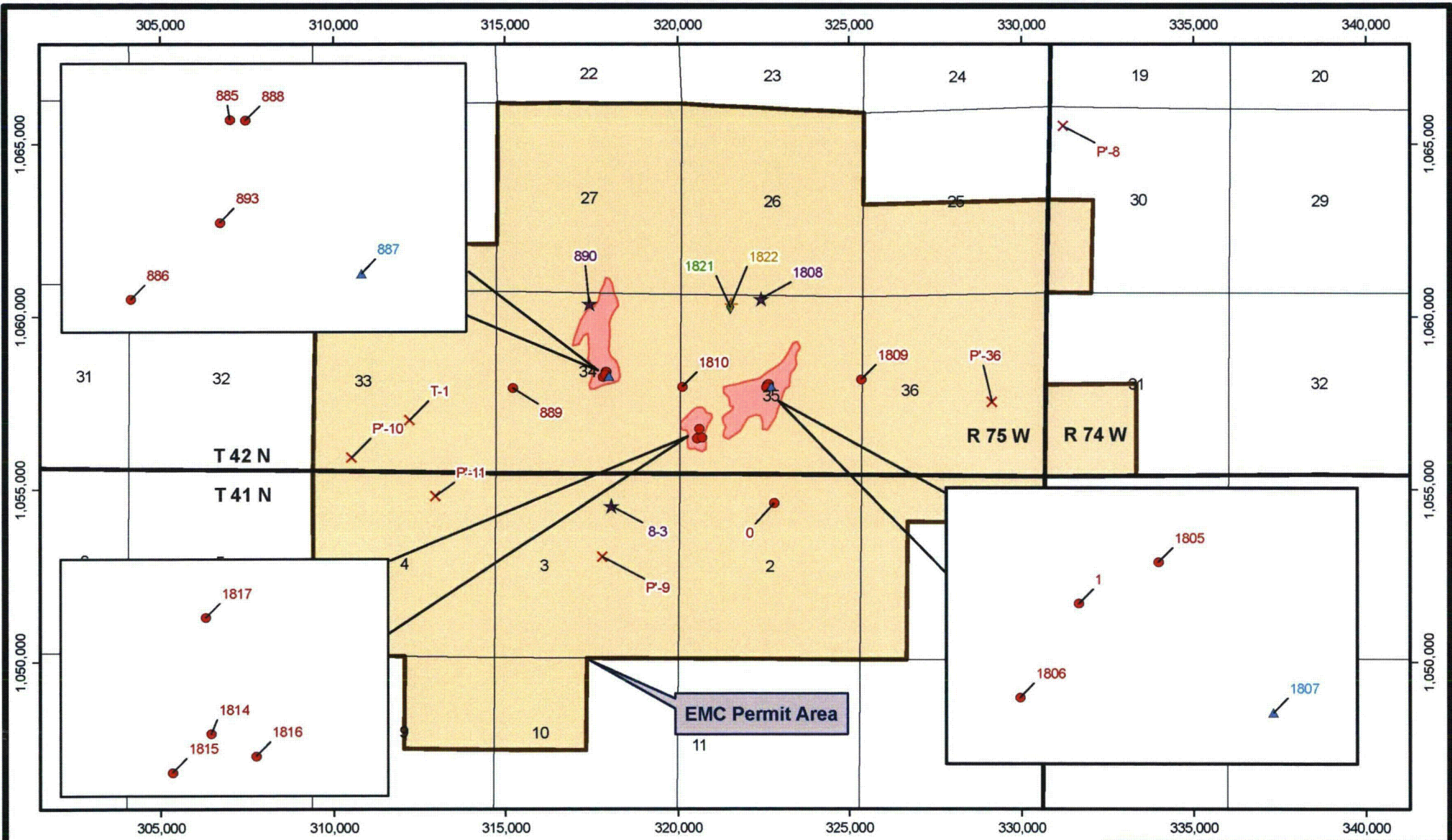


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**Figure 3.4.3-10e Hydrograph, Long Term Monitoring
Moore Ranch Baseline Monitor Well UMW-3**

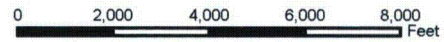


Legend

- ✦ Conoco-40-50_Sand
- ★ Conoco-68-70_Sand
- ▲ Conoco-68_Sand
- Conoco-70_Sand
- ◆ Conoco-Roland_Sand
- ✕ Conoco-Stock_Wells
- Well Field



1:48,000



Projection: State Plane - Wyoming East - NAD27 (feet)

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Figure 3.4.3-11
 Location of Conoco Baseline Monitoring Network

Project: 312-7	Date: September 2007
Figure D6.3-15.mxd	By: JLM Checked: KC

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Figure 3.4.3-11a Hydrographs of Baseline Wells MW1 and OMW1, Moore Ranch, Wyoming

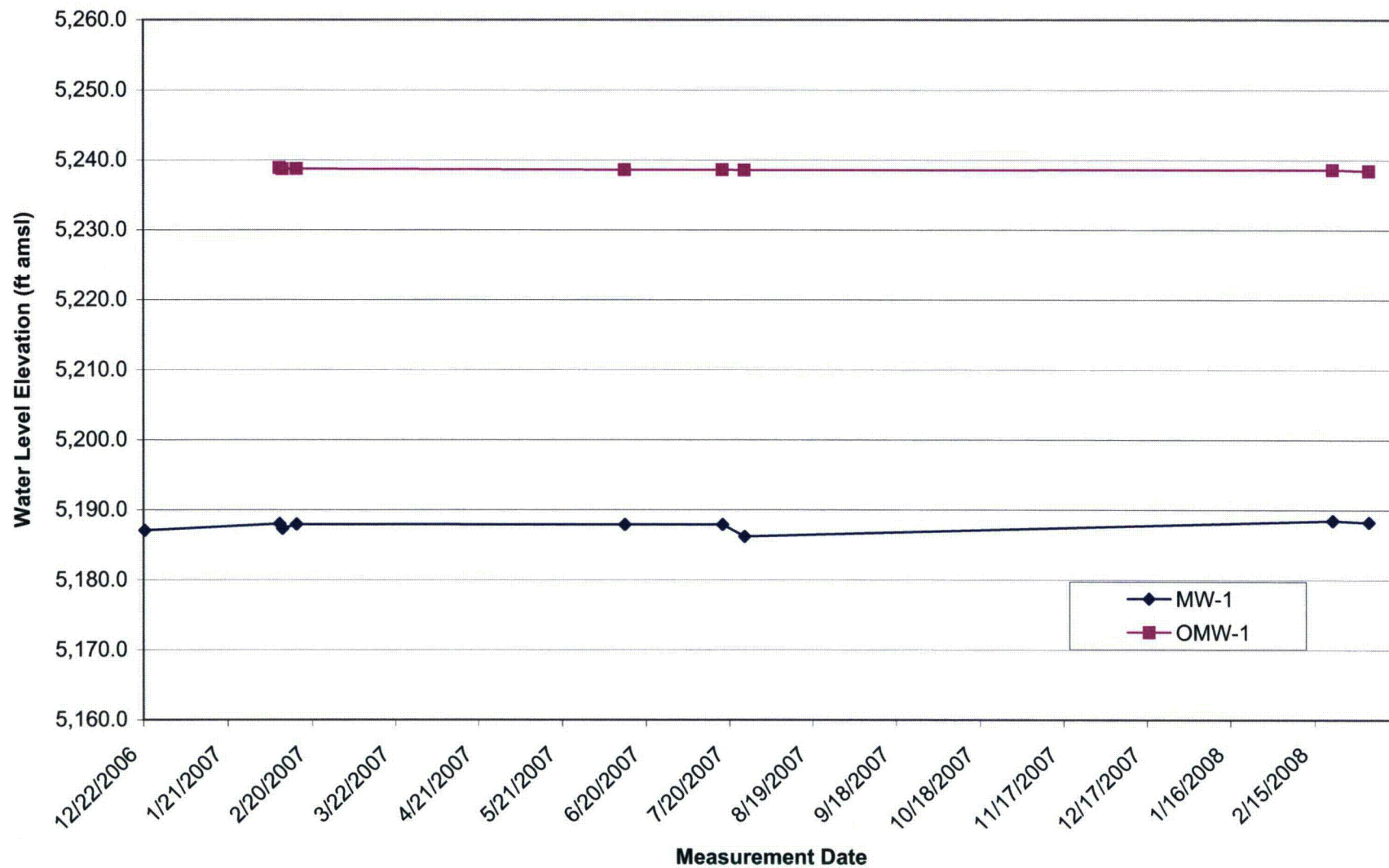


Figure 3.4.3-11b Hydrographs of Baseline Wells MW2 and OMW2, Moore Ranch, Wyoming

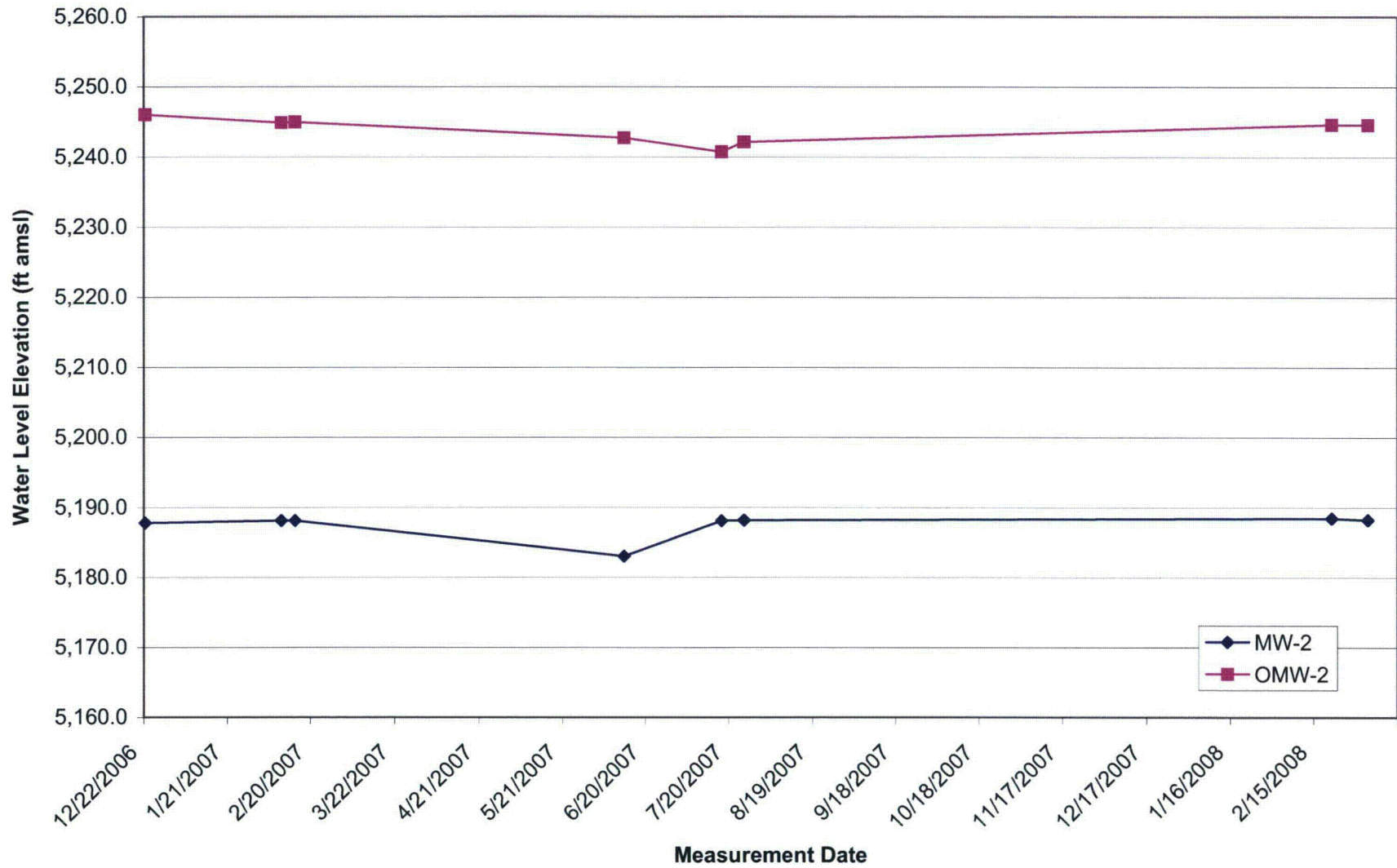


Figure 3.4.3-11c Hydrographs of Baseline Wells MW3 and OMW3, Moore Ranch, Wyoming

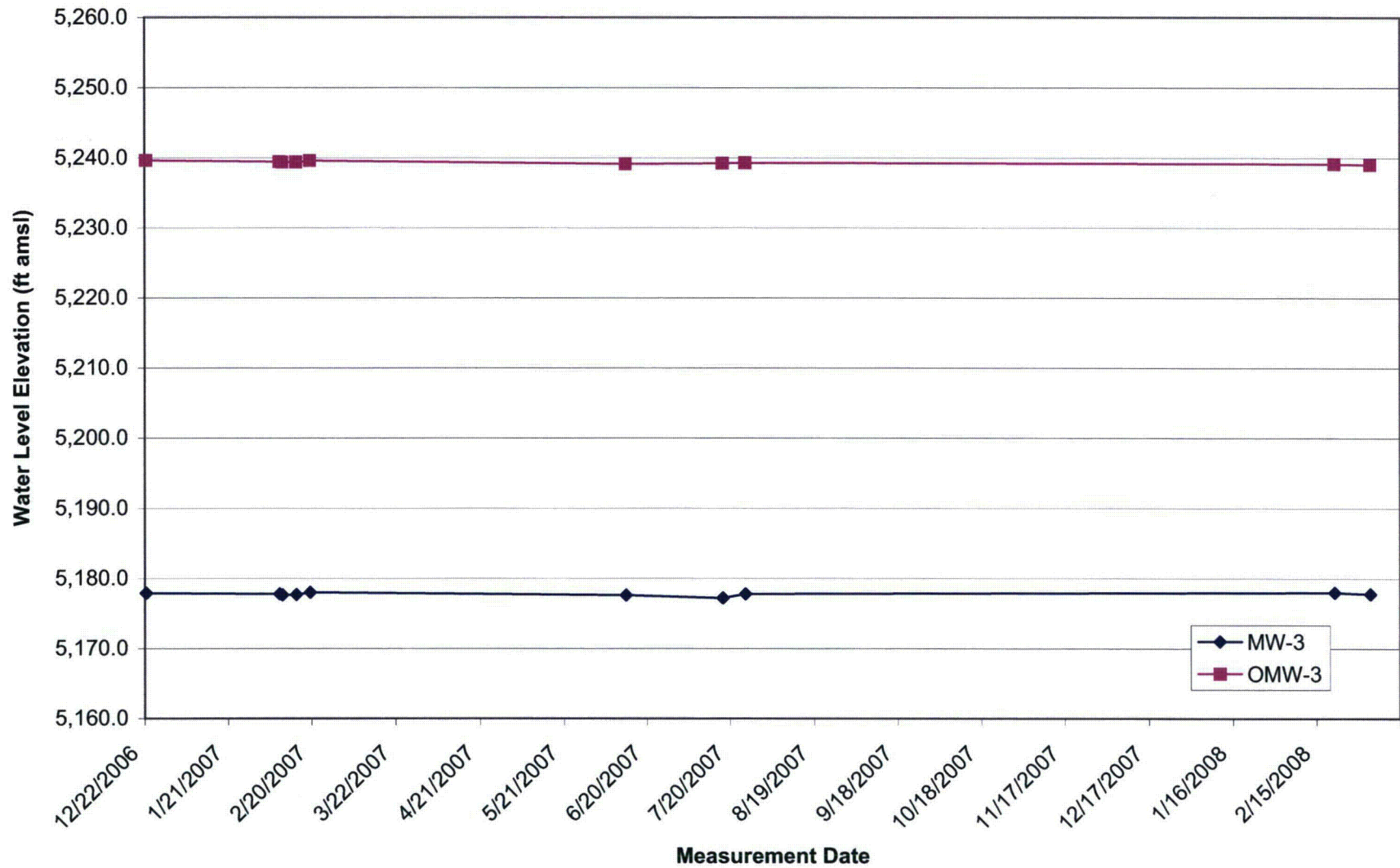
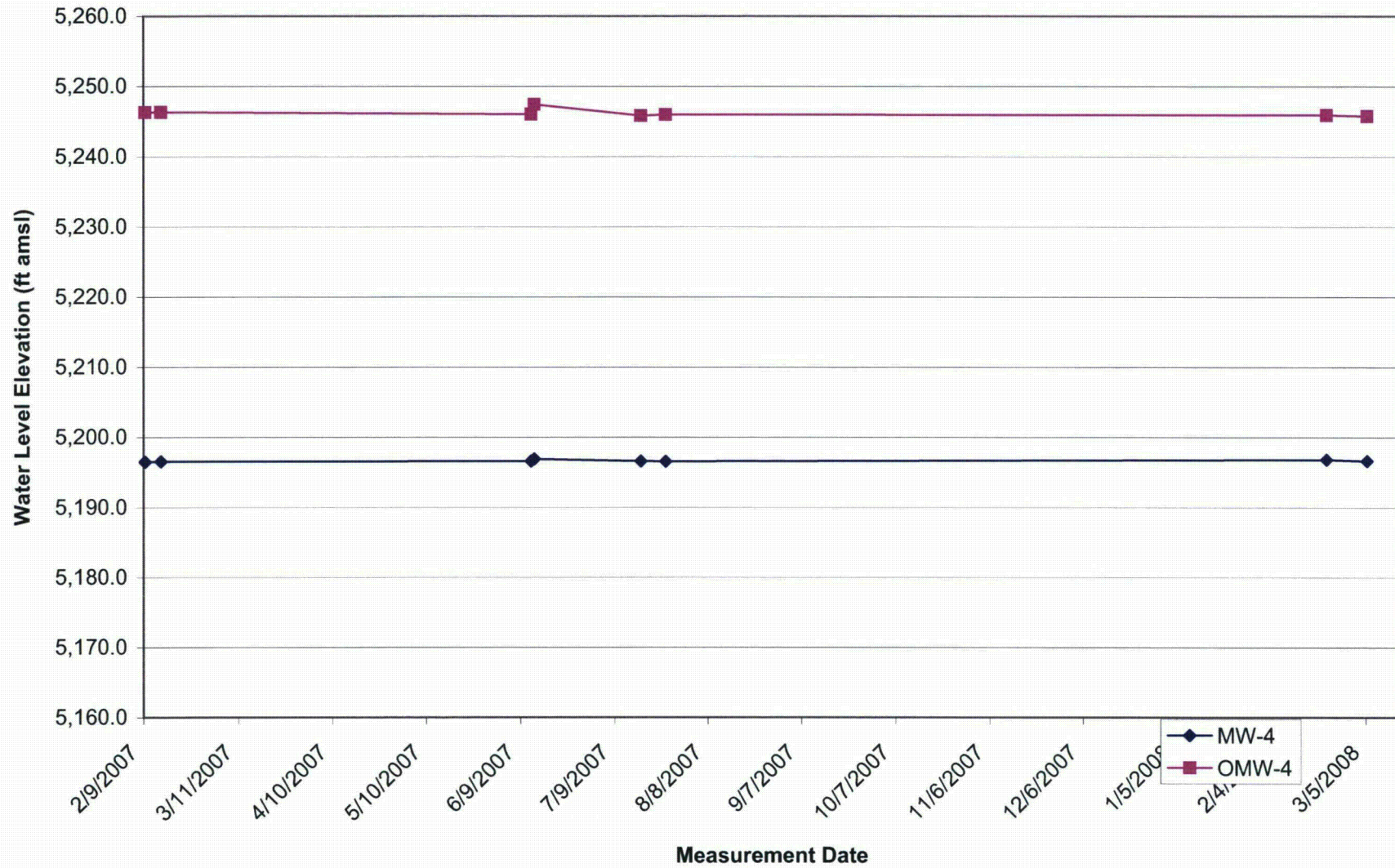
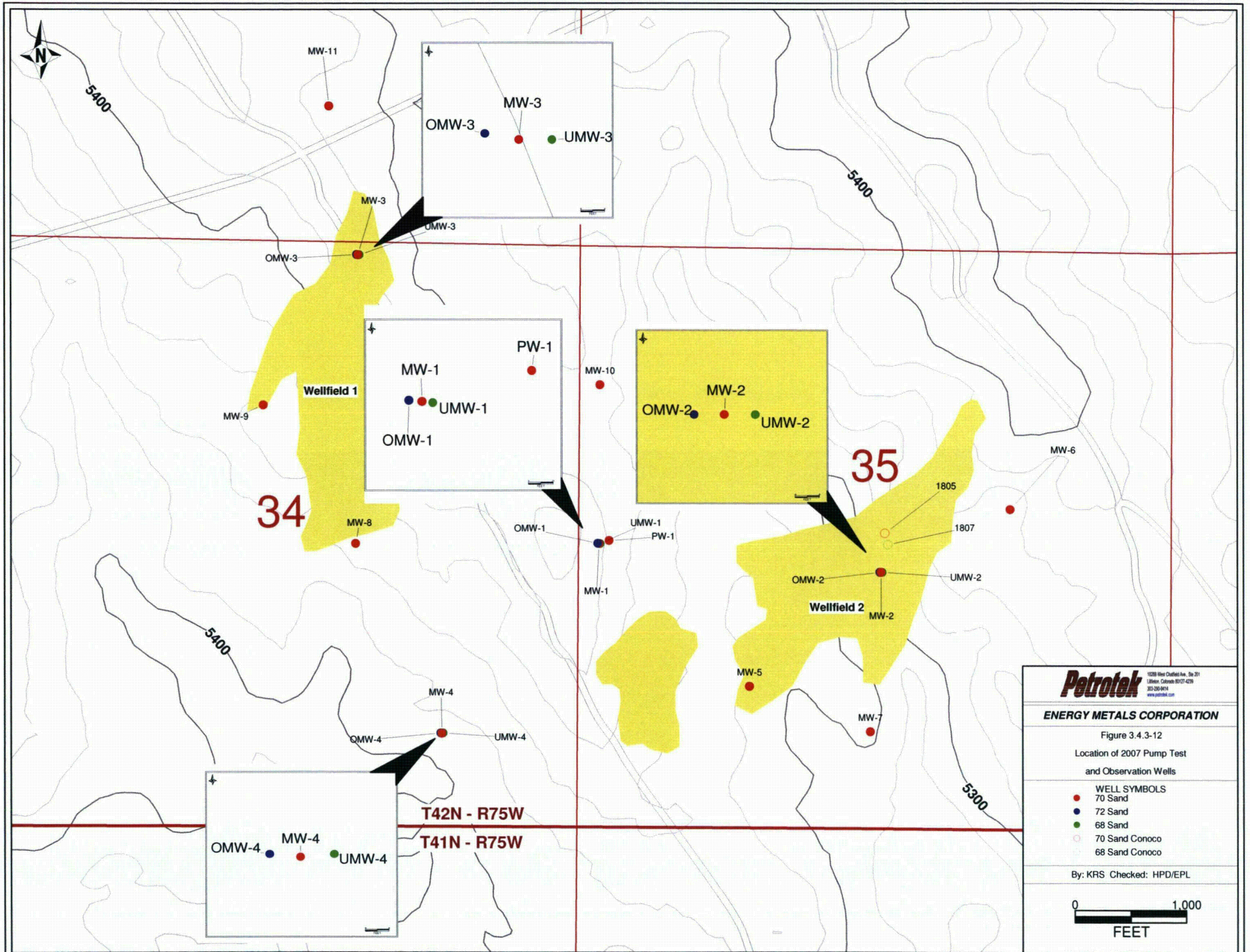


Figure 3.4.3-11d Hydrographs of Baseline Wells MW4 and OM4, Moore Ranch, Wyoming





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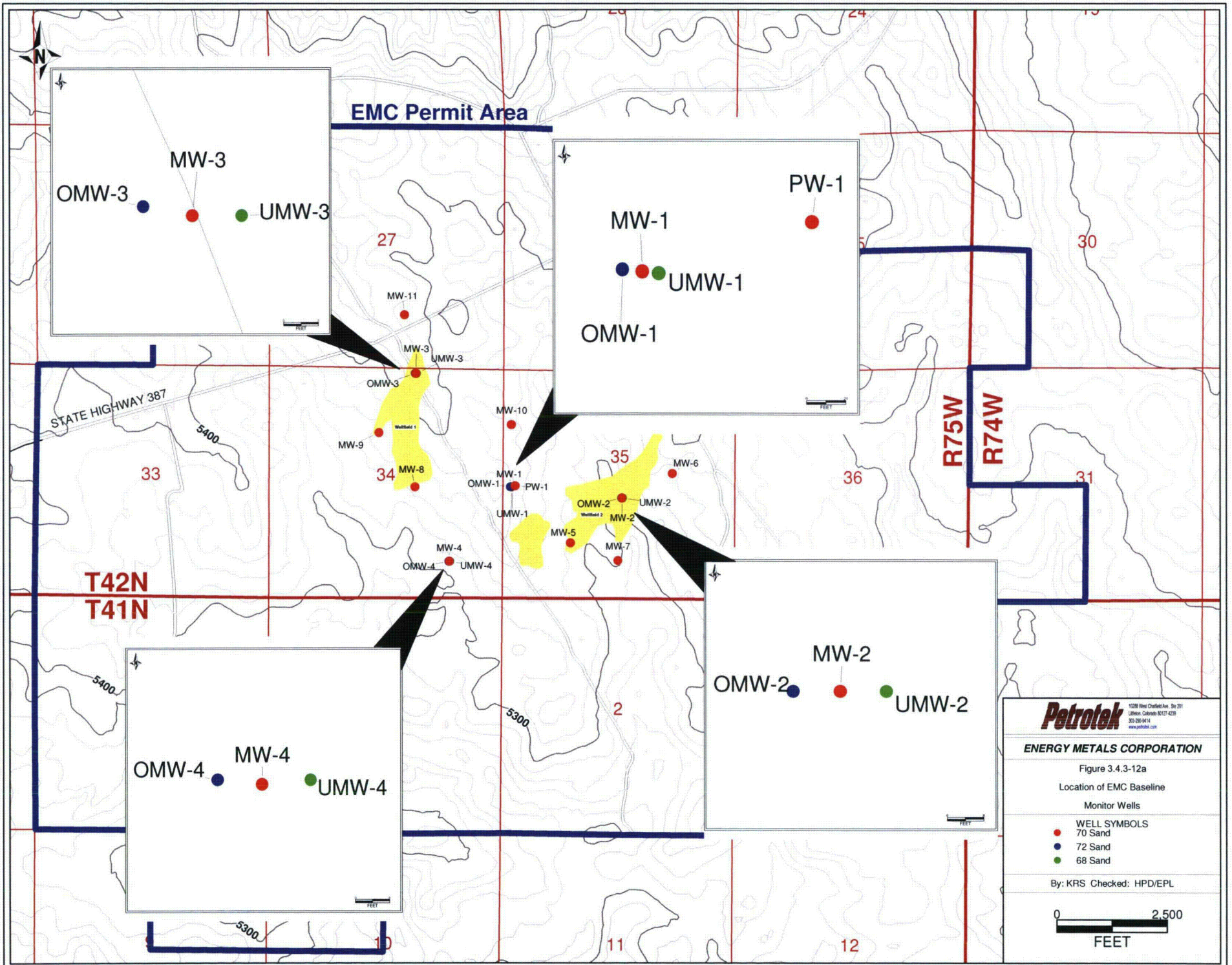
Figure 3.4.3-12

Location of 2007 Pump Test
 and Observation Wells

- WELL SYMBOLS**
- 70 Sand
 - 72 Sand
 - 68 Sand
 - 70 Sand Conoco
 - 68 Sand Conoco

By: KRS Checked: HPD/EPL





EMC Permit Area

Inset 1: MW-3 (red dot), OMW-3 (blue dot), UMW-3 (green dot)

Inset 2: MW-1 (red dot), OMW-1 (blue dot), UMW-1 (green dot), PW-1 (red dot)

Inset 3: MW-4 (red dot), OMW-4 (blue dot), UMW-4 (green dot)

Inset 4: MW-2 (red dot), OMW-2 (blue dot), UMW-2 (green dot)

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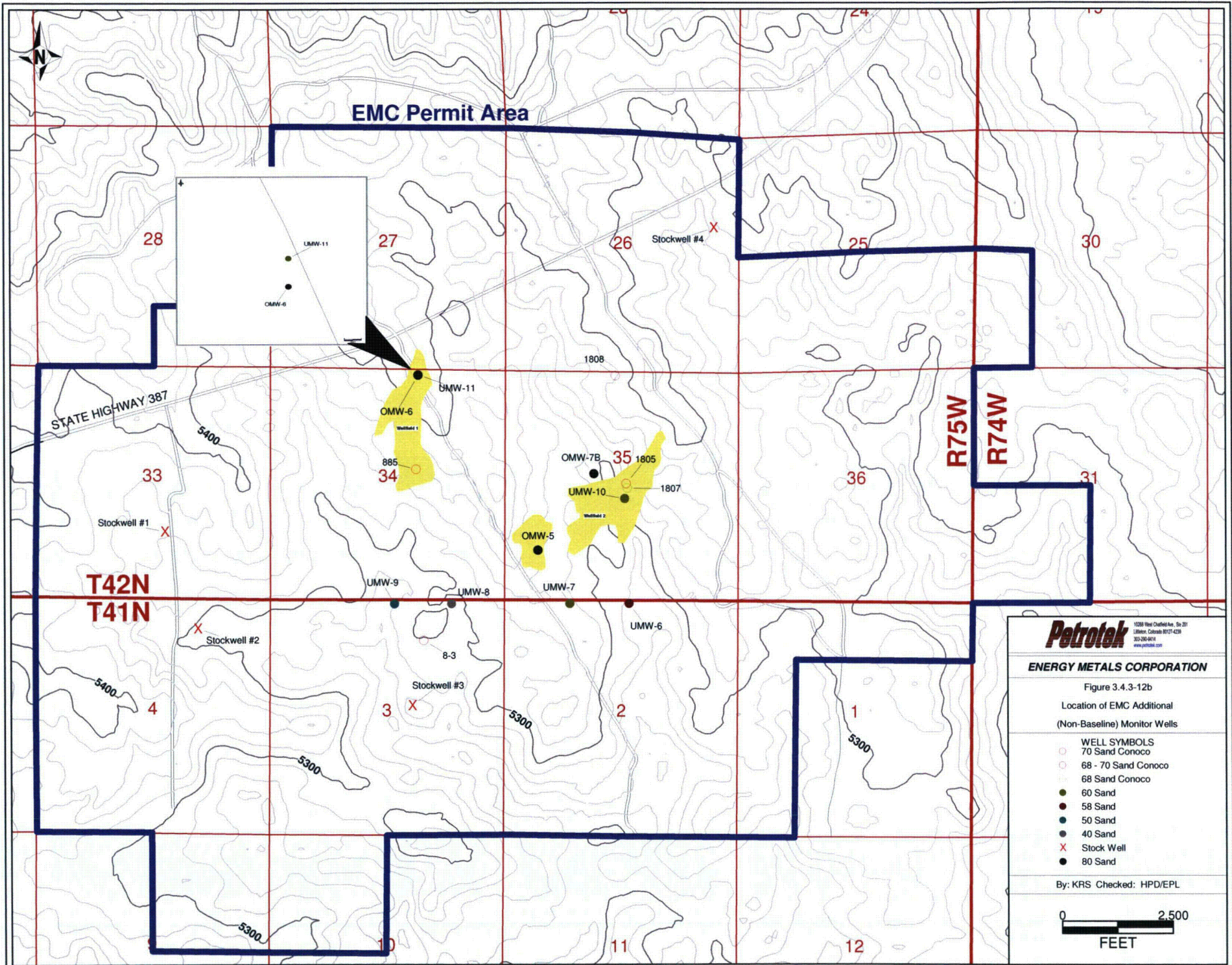
ENERGY METALS CORPORATION

Figure 3.4.3-12a
 Location of EMC Baseline
 Monitor Wells

- WELL SYMBOLS**
- 70 Sand
 - 72 Sand
 - 68 Sand

By: KRS Checked: HPD/EPL





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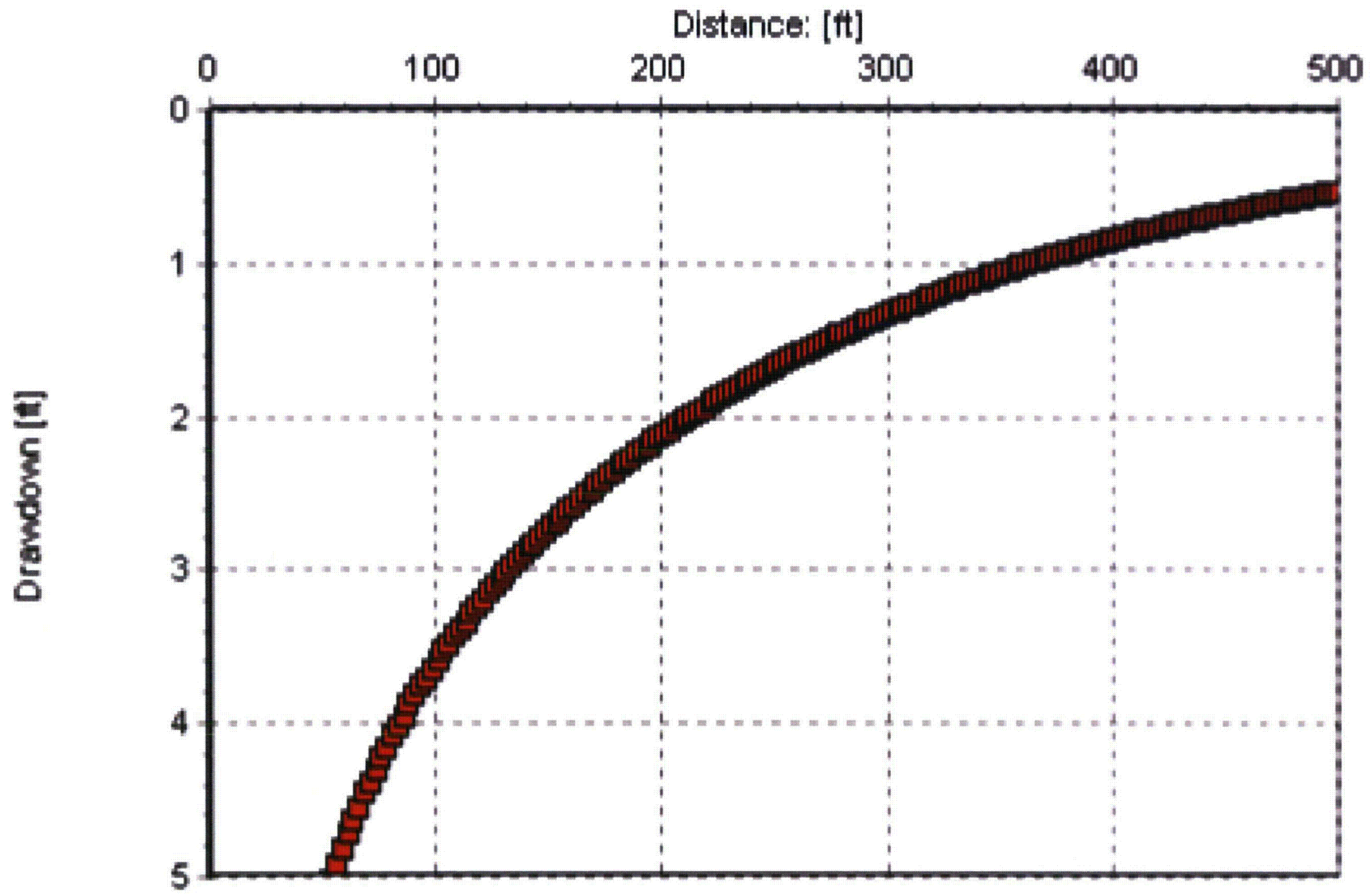
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Figure 3.4.3-12b
 Location of EMC Additional
 (Non-Baseline) Monitor Wells

WELL SYMBOLS
 ○ 70 Sand Conoco
 ○ 68 - 70 Sand Conoco
 ○ 68 Sand Conoco
 ● 60 Sand
 ● 58 Sand
 ● 50 Sand
 ● 40 Sand
 ● 80 Sand
 X Stock Well

By: KRS Checked: HPD/EPL

0 2,500
 FEET



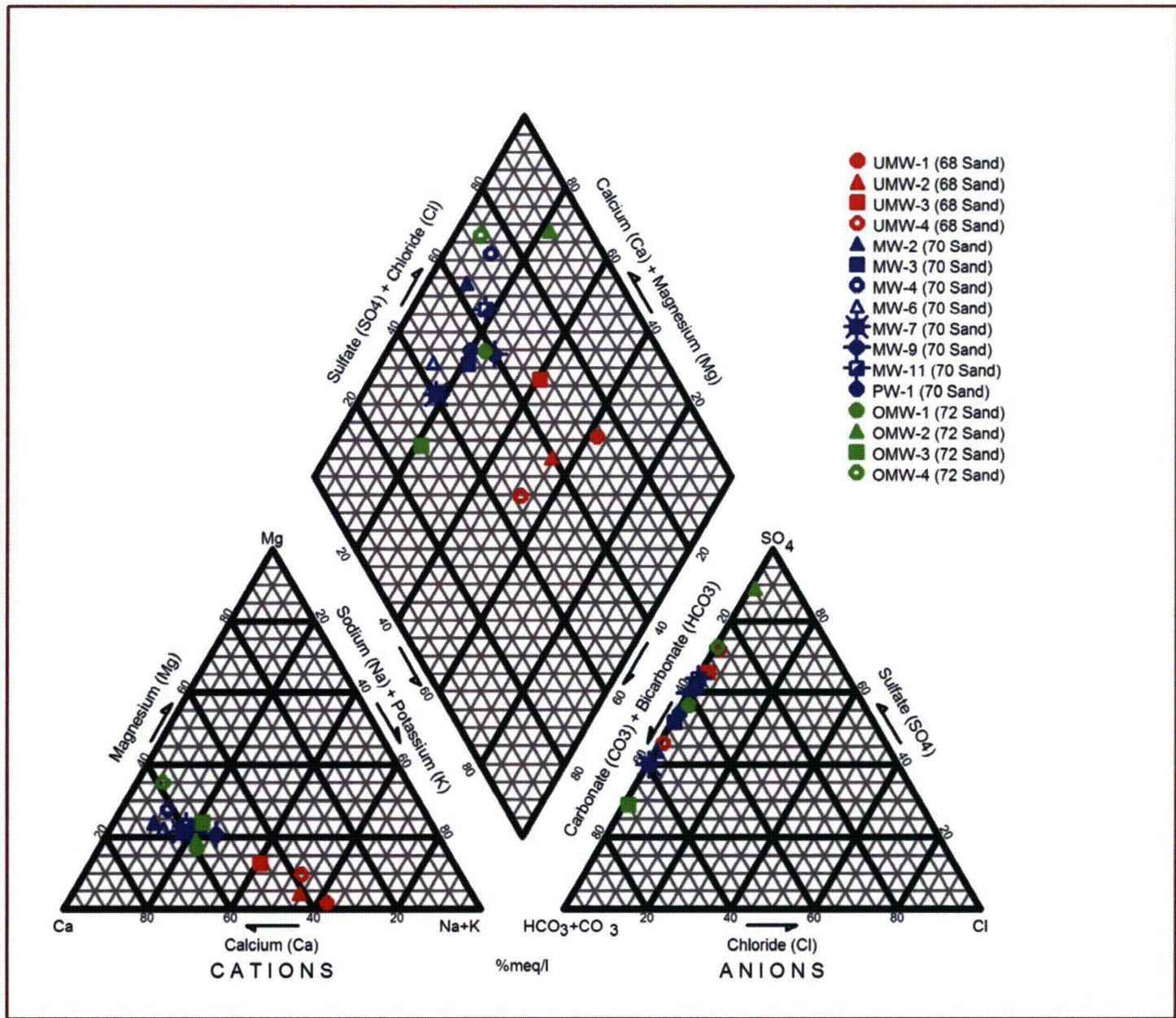
Transmissivity - 300 ft²/d
 Storativity (specific yield) - 0.028
 Pumping Rate - 22 gpm
 Time - 10 days



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**Figure 3.4.3-13. Predicted Drawdown vs Distance
 After 10 Days At 22 gpm
 Moore Ranch Uranium Project, Wyoming**



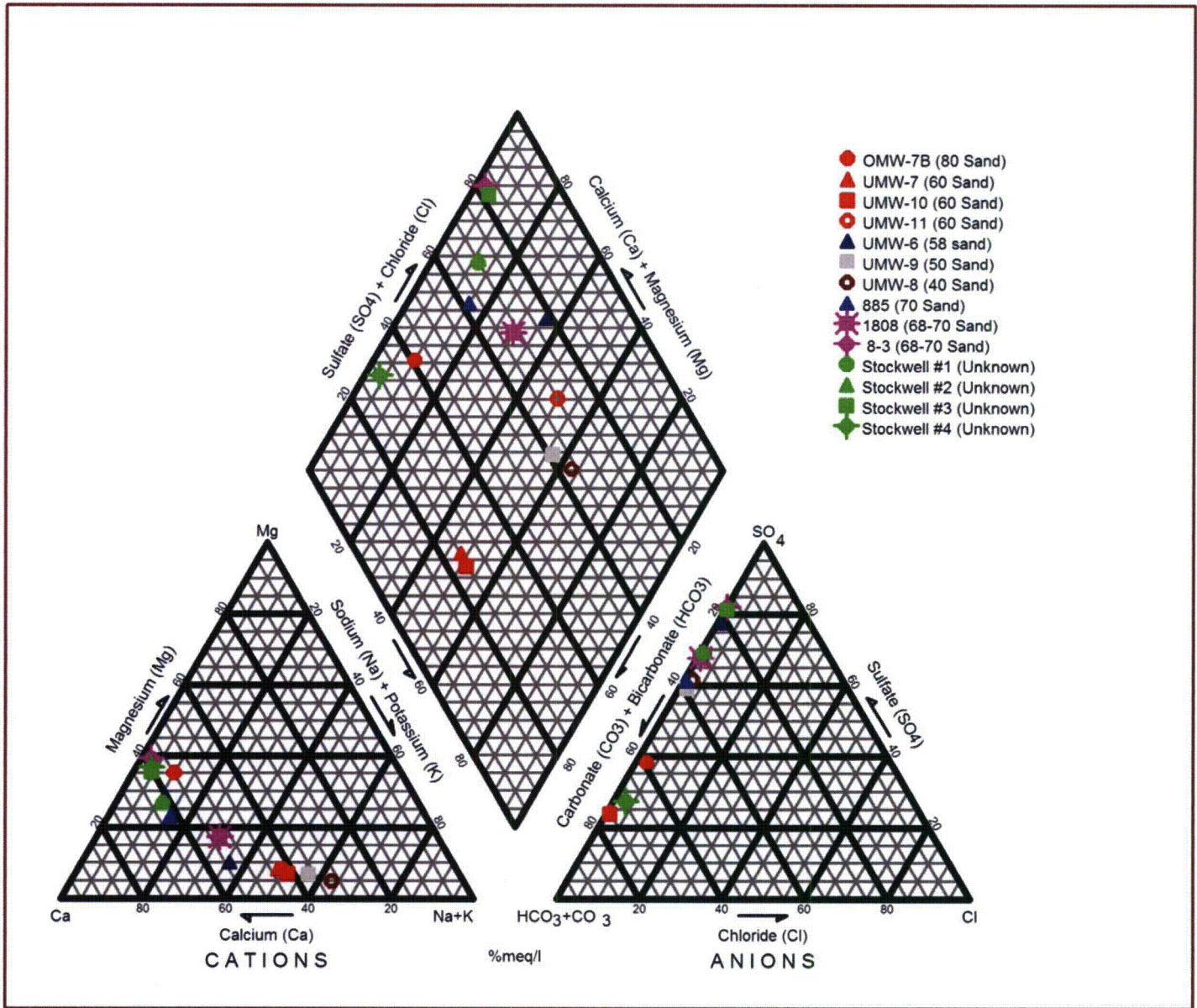
Data used to construct the Piper Diagram are from Table D6.3.14a

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Figure 3.4.3-13a Piper Diagram-Average Water Quality Moore Ranch Baseline Monitor Wells (68, 70 and 72 Sands)



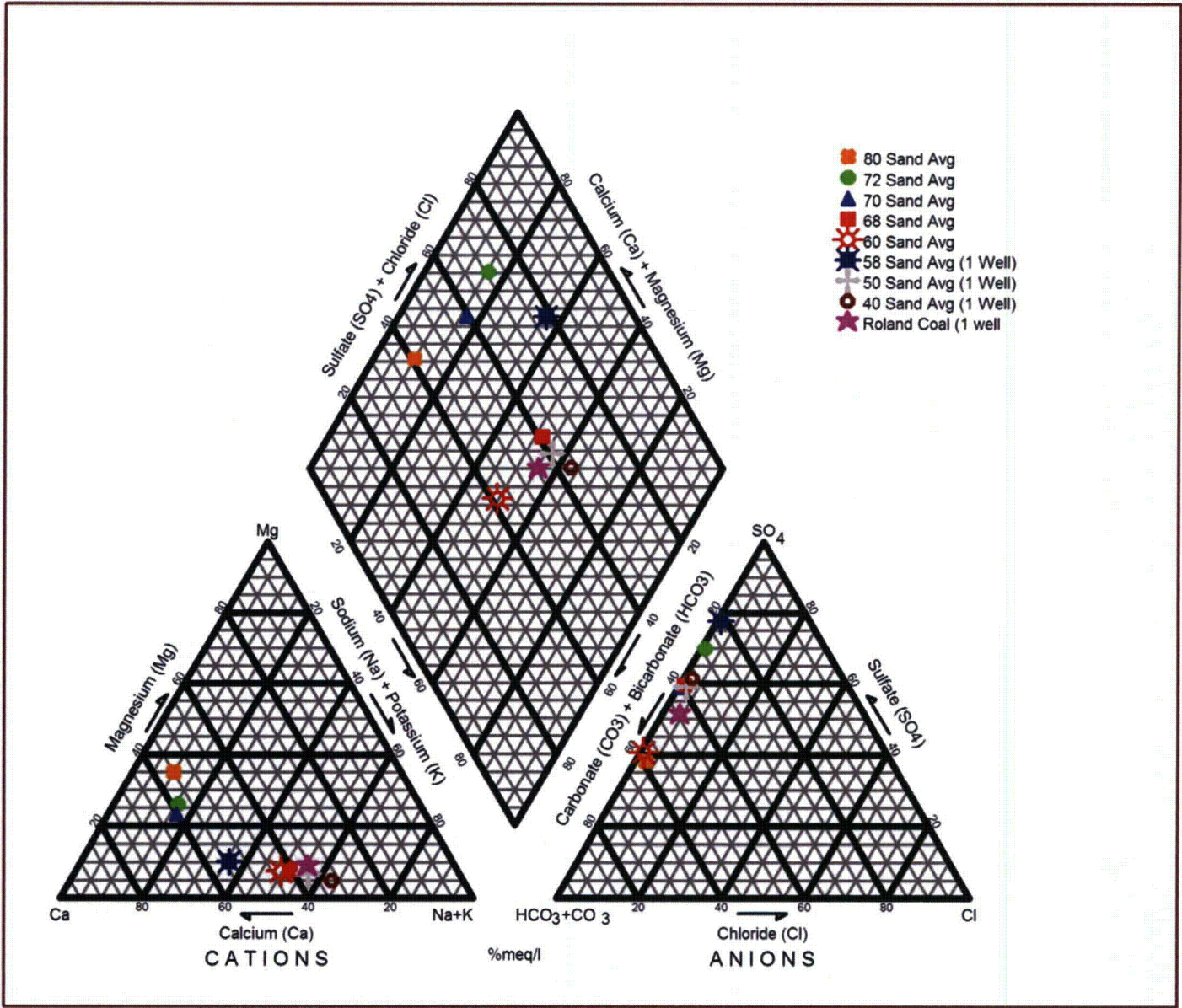
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**Figure 3.4.3-13b Piper Diagram-Average Water Quality
Moore Ranch Non-Baseline Monitor Wells
(80, 60, 58, 50 and 40 Sands and wells completed in multiple aquifers)**

By: EPL Checked: HD File ID: figD6.3-17b.srf Date: 08/08/08

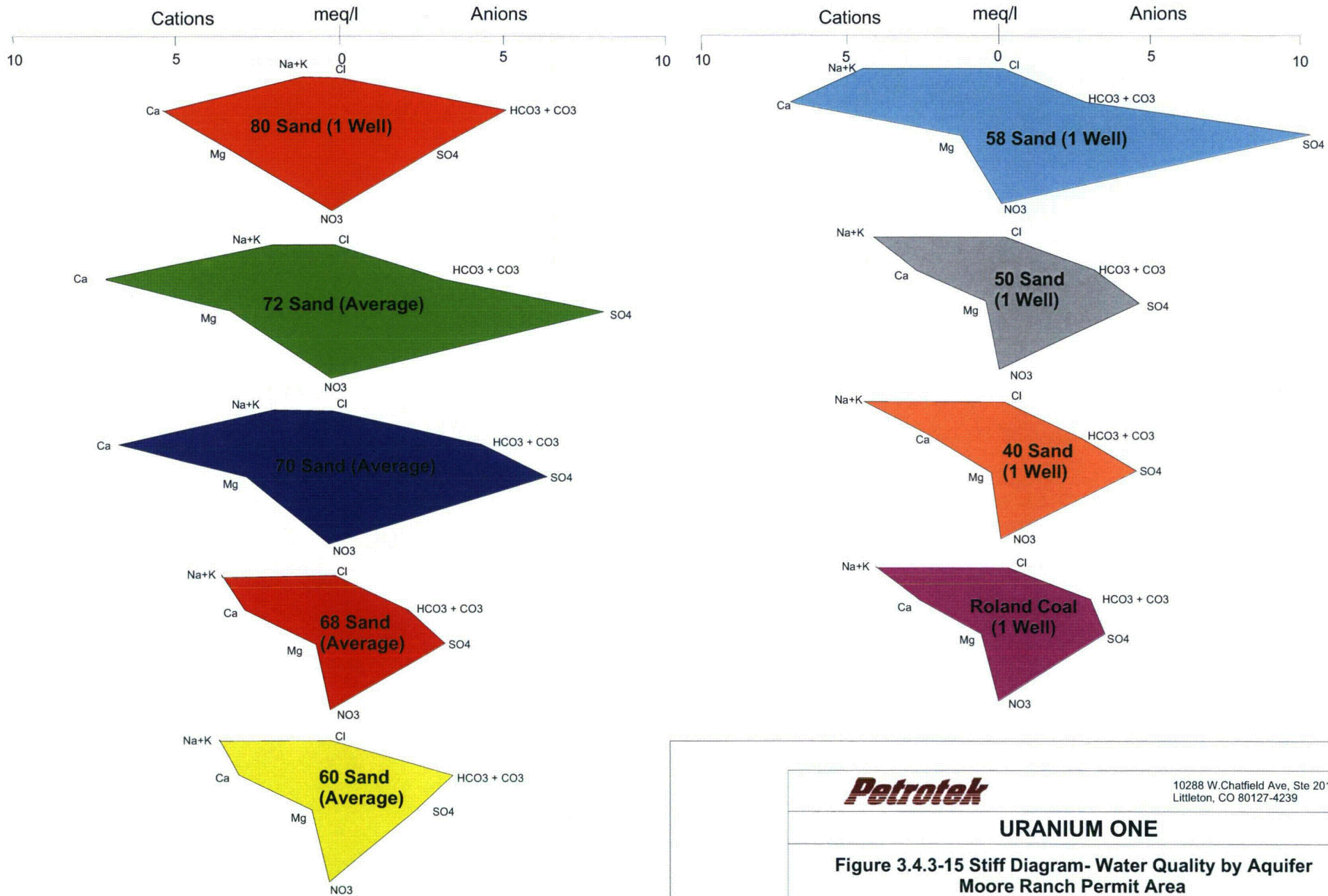


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**Figure 3.4.3-14 Piper Diagram-Average Water Quality by Aquifer
Moore Ranch Permit Area**

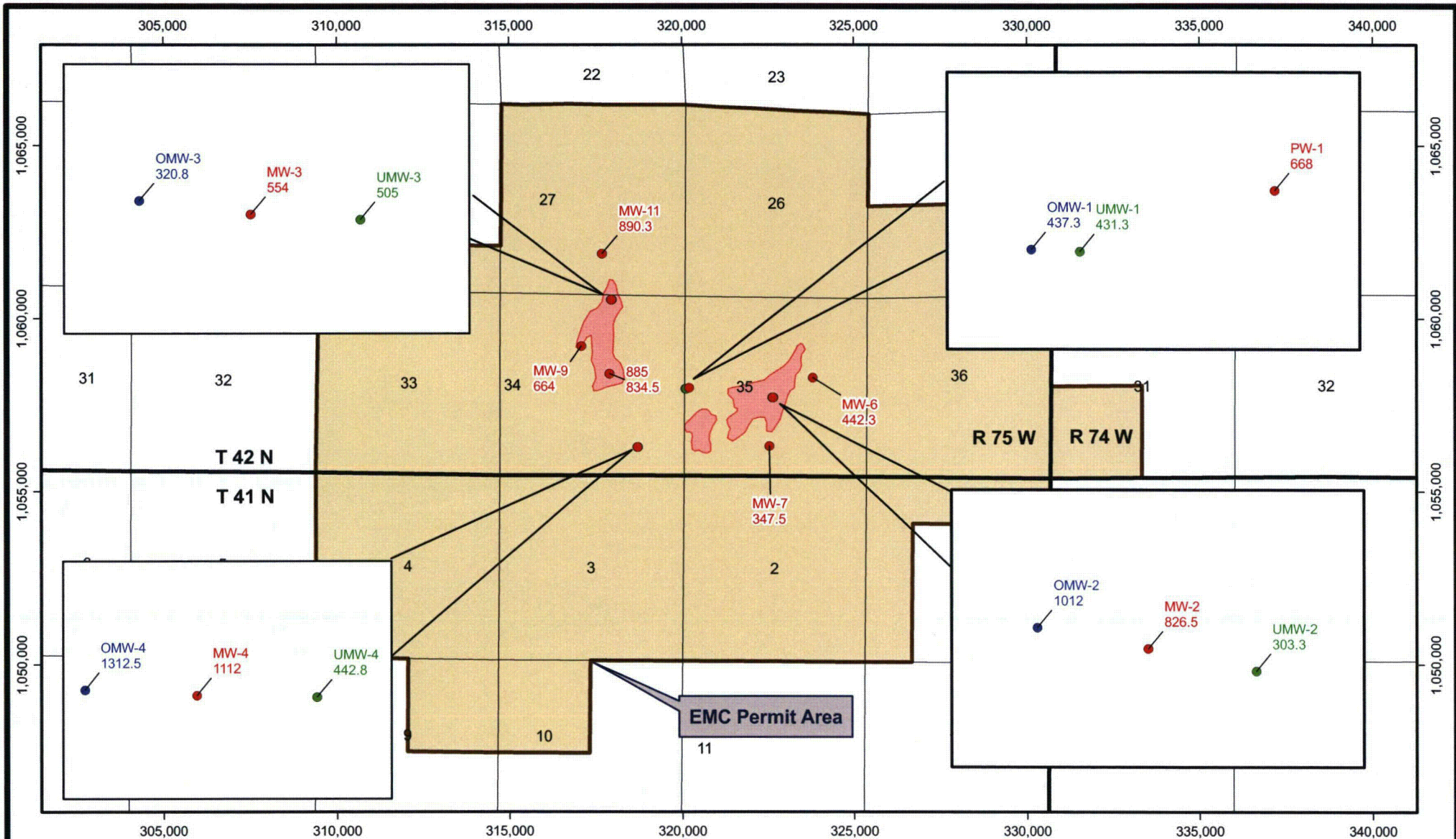


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**Figure 3.4.3-15 Stiff Diagram- Water Quality by Aquifer
Moore Ranch Permit Area**



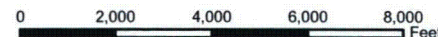
Legend

- Production Zone (70 Sand)
- Underlying Aquifer (68 Sand)
- Overlying Aquifer (72 Sand)
- Well Field

Projection: State Plane - Wyoming East - NAD27 (feet)



1:48,000

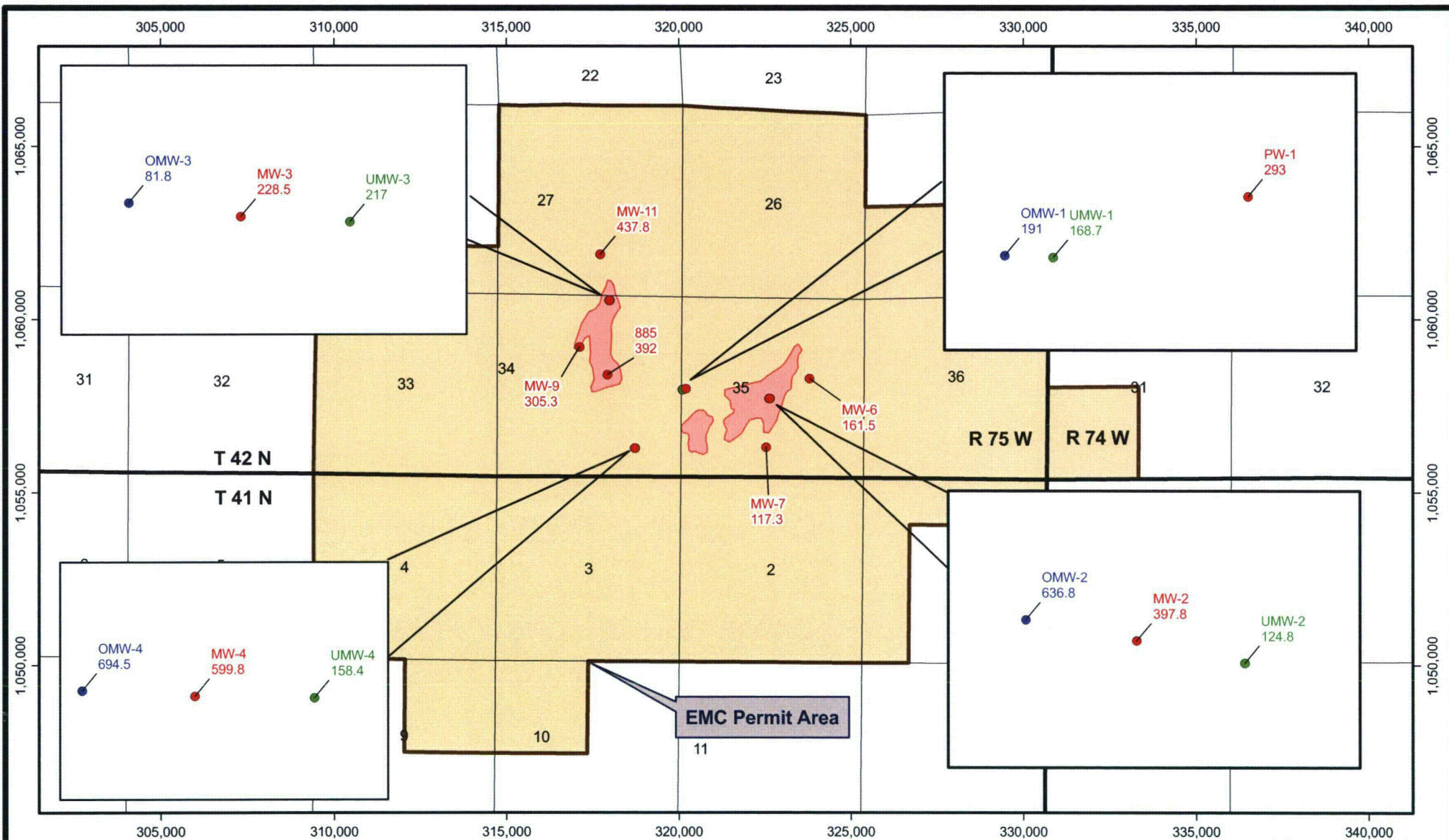


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Figure 3.4.3-16
2007 TDS Distribution (mg/L)
Baseline Monitor Wells

Project: 312-7	Date: March 2008
Figure D6.3-20.mxd	By: JLM Checked: KC

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Legend

- Production Zone (70 Sand)
- Underlying Aquifer (68 Sand)
- Overlying Aquifer (72 Sand)
- Well Field

Projection: State Plane - Wyoming East - NAD27 (feet)



1:48,000

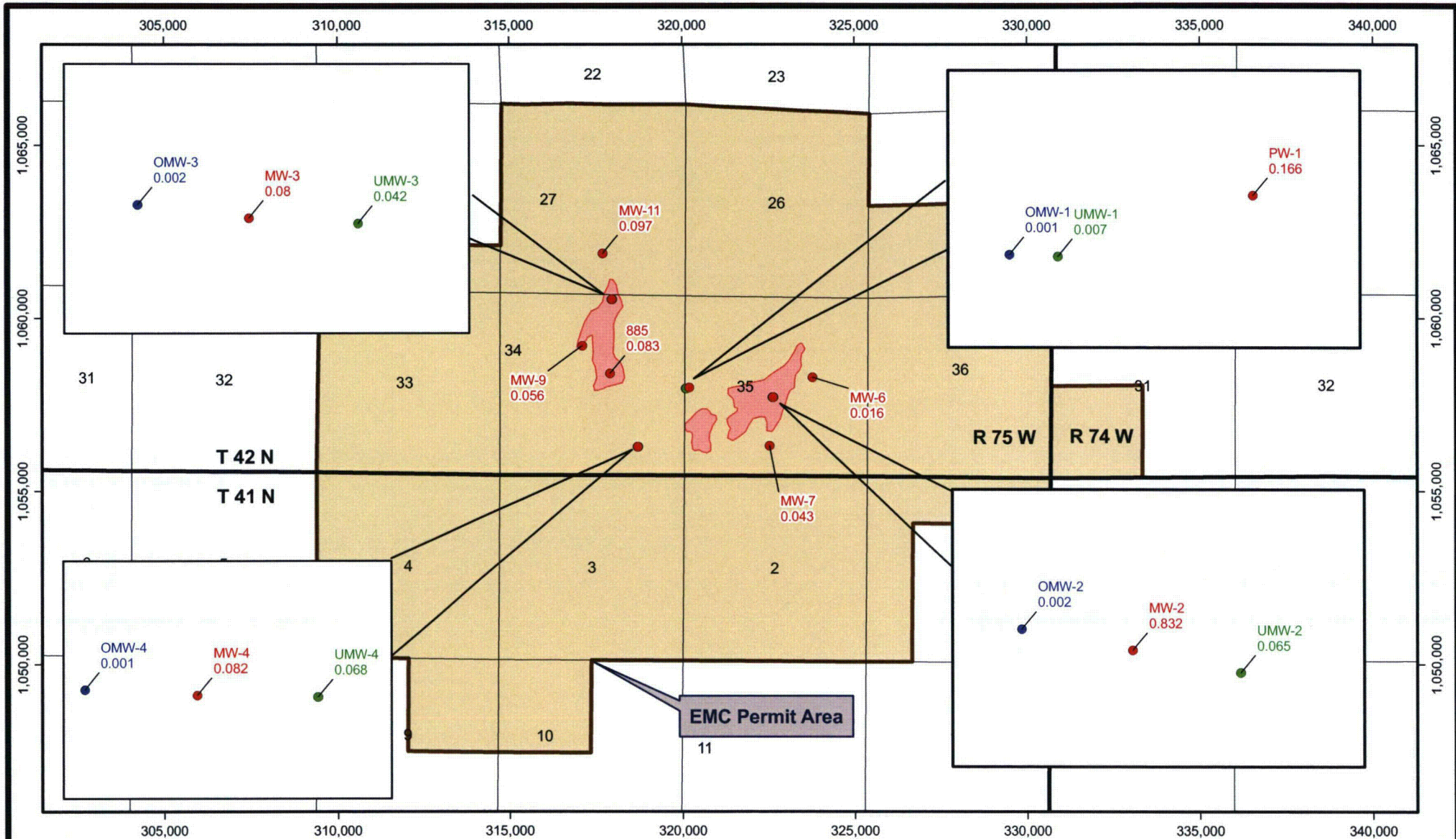


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Figure 3.4.3-17
 2007 Sulfate Distribution (mg/L)
 Baseline Monitor Wells

Project: 312-7	Date: March 2008
Figure D6.3-21.mxd	By: JLM Checked: KC

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Legend

- Production Zone (70 Sand)
- Underlying Aquifer (68 Sand)
- Overlying Aquifer (72 Sand)
- Well Field

Projection: State Plane - Wyoming East - NAD27 (feet)



1:48,000

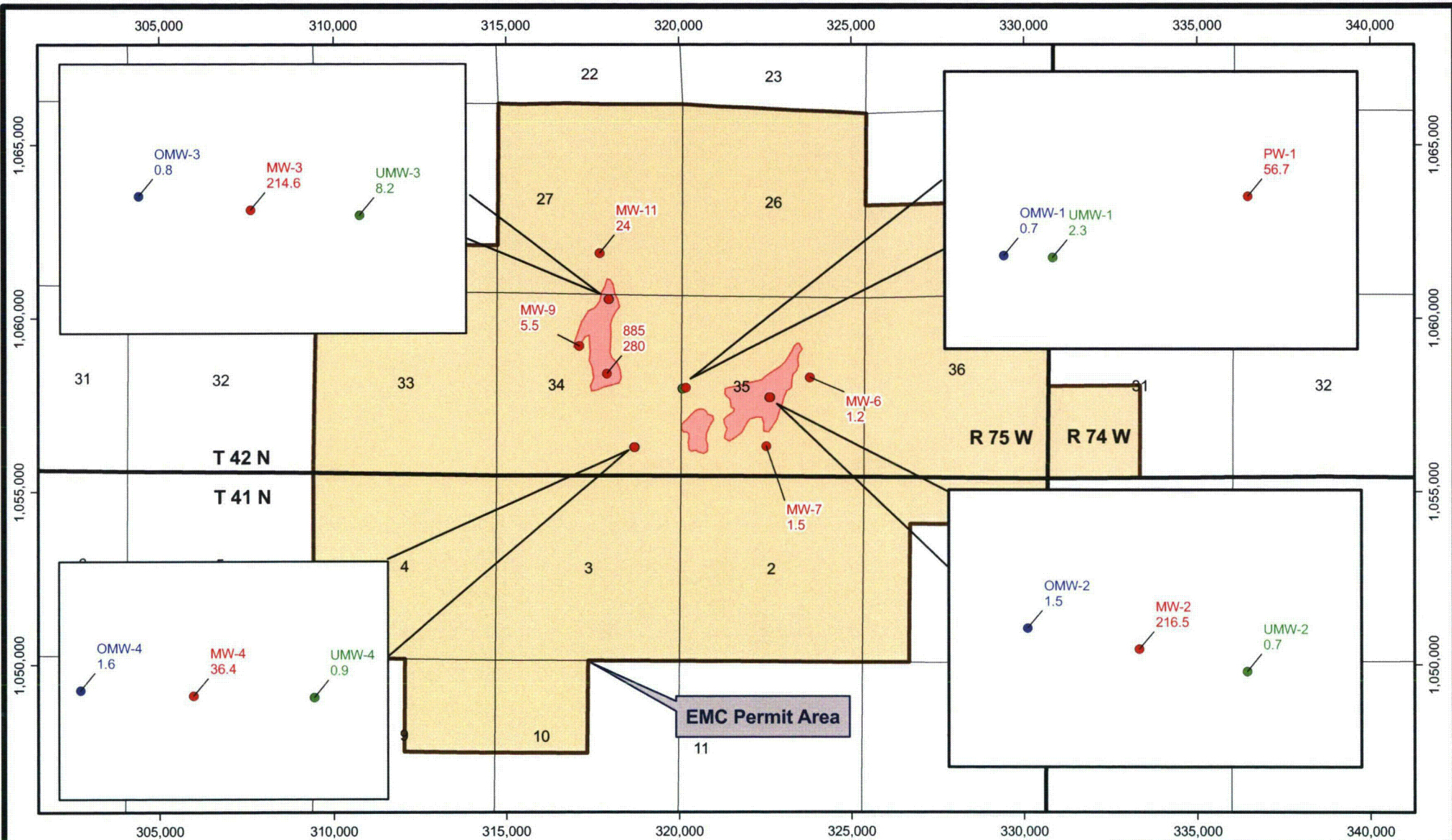


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Figure 3.4.3-18
 2007 Uranium Distribution (mg/L)
 Baseline Monitor Wells

Project: 312-7	Date: March 2008
Figure D6.3-22.mxd	By: JLM Checked: KC

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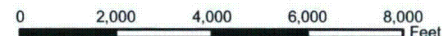
Legend

- Production Zone (70 Sand)
- Underlying Aquifer (68 Sand)
- Overlying Aquifer (72 Sand)
- Well Field

Projection: State Plane - Wyoming East - NAD27 (feet)



1:48,000



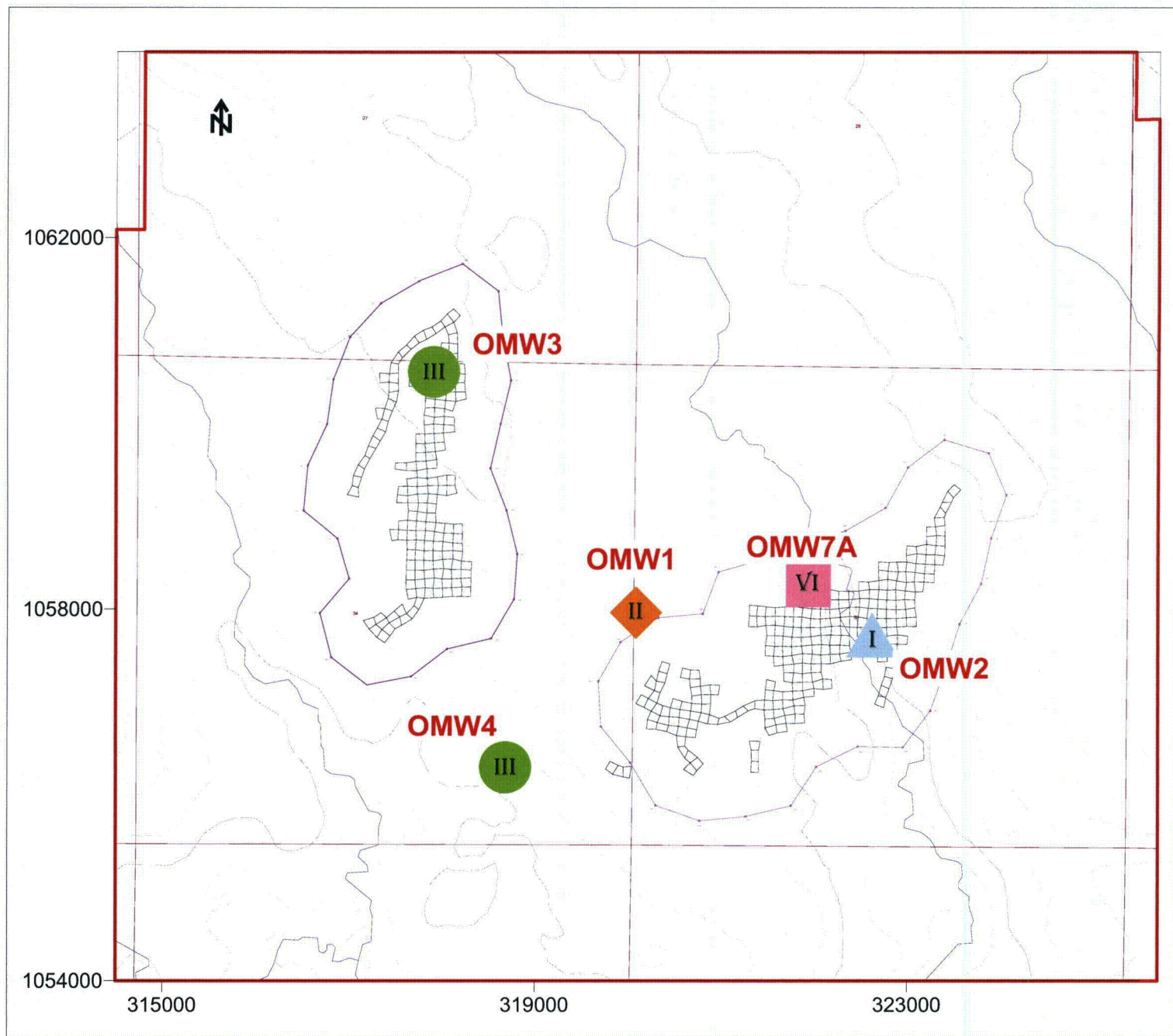
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Figure 3.4.3-19
2007 Radium Distribution (pCi/L)
Baseline Monitor Wells





Project: 312-7	Date: March 2008
Figure D6.3-23.mxd	By: JLM Checked: KC

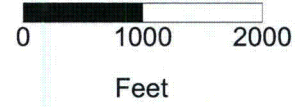
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WDEQ Groundwater Class of Use

-  Class I (Drinking)
-  Class II (Agricultural)
-  Class III (Livestock)
-  Class VI (Not suitable for Class I, II or III uses)

-  Permit Area Boundary
-  Topographic Surface
C.I. = 20 feet
-  Wellfield Patterns
-  Monitor Well Ring

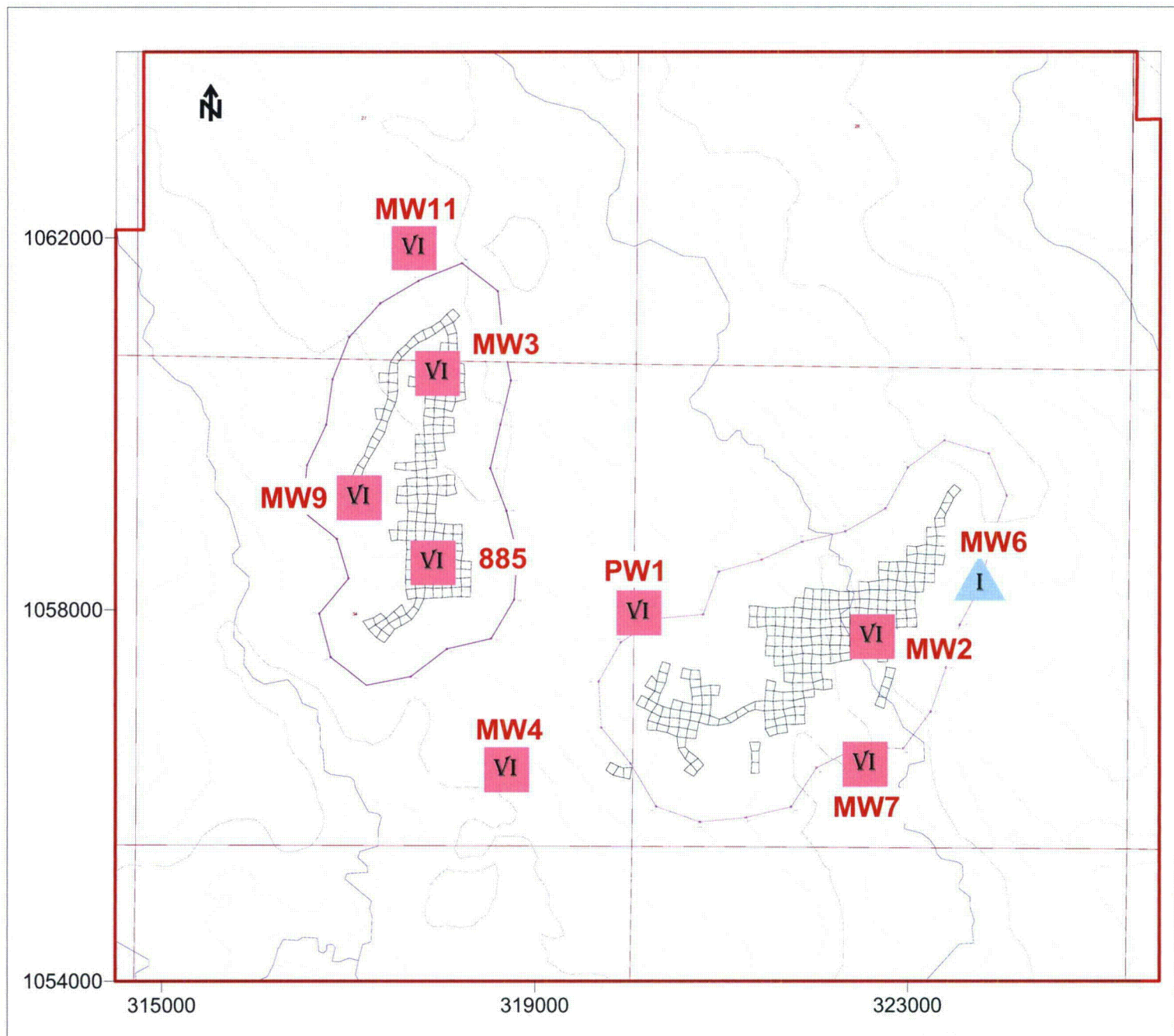


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

**Figure 3.4.3-20a Projected Class of Use
80 and 72 Sand Monitor Wells
Moore Ranch Permit Area, Wyoming**

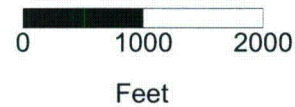
By: EPL Checked: HD File ID: figCR34332lsrf Date: 7/29/09



WDEQ Groundwater Class of Use

-  Class I (Drinking)
-  Class II (Agricultural)
-  Class III (Livestock)
-  Class VI (Not suitable for Class I, II or III uses)

-  Permit Area Boundary
-  Topographic Surface
C.I. = 20 feet
-  Wellfield Patterns
-  Monitor Well Ring

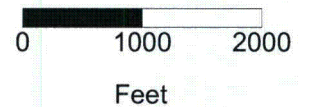
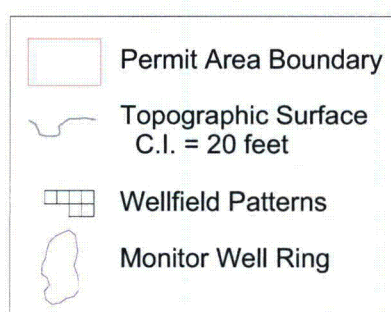
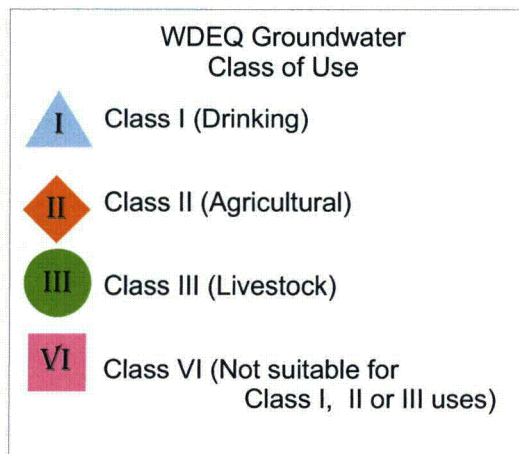
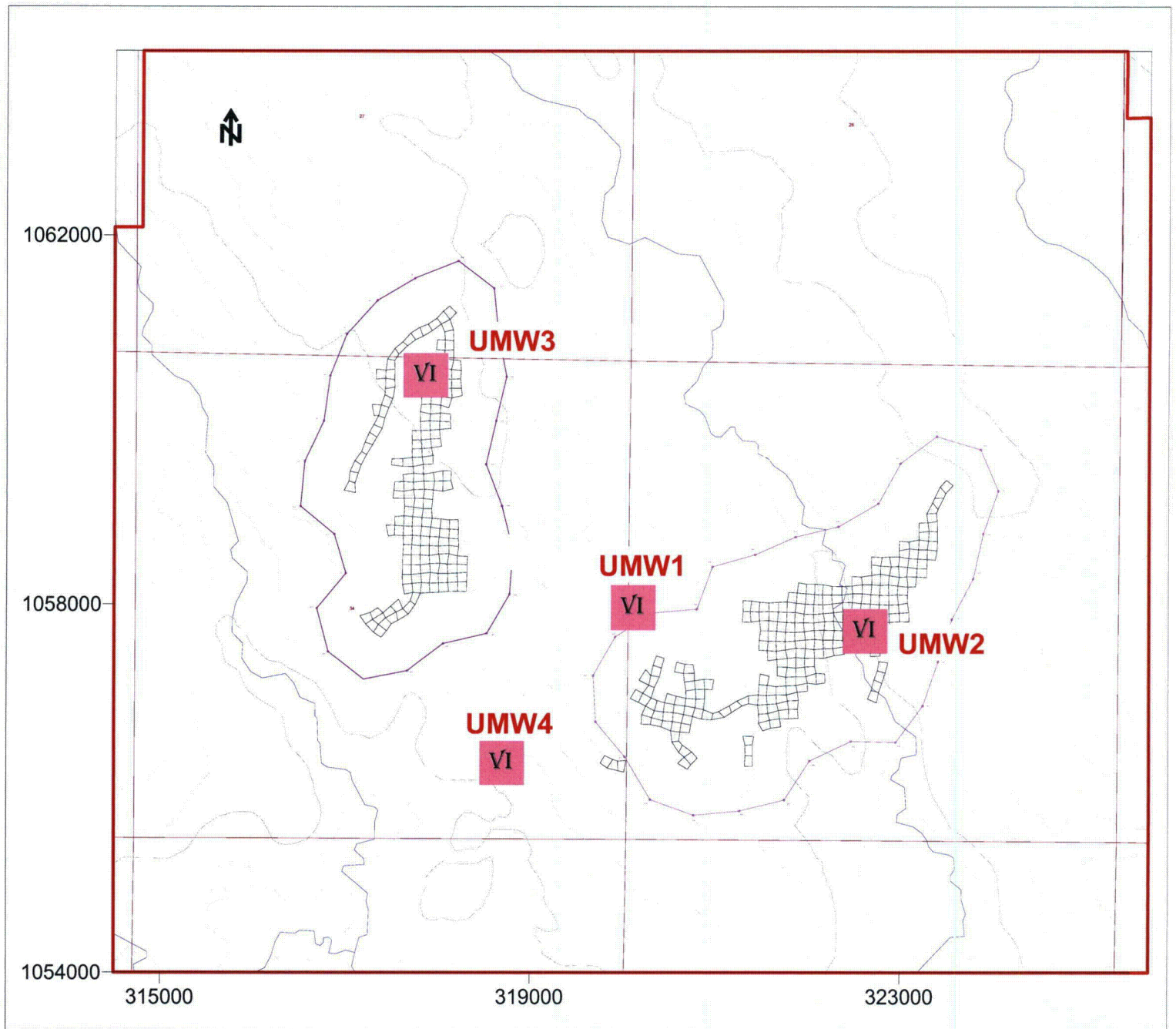


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**Figure 3.4.3-20b Projected Class of Use
70 Sand Monitor Wells
Moore Ranch Permit Area, Wyoming**

By: EPL Checked: HD File ID: figCR34332lsrf Date: 7/29/09

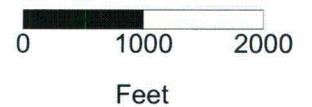
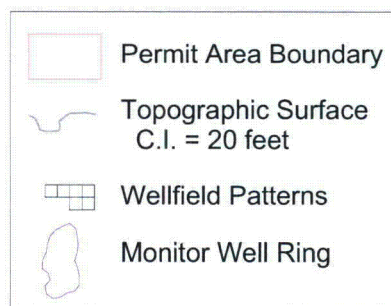
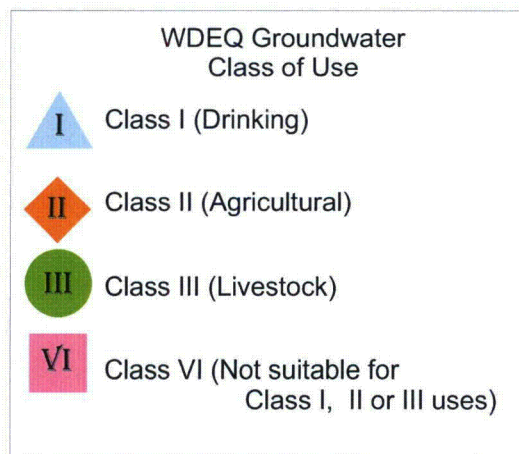
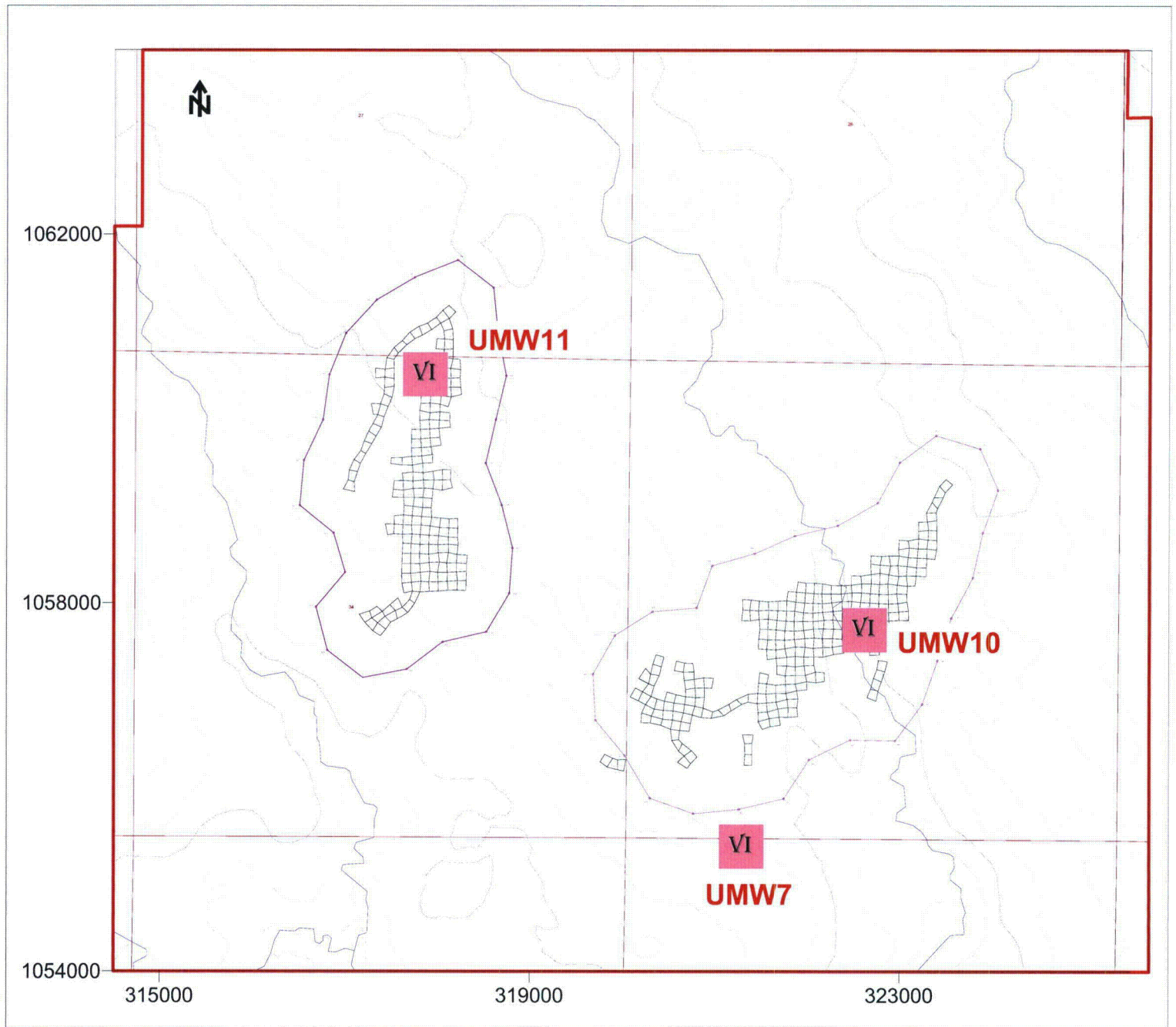


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**Figure 3.4.3-20c Projected Class of Use
68 Sand Monitor Wells
Moore Ranch Permit Area, Wyoming**

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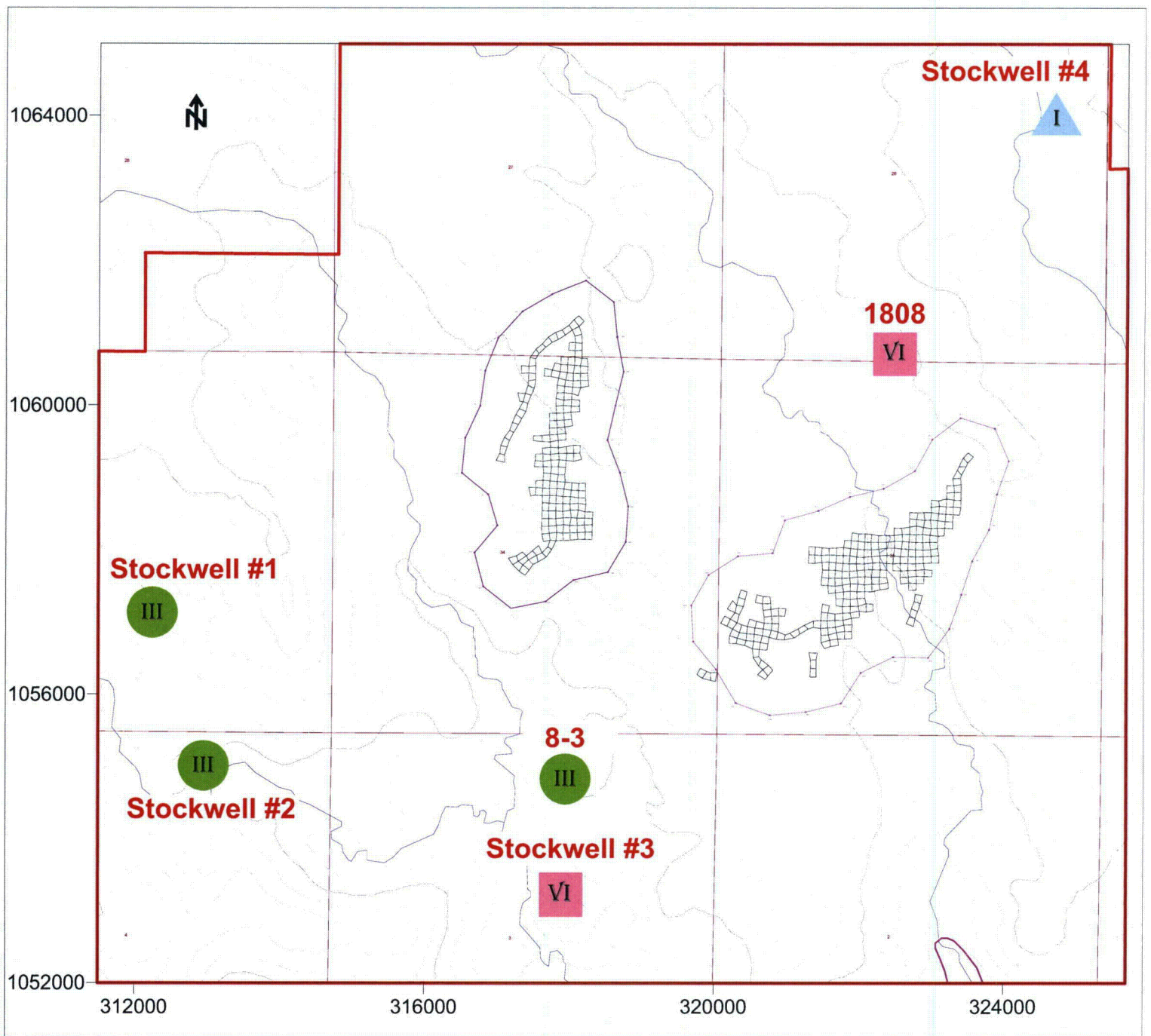


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
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

**Figure 3.4.3-20d Projected Class of Use
60 Sand Monitor Wells
Moore Ranch Permit Area, Wyoming**

By: EPL Checked: HD File ID: figCR34332lsrf Date: 7/29/09



WDEQ Groundwater Class of Use

-  Class I (Drinking)
-  Class II (Agricultural)
-  Class III (Livestock)
-  Class VI (Not suitable for Class I, II or III uses)

-  Permit Area Boundary
-  Topographic Surface
C.I. = 20 feet
-  Wellfield Patterns
-  Monitor Well Ring



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Figure 3.4.3.-20e Projected Class of Use Private (Stock) Wells and Monitor Wells Screened Across Multiple Sands Moore Ranch Permit Area, Wyoming

By: EPL Checked: HD File ID: figCR34332.srf Date: 7/29/09

Table 3.4.3-8
Well Completion Data - Conoco Monitoring Program

Well No.	Easting (ft)	Northing (ft)	Completion Zone	Collar Elevation (ft amsl)	Total Depth (ft bgs)	Casing Depth (ft bgs)	Perforated Interval (ft bgs)	Gravel Pack	Drill Bit (in)	Casing Diameter (in)	Type Casing	State Permit No.	Date Drilled
1	322,598	1,058,010	70 SS	5,331	240	240	200-240	-	6-1/4	5"	PVC	39649	9/17/1977
885	317,898	1,058,399	70 SS	5,350	240	240	180-240	X	9-7/8	5"	PVC	39648	7/22/1977
886	317,819	1,058,258	70 SS	5,349	240	240	180-240	X	8-3/4	3"	PVC	-	7/21/1977
887	318,000	1,058,278	68 SS	5,347	320	320	290-320	X	8-3/4	3"	PVC	-	7/20/1977
888	317,910	1,058,398	70 SS	5,352	250	250	180-240	X	8-3/4	3"	PVC	-	7/21/1977
889	315,219	1,057,936	70 SS	5,334	260	260	200-260	X	8-3/4	3"	PVC	39653	7/29/1977
890	317,428	1,060,376	70-68 SS	5,410	330	330	240-330	X	8-3/4	3"	PVC	39654	7/29/1977
893	317,890	1,058,318	70 SS	5,348	240	240	153-240	X	9-0	5"	Steel	-	11/21/1978
1805	322,638	1,058,047	70 SS	5,331	240	240	120-240	X	8-3/4	3"	PVC	-	7/22/1977
1806	322,578	1,057,946	70 SS	5,324	220	220	120-200	X	8-3/4	3"	PVC	-	7/21/1977
1807	322,729	1,057,976	68 SS	5,328	290	290	250-290	X	8-3/4	3"	PVC	-	7/22/1977
1808	322,427	1,060,516	70-68 SS	5,377	275	275	195-275	X	9-7/8	5"	PVC	39651	7/28/1977
1809	325,349	1,058,177	70 SS	5,356	230	230	135-225	X	8-3/4	3"	PVC	39652	7/28/1977
1810	320,128	1,057,966	70 SS	5,378	265	265	200-260	X	8-3/4	3"	PVC	39650	7/29/1977
1814	320,620	1,056,541	70 SS	5,345	207	207	143-207	-	9-7/8	5"	Steel	-	11/2/1978
1815	320,550	1,056,471	70 SS	5,348	208	208	142-208	X	5-1/8	3"	PVC	-	11/8/1978
1816	320,701	1,056,501	70 SS	5,343	207	207	138-207	X	5-1/8	3"	PVC	-	11/8/1978
1817	320,610	1,056,752	70SS	5,350	233	233	143-233	X	5-1/8	3"	PVC	-	11/8/1978
22-2	322,809	1,054,603	70 SS	5,287	165	165	85-165	X	8-3/4	3"	PVC	39655	8/1/1977
8-3	318,060	1,054,523	70-68 SS	5,308	175	175	105-175	X	9-7/8	5"	PVC	39656	8/1/1977
1821	321,534	1,060,275	Roland Coal	5,355	1200	1200	1120-1200	-	8-3/4	6"	Steel	-	10/22/1979
1822	321,574	1,060,356	50-40 SS	5,355	740	740	560-600, 640-680, 700- 720	-	8-3/4	6"	Steel	-	10/26/1979

ft - feet
in - inches
ft amsl - feet above mean sea level
ft bgs - feet below ground surface

Table 3.4.3-10 Well Completion Data - EMC Monitoring Program, Moore Ranch Permit Area

Well	Easting (ft)	Northing (ft)	Completion Zone	GS Elevation (ft amsl)	Stick-up (ft)	TOC Elevation (ft amsl)	Pilot TD (ft bgs)	Casing Depth (ft bgs)	Screen Top (ft bgs)	Screen Bottom (ft bgs)	Screen Interval (ft)
Baseline Wells											
MW-1	320102	1057971	70 Sand	5380.0	0.75	5379.28	280	180	182	250	68
MW-2	322636	1057719	70 Sand	5313.4	0.95	5312.40	200	128	130	195	65
MW-3	317949	1060552	70 Sand	5429.9	1.75	5428.19	320	267	269	317	48
MW-4	318699	1056282	70 Sand	5313.1	0.50	5312.59	220	120	126	164	38
MW-5	321453	1056691	70 Sand	5330.1	1.20	5328.85	220	126	128	198	70
MW-6	323791	1058288	70 Sand	5353.4	1.10	5352.34	280	175	177	257	80
MW-7	322537	1056311	70 Sand	5312.5	0.80	5311.73	200	88	90	177	87
MW-8	317925	1057973	70 Sand	5337.6	1.50	5336.06	220	150	152	205	53
MW-9	317099	1059198	70 Sand	5367.8	1.00	5366.78	280	190	192	252	60
MW-10	320118	1059390	70 Sand	5368.6	1.30	5367.28	280	180	182	250	68
MW-11	317693	1061868	70 Sand	5415.9	1.50	5414.43	340	280	281	331	50
PW-1	320194	1057997	70 Sand	5374.4	0.50	5373.88	280	174	176	246	70
OMW-1	320092	1057972	72 Sand	5380.6	0.80	5379.79	180	146	148	168	20
OMW-2	322626	1057719	72 Sand	5312.6	0.30	5312.32	100	59	60	78	18
OMW-3	317939	1060553	72 Sand	5428.5	0.80	5427.72	250	200	205	245	40
OMW-4	318689	1056283	72 Sand	5312.8	0.35	5312.41	120	74	76	91	15
UMW-1	320112	1057971	68 Sand	5380.4	1.00	5379.39	340	280	282	312	30
UMW-2	322646	1057720	68 Sand	5314.6	1.54	5313.07	280	228	230	250	20
UMW-3	317960	1060551	68 Sand	5427.4	0.55	5426.89	380	351	353	378	25
UMW-4	318709	1056282	68 Sand	5314.6	1.25	5313.37	300	220	222	252	30

Table 3.4.3-10 Well Completion Data - EMC Monitoring Program, Moore Ranch Permit Area

Well	Easting (ft)	Northing (ft)	Completion Zone	GS Elevation (ft amsl)	Stick-up (ft)	TOC Elevation (ft amsl)	Pilot TD (ft bgs)	Casing Depth (ft bgs)	Screen Top (ft bgs)	Screen Bottom (ft bgs)	Screen Interval (ft)
Non Baseline Wells*											
OMW-5 ^a	320655	1056562	80 Sand			5322.5 (Est)	65	43	45	60	15
OMW-6 ^a	317948	1060531	80 Sand			5427.5 (Est)	102	86	88	102	14
OMW7B	321924	1058292	80 Sand			5310.5 (Est)	58	31	32	42	10
UMW-7	321375	1055351	60 Sand	5339.1		5339.7	900	318	320	360	40
UMW-10	322635	1057728	60 Sand			5312.5 (Est)	420	333	335	365	30
UMW-11	317948	1060542	60 Sand			5427.5 (Est)	500	448	450	480	30
UMW-8	318700	1055350	40 Sand	5305.1		5305.1	980	588	590	630	40
UMW-9	317400	1055350	50 Sand	5289.5		5289.8	980	468	470	510	40
UMW-6	322726	1055350	58 Sand	5291.8		5292.0	920	358	360	400	40
885	317873	1058452	70 Sand	5350.0	-	-	240	240	180	240	60
1808	322485	1060546	68-70 Sand	5377.0	-	-	275	275	195	275	80
8-3	317952	1054646	68-70 Sand	5308.0	-	-	175	175	105	175	70

ft - feet

ft amsl - feet above mean sea level

Wells in italics are completed across multiple Sands

ft bgs - feet below ground surface

*Non Baseline Wells - Wells completed in anything other than the 72, 70 or 68 Sands or completed across multiple sands.

Data are provided for informational purposes only

a - Wells were dry at time of completion

Table 3.4.3-13. Analytical Results EMC Non-Baseline Monitoring Program, Moore Ranch Permit Area

Well ID	Completion Zone	Sample Date	Major Cations and Anions										General Chemistry			
			Na (mg/l)	K (mg/l)	Ca (mg/l)	Mg (mg/l)	Cl (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	SO4 (mg/l)	NO3+NO2 as N (mg/l)	F (mg/l)	Si (mg/l)	TDS @180 F (mg/l)	Conduct. (umhos/cm)	pH. (s.u.)
EMC Wells																
MR-OMW-5	80	6/2/2009														
MR-OMW-5	80	6/8/2009														
MR-OMW-5	80	8/19/2009														
MR-OMW-6	80	6/2/2009														
MR-OMW-6	80	6/9/2009														
MR-OMW-6	80	8/19/2009														
MR-OMW-7B	80	6/9/2009	16	14	94	39	8	276	<1	172	1.08	0.2	12.4	560	746	8.42
MR-OMW-7B	80	7/27/2009	12	7	102	36	7	329	<5	141	1.11	0.3	12	468	802	7.73
MR-UMW-7	60	5/12/2009	62	6	48	6	<1	280	<1	67	1.00	0.2	13.2	337	522	7.87
MR-UMW-7	60	5/21/2009	68	7	59	6	<1	241	<1	93	1.11	0.2	7.0	359	594	7.97
MR-UMW-7	60	7/22/2009	59	6	50	6	2	274	<5	51	1.09	0.2	15	374	550	7.81
MR-UMW-10	60	5/18/2009	64	11	44	5	1	236	12	67	1.35	0.2	12.9	354	528	8.77
MR-UMW-10	60	8/17/2009	63	9	53	5	2	267	<1	64	1.3	0.2	14.8	359	551	8.34
MR-UMW-11	60	5/20/2009	86	11	70	8	5	148	8	284	0.4	0.2	13.8	573	807	8.77
MR-UMW-11	60	8/20/2009	90	8	68	7	3	135	3	273	0.3	0.2	12.9	545	795	8.51
MR-UMW-6	58	5/12/2009	88	11	125	13	4	160	<1	465	<0.05	0.1	11.8	791	1090	8.02
MR-UMW-6	58	6/2/2009	96	9	139	18	4	154	<1	483	<0.05	0.1	6.6	789	1080	7.99
MR-UMW-6	58	7/22/2009	99	10	128	15	4	159	<5	443	<0.01	0.1	13.1	790	1120	7.99
MR-UMR-9	50	5/13/2009	86	7	53	6	5	177	2	215	0.07	0.2	11.2	456	699	8.05
MR-UMR-9	50	6/10/2009	97	8	54	5	5	159	<1	226	<0.05	0.2	5.0	457	732	8.15
MR-UMR-9	50	7/27/2009	88	7	52	6	5	181	<5	188	0.07	0.2	11.7	528	729	7.94
MR-UMW-8	40	5/14/2009	88	8	45	4	5	164	<1	207	<0.05	0.3	11.5	454	681	8.36
MR-UMW-8	40	6/4/2009	98	10	37	3	4	105	6	210	<0.05	0.3	5.0	455	667	8.83
MR-UMW-8	40	7/23/2009	93	7	48	5	5	162	<5	190	<0.01	0.2	12.6	487	712	8.19
Conoco Wells																
MR-885	70	5/2/2007	40	9	155	34	3	300	<1	370	0.3	0.2	12.2	842	1203	7.17
MR-885	70	6/15/2007	37	8	154	35	3	300	<1	407	<0.1	0.2	11.6	802	1150	7.55
MR-885	70	10/2/2007	38	10	158	35	3	312	<1	375	<0.1	0.1	12.7	844	1230	7.40
MR-885	70	11/15/2007	39	9	168	38	3	312	<1	416	<0.1	0.1	11.8	850	1210	7.64
MR-1808	68-70	5/3/2007	60	8	104	20	3	179	<1	316	0.1	0.3	6.6	602	976	8.10
MR-1808	68-70	6/19/2007	64	7	97	19	3	178	<1	322	<0.1	0.3	9.4	638	916	7.38
MR-1808	68-70	10/1/2007	62	7	104	21	3	184	<1	325	<0.1	0.2	9	584	915	7.82
MR-1808	68-70	11/12/2007	59	7	94	19	3	185	<1	286	<0.1	0.2	8.6	570	903	7.66
MR-8-3	68-70	5/2/2007	15	12	399	149	<1	370	<1	1410	0.2	0.1	12.8	2270	2740	6.93
MR-8-3	68-70	6/13/2007	9	12	408	176	2	359	<1	1430	<0.1	<0.1	12.8	2380	2660	7.13
MR-8-3	68-70	9/27/2007	9	13	427	185	1	377	<1	1440	<0.1	<0.1	13.6	2310	2610	7.21
MR-8-3	68-70	11/15/2007	9	13	374	146	2	430	<1	1360	<0.1	<0.1	12.2	2240	2540	7.51

Table 3.4.3-13. Analytical Results EMC Non-Baseline Monitoring Program, Moore Ranch Permit Area

			Major Cations and Anions										General Chemistry			
Well ID	Completion Zone	Sample Date	Na	K	Ca	Mg	Cl	HCO3	CO3	SO4	NO3+NO2 as N	F	Si	TDS @180 F	Conduct.	pH.
			(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(umhos/cm)
Private Wells																
Stockwell #1	70?	4/27/2007	53	8	149	33	2	273	<1	404	0.4	0.2	11	806	1179	7.50
Stockwell #1	70?	6/13/2007	59	9	149	34	2	273	<1	410	0.2	0.2	11.3	822	1180	7.51
Stockwell #1	70?	10/1/2007	22	10	281	79	5	358	<1	798	<0.1	<0.1	14.1	1390	1870	7.32
Stockwell #1	70?	11/20/2007	20	10	244	70	9	355	<1	668	<0.1	0.1	12.6	1400	1770	7.26
Stockwell #2	68?	4/27/2007	22	10	286	78	8	346	<1	776	0.2	0.2	13.8	1420	1748	7.10
Stockwell #2	68?	6/13/2007	24	10	268	80	9	344	<1	769	<0.1	0.1	14.1	1450	1800	7.34
Stockwell #2	68?	10/1/2007	54	9	153	34	2	282	<1	421	0.2	0.1	11.2	792	1190	7.57
Stockwell #2	68?	11/20/2007	52	9	135	28	2	276	<1	350	0.3	0.2	9.9	798	1150	7.37
Stockwell #3	70?	4/27/2007	29	11	456	166	6	388	<1	1500	0.3	0.2	9.2	2470	2980	7.25
Stockwell #3	70?	6/13/2007	30	11	455	168	6	403	<1	1530	<0.1	0.2	9	2550	2860	7.32
Stockwell #3	70?	10/1/2007	30	11	419	144	5	394	<1	1360	<0.1	0.1	10.2	2180	2620	7.32
Stockwell #3	70?	11/20/2007	25	11	377	129	7	397	<1	1220	<0.1	0.2	9	2350	2620	6.96
Stockwell #4	72?	5/9/2007	3	3	64	24	6	232	<1	75	2.5	0.4	9.1	340	524	7.50
Stockwell #4	72?	6/19/2007	4	3	69	25	5	234	<1	79	2.2	0.6	10.1	358	544	7.42
Stockwell #4	72?	10/1/2007	3	3	72	27	6	239	<1	79	2.2	0.4	9.7	302	503	7.75
Stockwell #4	72?	11/20/2007	3	3	64	23	7	245	<1	63	2.9	0.4	9.1	321	560	7.58

Wells in bold italics are either completed across multiple sands or are of unknown completion interval

< - indicates sample was below reporting limit
 tot. - total dis.-dissolved sus.- suspended

Table 3.4.3-13. Analytical Results EMC Non-Baseline Monitoring Program, Moore Ranch Permit Area

Well ID	Completion Zone	Sample Date	Trace Metals																
			Al (mg/l)	NH4 as N (mg/l)	As (mg/l)	Ba (mg/l)	B (mg/l)	Cd (mg/l)	Cr (mg/l)	Cu (mg/l)	Fe (mg/l)	Pb (mg/l)	Mn (mg/l)	Hg (mg/l)	Mo (mg/l)	Ni (mg/l)	Se (mg/l)	V (mg/l)	Zn (mg/l)
EMC Wells																			
MR-OMW-5	80	6/2/2009																	
MR-OMW-5	80	6/8/2009																	
MR-OMW-5	80	8/19/2009																	
MR-OMW-6	80	6/2/2009																	
MR-OMW-6	80	6/9/2009																	
MR-OMW-6	80	8/19/2009																	
MR-OMW-7B	80	6/9/2009	<0.1	<0.05	0.001	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	<0.01	<0.001	<0.1	<0.05	0.018	<0.1	<0.01
MR-OMW-7B	80	7/27/2009	<0.1	<0.05	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	<0.01	<0.001	<0.1	<0.05	0.018	<0.1	<0.01
MR-UMW-7	60	5/12/2009	<0.1	<0.05	0.002	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	0.03	<0.001	<0.1	<0.05	0.076	<0.1	<0.01
MR-UMW-7	60	5/21/2009	<0.1	<0.05	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	0.02	<0.001	<0.1	<0.05	0.075	<0.1	<0.01
MR-UMW-7	60	7/22/2009	<0.1	<0.05	0.001	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	<0.01	<0.001	<0.1	<0.05	0.087	<0.1	<0.01
MR-UMW-10	60	5/18/2009	<0.1	<0.05	0.001	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	<0.01	<0.001	<0.1	<0.05	0.102	<0.1	<0.01
MR-UMW-10	60	8/17/2009	<0.1	<0.05	0.001	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	<0.01	<0.001	<0.1	<0.05	0.100	<0.1	<0.01
MR-UMW-11	60	5/20/2009	<0.1	<0.05	0.001	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	<0.01	<0.001	<0.1	<0.05	0.074	<0.1	<0.03
MR-UMW-11	60	8/20/2009	<0.1	<0.05	0.002	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	0.01	<0.001	<0.1	<0.05	0.072	<0.1	<0.01
MR-UMW-6	58	5/12/2009	<0.1	<0.05	0.002	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	0.02	<0.001	<0.1	<0.05	<0.001	<0.1	<0.01
MR-UMW-6	58	6/2/2009	<0.1	<0.05	0.004	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	0.03	<0.001	<0.1	<0.05	<0.001	<0.1	0.01
MR-UMW-6	58	7/22/2009	<0.1	<0.05	0.001	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	0.02	<0.001	<0.1	<0.05	<0.001	<0.1	<0.01
MR-UMR-9	50	5/13/2009	<0.1	<0.05	0.003	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	0.04	<0.001	<0.1	<0.05	0.010	<0.1	<0.01
MR-UMR-9	50	6/10/2009	<0.1	<0.05	0.003	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	0.03	<0.001	<0.1	<0.05	0.004	<0.1	<0.01
MR-UMR-9	50	7/27/2009	<0.1	<0.05	0.003	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	0.05	<0.001	<0.1	<0.05	0.010	<0.1	<0.01
MR-UMW-8	40	5/14/2009	<0.1	<0.05	0.005	<0.1	0.1	<0.005	<0.05	<0.01	<0.03	<0.001	<0.01	<0.001	<0.1	<0.05	0.001	<0.1	<0.01
MR-UMW-8	40	6/4/2009	<0.1	<0.05	0.002	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	<0.01	<0.001	<0.1	<0.05	0.002	<0.1	<0.01
MR-UMW-8	40	7/23/2009	<0.1	<0.05	0.004	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	0.01	<0.001	<0.1	<0.05	0.001	<0.1	<0.01
Conoco Wells																			
MR-885	70	5/2/2007	<0.1	<0.05	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	0.15	<0.001	0.05	<0.001	<0.1	<0.05	<0.001	<0.1	<0.01
MR-885	70	6/15/2007	<0.1	<0.05	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	0.06	<0.001	<0.1	<0.05	0.002	<0.1	<0.01
MR-885	70	10/2/2007	<0.1	<0.05	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	0.11	<0.001	0.05	<0.001	<0.1	<0.05	<0.001	<0.1	<0.01
MR-885	70	11/15/2007	<0.1	<0.05	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	0.14	<0.001	0.05	<0.001	<0.1	<0.05	<0.001	<0.1	<0.01
MR-1808	68-70	5/3/2007	<0.1	0.06	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	0.03	<0.001	<0.1	<0.05	0.003	<0.1	<0.01
MR-1808	68-70	6/19/2007	<0.1	<0.05	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	0.06	<0.001	<0.1	<0.05	0.001	<0.1	<0.01
MR-1808	68-70	10/1/2007	<0.1	<0.05	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	0.06	<0.001	<0.1	<0.05	<0.001	<0.1	<0.01
MR-1808	68-70	11/12/2007	<0.1	<0.05	0.002	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	0.05	<0.001	<0.1	<0.05	<0.001	<0.1	<0.01
MR-8-3	68-70	5/2/2007	<0.1	1.62	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	3.34	<0.001	0.53	<0.001	<0.1	<0.05	0.001	<0.1	<0.01
MR-8-3	68-70	6/13/2007	<0.1	0.24	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	1.08	<0.001	0.52	<0.001	<0.1	<0.05	0.001	<0.1	<0.01
MR-8-3	68-70	9/27/2007	<0.1	2.72	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	2.66	<0.001	0.52	<0.001	<0.1	<0.05	0.001	<0.1	<0.01
MR-8-3	68-70	11/15/2007	<0.1	13.2	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	2.35	<0.001	0.49	<0.001	<0.1	<0.05	<0.001	<0.1	<0.01

Table 3.4.3-13. Analytical Results EMC Non-Baseline Monitoring Program, Moore Ranch Permit Area

			Trace Metals																
Well ID	Completion Zone	Sample Date	Al (mg/l)	NH4 as N (mg/l)	As (mg/l)	Ba (mg/l)	B (mg/l)	Cd (mg/l)	Cr (mg/l)	Cu (mg/l)	Fe (mg/l)	Pb (mg/l)	Mn (mg/l)	Hg (mg/l)	Mo (mg/l)	Ni (mg/l)	Se (mg/l)	V (mg/l)	Zn (mg/l)
Private Wells																			
<i>Stockwell #1</i>	<i>70?</i>	<i>4/27/2007</i>	<0.1	<0.05	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	0.06	<0.001	<0.1	<0.05	0.01	<0.1	<0.01
<i>Stockwell #1</i>	<i>70?</i>	<i>6/13/2007</i>	<0.1	<0.05	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	0.05	<0.001	<0.1	<0.05	0.012	<0.1	<0.01
<i>Stockwell #1</i>	<i>70?</i>	<i>10/1/2007</i>	<0.1	0.06	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	2.05	<0.001	0.25	<0.001	<0.1	<0.05	0.002	<0.1	<0.01
<i>Stockwell #1</i>	<i>70?</i>	<i>11/20/2007</i>	<0.1	0.07	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	0.89	<0.001	0.25	<0.001	<0.1	<0.05	<0.001	<0.1	<0.01
<i>Stockwell #2</i>	<i>68?</i>	<i>4/27/2007</i>	<0.1	0.05	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	0.03	<0.001	0.24	<0.001	<0.1	<0.05	<0.001	<0.1	<0.01
<i>Stockwell #2</i>	<i>68?</i>	<i>6/13/2007</i>	<0.1	0.05	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	0.58	<0.001	0.25	<0.001	<0.1	<0.05	<0.001	<0.1	<0.01
<i>Stockwell #2</i>	<i>68?</i>	<i>10/1/2007</i>	<0.1	<0.05	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	0.07	<0.001	<0.1	<0.05	0.012	<0.1	<0.01
<i>Stockwell #2</i>	<i>68?</i>	<i>11/20/2007</i>	<0.1	<0.05	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	0.06	<0.001	<0.1	<0.05	0.009	<0.1	<0.01
<i>Stockwell #3</i>	<i>70?</i>	<i>4/27/2007</i>	<0.1	0.1	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	4.86	<0.001	0.46	<0.001	<0.1	<0.05	<0.001	<0.1	<0.01
<i>Stockwell #3</i>	<i>70?</i>	<i>6/13/2007</i>	<0.1	0.14	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	0.24	<0.001	0.46	<0.001	<0.1	<0.05	0.001	<0.1	<0.01
<i>Stockwell #3</i>	<i>70?</i>	<i>10/1/2007</i>	<0.1	0.1	<0.001	<0.1	<0.1	<0.005	<0.05	0.01	3.48	<0.001	0.37	<0.001	<0.1	<0.05	0.003	<0.1	<0.01
<i>Stockwell #3</i>	<i>70?</i>	<i>11/20/2007</i>	<0.1	0.15	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	3.11	<0.001	0.42	<0.001	<0.1	<0.05	<0.001	<0.1	<0.01
<i>Stockwell #4</i>	<i>72?</i>	<i>5/9/2007</i>	<0.1	<0.05	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	0.13	0.004	0.04	<0.001	<0.1	<0.05	0.002	<0.1	<0.01
<i>Stockwell #4</i>	<i>72?</i>	<i>6/19/2007</i>	<0.1	<0.05	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	0.06	<0.001	<0.1	<0.05	0.002	<0.1	0.02
<i>Stockwell #4</i>	<i>72?</i>	<i>10/1/2007</i>	<0.1	<0.05	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	0.03	<0.001	<0.1	<0.05	0.002	<0.1	<0.01
<i>Stockwell #4</i>	<i>72?</i>	<i>11/20/2007</i>	<0.1	<0.05	<0.001	<0.1	<0.1	<0.005	<0.05	<0.01	<0.03	<0.001	0.02	<0.001	<0.1	<0.05	0.001	<0.1	<0.01

Wells in bold italics are either completed across multiple sands or are of unknown completion interval

< - indicates sample was below reporting limit
 tot. - total dis.-dissolved sus.- suspended

Table 3.4.3-13. Analytical Results EMC Non-Baseline Monitoring Program, Moore Ranch Permit Area

Well ID	Completion Zone	Sample Date	Radionuclides																
			Fe (tot.) (mg/l)	Mn (tot.) (mg/l)	G Alpha (pCi/l)	G Beta (pCi/l)	Pb-210 (dis.) (pCi/l)	Po-210 (dis.) (pCi/l)	Ra-226 (dis.) (pCi/l)	Ra-228 (dis.) (pCi/l)	Th-230 (dis.) (pCi/l)	U (dis.) (mg/l)	Pb-210 (sus.) (pCi/l)	Po-210 (sus.) (pCi/l)	Ra-226 (sus.) (pCi/l)	Th-230 (sus.) (pCi/l)	U (sus.) (mg/l)		
EMC Wells																			
MR-OMW-5	80	6/2/2009						Insufficient water to sample											
MR-OMW-5	80	6/8/2009						Insufficient water to sample											
MR-OMW-5	80	8/19/2009						Insufficient water to sample											
MR-OMW-6	80	6/2/2009						Insufficient water to sample											
MR-OMW-6	80	6/9/2009						Insufficient water to sample											
MR-OMW-6	80	8/19/2009						Insufficient water to sample											
MR-OMW-7B	80	6/9/2009	<0.07	<0.01	20.5	15.3	<0.2	0.07	0.39	2.2	<0.02	0.0102	NM	NM	0.6	NM	<0.0003		
MR-OMW-7B	80	7/27/2009	<0.03	<0.01	15.6	5.7	<2.2	<1	0.69	<1	<0.2	0.0103	<4	<1	<0.2	<0.2	<0.0003		
MR-UMW-7	60	5/12/2009	<0.07	0.03	64.5	14.8	<2.0	0.1	0.35	1.4	<0.04	0.0524	<0.8	0.5	<0.04	<0.07	<0.0003		
MR-UMW-7	60	5/21/2009	0.08	0.02	50.6	13.9	<0.5	2.8	0.4	0.4	0.0	0.0484	<0.4	1.6	<0.3	0.1	<0.0003		
MR-UMW-7	60	7/22/2009	<0.03	0.04	79.1	16.8	<2.3	<1.0	0.56	1.3	<0.1	0.0581	<3.6	<0.3	<0.2	<0.2	<0.0003		
MR-UMW-10	60	5/18/2009	93.9	2.3	5.1	2.1	2.3	0.2	0.30	1	0.2	0.0645	1.3	0.2	0.01	<0.09	<0.0003		
MR-UMW-10	60	8/17/2009	0.11	0.01	81.7	20.5	<2.4	<1	0.72	1.3	<0.2	0.0775	3.6	<1	<0.2	1.7	0.12		
MR-UMW-11	60	5/20/2009	<0.03	0.02	70.6	21.5	<0.4	0.3	0.99	0.9	0.05	0.0360	<0.09	0.1	-0.1	<0.03	<0.0003		
MR-UMW-11	60	8/20/2009	<0.03	0.01	83	18.5	<2.4	<1	0.87	2.5	<0.2	0.0355	<3.1	<1	0.2	4.5	0.0396		
MR-UMW-6	58	5/12/2009	0.10	0.02	31.3	11.8	<2.0	0.03	0.13	1.3	0.0005	0.0180	<2.0	0.02	<0.2	<0.1	<0.0003		
MR-UMW-6	58	6/2/2009	0.06	0.03	31.2	15.5	1.6	<0.2	0.4	1.0	0.1	0.0198	3.6	0.0	0.1	0.1	<0.0003		
MR-UMW-6	58	7/22/2009	0.07	0.02	38.2	15.3	<1	<1	0.19	1.6	<0.2	0.0175	<3.5	<1	0.2	<0.2	<0.0003		
MR-UMR-9	50	5/13/2009	1.80	0.09	48.7	12.1	<1.0	0.3	0.21	1.0	<0.01	0.0269	<3.0	0.1	<0.02	0.1	0.0003		
MR-UMR-9	50	6/10/2009	1.43	0.07	37.3	11.1	0.8	0.6	0.2	1.3	0.0	0.0306	3.6	0.2	<0.2	0.1	NM		
MR-UMR-9	50	7/27/2009	1.26	0.07	51.1	10.4	<2.2	<1	0.72	<1	<0.2	0.0252	<4.2	<1	<0.2	<0.2	0.0003		
MR-UMW-8	40	5/14/2009	0.09	<0.01	32.4	11.8	0.3	0.04	0.17	0.6	0.08	0.0209	<2.0	0.1	-0.05	<0.1	<0.0003		
MR-UMW-8	40	6/4/2009	0.06	<0.01	29.0	13.1	0.9	NM	1.0	0.6	0.0	0.0196	3.6	0.2	<0.2	0.0	<0.0003		
MR-UMW-8	40	7/23/2009	0.07	0.01	34.6	14.2	<1	<1	0.31	1	<0.2	0.0203	<3.6	<1	<0.2	<0.2	<0.0003		
Conoco Wells																			
MR-885	70	5/2/2007	0.23	0.06	293	147	41	31	309	1.8	<0.2	0.0763	<1.0	<1.0	<0.2	<0.2	<0.0003		
MR-885	70	6/15/2007	0.26	0.05	NM	NM	12	12	276	4.3	<0.2	0.11	270	290	9.3	1	<0.003		
MR-885	70	10/2/2007	0.2	0.05	NM	NM	12	3.5	272	<1.0	<0.2	0.0758	140	110	3.1	<0.2	<0.0003		
MR-885	70	11/15/2007	0.21	0.05	472	144	20	9.9	263	<1.0	0.4	0.0715	<1.0	98	2.5	1.3	0.0003		
MR-1808	68-70	5/3/2007	<0.03	0.03	30.9	12.8	<1.0	<1.0	9.1	<1.0	0.4	0.0012	<1.0	<1.0	<0.2	<0.2	<0.0003		
MR-1808	68-70	6/19/2007	0.28	0.08	NM	NM	<1.0	<1.0	4.9	<1.0	<0.2	0.0005	<1.0	<1.0	<0.2	<0.2	<0.0003		
MR-1808	68-70	10/1/2007	0.2	0.07	NM	NM	<1.0	5.3	1.1	<1.0	<0.2	<0.0003	<1.0	<1.0	1.5	<0.2	0.0008		
MR-1808	68-70	11/12/2007	0.19	0.06	5.9	9.5	4.9	1.6	1.5	4.3	<0.2	<0.0003	<1.0	<1.0	0.2	<0.2	<0.0003		
MR-8-3	68-70	5/2/2007	3.86	0.6	3.6	12.9	<1.0	<1.0	0.8	3	<0.2	0.002	<1.0	<1.0	<0.2	<0.2	<0.0003		
MR-8-3	68-70	6/13/2007	3.57	0.53	NM	NM	<1.0	<1.0	1.2	<1.0	<0.2	0.0016	<1.0	<1.0	<0.2	<0.2	<0.0003		
MR-8-3	68-70	9/27/2007	3.23	0.52	NM	NM	<1.0	<1.0	0.7	<1.0	<0.2	0.0016	<1.0	6.4	1.5	<0.2	0.001		
MR-8-3	68-70	11/15/2007	3.2	0.5	12.2	7.9	8.6	2.3	1.4	4.6	<0.2	0.0017	13	18	0.6	2.8	0.001		

Table 3.4.3-13. Analytical Results EMC Non-Baseline Monitoring Program, Moore Ranch Permit Area

Well ID	Completion Zone	Sample Date	Radionuclides														
			Fe (tot.) (mg/l)	Mn (tot.) (mg/l)	G Alpha (pCi/l)	G Beta (pCi/l)	Pb-210 (dis.) (pCi/l)	Po-210 (dis.) (pCi/l)	Ra-226 (dis.) (pCi/l)	Ra-228 (dis.) (pCi/l)	Th-230 (dis.) (pCi/l)	U (dis.) (mg/l)	Pb-210 (sus.) (pCi/l)	Po-210 (sus.) (pCi/l)	Ra-226 (sus.) (pCi/l)	Th-230 (sus.) (pCi/l)	U (sus.) (mg/l)
Private Wells																	
<i>Stockwell #1</i>	<i>70?</i>	<i>4/27/2007</i>	<i><0.03</i>	<i>0.06</i>	<i>68.2</i>	<i>24</i>	<i><1.0</i>	<i><1.0</i>	<i>0.8</i>	<i>1.6</i>	<i><0.2</i>	<i>0.0508</i>	<i><1.0</i>	<i><1.0</i>	<i><0.2</i>	<i><0.2</i>	<i><0.0003</i>
<i>Stockwell #1</i>	<i>70?</i>	<i>6/13/2007</i>	<i>0.14</i>	<i>0.06</i>	<i>NM</i>	<i>NM</i>	<i><1.0</i>	<i><1.0</i>	<i>0.6</i>	<i><1.0</i>	<i><0.2</i>	<i>0.0446</i>	<i><1.0</i>	<i><1.0</i>	<i><0.2</i>	<i><0.2</i>	<i><0.0003</i>
<i>Stockwell #1</i>	<i>70?</i>	<i>10/1/2007</i>	<i>3.1</i>	<i>0.26</i>	<i>NM</i>	<i>NM</i>	<i><1.0</i>	<i><1.0</i>	<i>0.7</i>	<i><1.0</i>	<i><0.2</i>	<i>0.001</i>	<i><1.0</i>	<i>4.7</i>	<i>2</i>	<i>2.1</i>	<i>0.0005</i>
<i>Stockwell #1</i>	<i>70?</i>	<i>11/20/2007</i>	<i>2.89</i>	<i>0.27</i>	<i>5.5</i>	<i>18</i>	<i>12</i>	<i><1.0</i>	<i>1</i>	<i>1.8</i>	<i><0.2</i>	<i>0.0013</i>	<i>1.6</i>	<i><1.0</i>	<i><0.2</i>	<i>0.3</i>	<i><0.0003</i>
<i>Stockwell #2</i>	<i>68?</i>	<i>4/27/2007</i>	<i>3.27</i>	<i>0.25</i>	<i>2</i>	<i>7.9</i>	<i><1.0</i>	<i><1.0</i>	<i>0.9</i>	<i>3.9</i>	<i><0.2</i>	<i>0.0008</i>	<i><1.0</i>	<i><1.0</i>	<i><0.2</i>	<i><0.2</i>	<i><0.0003</i>
<i>Stockwell #2</i>	<i>68?</i>	<i>6/13/2007</i>	<i>3.7</i>	<i>0.25</i>	<i>NM</i>	<i>NM</i>	<i><1.0</i>	<i><1.0</i>	<i>0.8</i>	<i><1.0</i>	<i><0.2</i>	<i>0.0004</i>	<i><1.0</i>	<i><1.0</i>	<i><0.2</i>	<i><0.2</i>	<i><0.0003</i>
<i>Stockwell #2</i>	<i>68?</i>	<i>10/1/2007</i>	<i>0.03</i>	<i>0.07</i>	<i>NM</i>	<i>NM</i>	<i><1.0</i>	<i><1.0</i>	<i>0.5</i>	<i><1.0</i>	<i><0.2</i>	<i>0.049</i>	<i>2.3</i>	<i><1.0</i>	<i><0.2</i>	<i><0.2</i>	<i><0.0003</i>
<i>Stockwell #2</i>	<i>68?</i>	<i>11/20/2007</i>	<i><0.03</i>	<i>0.07</i>	<i>52.3</i>	<i>24</i>	<i>10</i>	<i><1.0</i>	<i>3.6</i>	<i><1.0</i>	<i><0.2</i>	<i>0.0451</i>	<i>1.8</i>	<i><1.0</i>	<i><0.2</i>	<i><0.2</i>	<i><0.0003</i>
<i>Stockwell #3</i>	<i>70?</i>	<i>4/27/2007</i>	<i>9.1</i>	<i>0.46</i>	<i>24.3</i>	<i>16.5</i>	<i><1.0</i>	<i><1.0</i>	<i>3.3</i>	<i>3.5</i>	<i><0.2</i>	<i>0.0077</i>	<i><1.0</i>	<i><1.0</i>	<i><0.2</i>	<i><0.2</i>	<i><0.0003</i>
<i>Stockwell #3</i>	<i>70?</i>	<i>6/13/2007</i>	<i>10</i>	<i>0.49</i>	<i>NM</i>	<i>NM</i>	<i><1.0</i>	<i><1.0</i>	<i>2.8</i>	<i>1.8</i>	<i><0.2</i>	<i>0.0066</i>	<i><1.0</i>	<i><1.0</i>	<i><0.2</i>	<i><0.2</i>	<i><0.0003</i>
<i>Stockwell #3</i>	<i>70?</i>	<i>10/1/2007</i>	<i>5.33</i>	<i>0.37</i>	<i>NM</i>	<i>NM</i>	<i><1.0</i>	<i><1.0</i>	<i>3.2</i>	<i><1.0</i>	<i><0.2</i>	<i>0.0316</i>	<i><1.0</i>	<i><1.0</i>	<i>3.5</i>	<i><0.2</i>	<i>0.0014</i>
<i>Stockwell #3</i>	<i>70?</i>	<i>11/20/2007</i>	<i>7.04</i>	<i>0.45</i>	<i>27.3</i>	<i>8.4</i>	<i>14</i>	<i>1.9</i>	<i>2.7</i>	<i>2.4</i>	<i><0.2</i>	<i>0.0175</i>	<i><1.0</i>	<i><1.0</i>	<i><0.2</i>	<i>0.6</i>	<i>0.0003</i>
<i>Stockwell #4</i>	<i>72?</i>	<i>5/9/2007</i>	<i>2.64</i>	<i>0.19</i>	<i>5.9</i>	<i>5.5</i>	<i><1.0</i>	<i><1.0</i>	<i><0.2</i>	<i><1.0</i>	<i>0.9</i>	<i>0.0071</i>	<i><1.0</i>	<i><1.0</i>	<i><0.2</i>	<i><0.2</i>	<i><0.0003</i>
<i>Stockwell #4</i>	<i>72?</i>	<i>6/19/2007</i>	<i>0.37</i>	<i>0.07</i>	<i>NM</i>	<i>NM</i>	<i><1.0</i>	<i><1.0</i>	<i><0.2</i>	<i><1.0</i>	<i><0.2</i>	<i>0.0069</i>	<i><1.0</i>	<i><1.0</i>	<i><0.2</i>	<i><0.2</i>	<i><0.0003</i>
<i>Stockwell #4</i>	<i>72?</i>	<i>10/1/2007</i>	<i>0.17</i>	<i>0.03</i>	<i>NM</i>	<i>NM</i>	<i>1.5</i>	<i><1.0</i>	<i><0.2</i>	<i><1.0</i>	<i><0.2</i>	<i>0.0068</i>	<i><1.0</i>	<i><1.0</i>	<i>1.5</i>	<i><0.2</i>	<i>0.0012</i>
<i>Stockwell #4</i>	<i>72?</i>	<i>11/20/2007</i>	<i>0.15</i>	<i>0.02</i>	<i>7</i>	<i>3.7</i>	<i>4</i>	<i>2.4</i>	<i><0.2</i>	<i><1.0</i>	<i><0.2</i>	<i>0.0074</i>	<i><1.0</i>	<i><1.0</i>	<i><0.2</i>	<i>0.3</i>	<i><0.0003</i>

Wells in bold italics are either completed across multiple sands or are of unknown completion interval

< - indicates sample was below reporting limit
 tot. - total dis.-dissolved sus.- suspended

Table 3.4.3-16 Comparison of Moore Ranch 2007 Baseline Monitoring Results to Water Quality Standards

	MAJOR CATIONS/ANIONS											
	Na	K	Ca	Mg	Cl	HC03	CO3	SO4	NH4	NO2+ NO3 (N)	F	SiO2
WYO Class I Standard	NA	NA	NA	NA	250	NA	NA	250	0.5	NA ³	4	NA
EPA MCL	NA	NA	NA	NA	NA ¹	NA	NA	NA ²	NA	NA ³	4	NA
68, 70 and 72 Sand Monitor Wells (See wells listed below for each Sand)												
Number of Samples	62	62	62	62	62	62	62	62	62	62	62	62
Average	41.6	14.3	112.0	26.0	2.8	218.4	5.6	300.8	0.3	0.3	0.2	11.7
Max	89	39	250	89	8	333	67	743	3.11	3.7	0.4	17.3
Min	13	6	9	1	1	1	1	65	0.05	0.1	0.1	3.4
No. Samples> WDEQ Class I	NA	NA	NA	NA	0	NA	NA	26	6	NA	0	NA
No. Samples> MCL	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	0	NA
68 Sand Monitor Wells (UMW-1, UMW-2, UMW-3 and UMW-4)												
Number of Samples	14	14	14	14	14	14	14	14	14	14	14	14
Average	65.2	18.9	52.1	5.9	2.6	116.4	11.4	167.2	0.6	0.3	0.2	10.1
Max	88	39	97	23	7	269	67	226	3.11	0.8	0.3	17.3
Min	34	10	9	1	1	1	1	96	0.05	0.1	0.1	5.3
No. Samples> WDEQ Class I	NA	NA	NA	NA	0	NA	NA	0	3	NA	0	NA
No. Samples> MCL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	NA
70 Sand Monitor Wells (MW-2, MW-3, MW-4, MW-6, MW-7, MW-9, MW-11 and PW-1)												
Number of Samples	32	32	32	32	32	32	32	32	32	32	32	32
Average	34.4	10.8	129.2	30.4	2.3	274.4	1.9	317.5	0.2	0.2	0.2	12.9
Max	89	24	236	64	5	317	8	665	2.0	1.5	0.4	15.3
Min	13	6	38	14	1	159	1	76	0.1	0.1	0.1	7.6
No. Samples> WDEQ Class I	NA	NA	NA	NA	0	NA	NA	18	1	NA	0	NA
No. Samples> MCL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	NA
72 Sand Monitor Wells, (OMW-1, OMW-2, OMW-3, OMW-4)												
Number of Samples	16	16	16	16	16	16	16	16	16	16	16	16
Average	32.3	16.6	137.4	37.3	4.2	208.2	1.7	401.0	0.230	0.4	0.2	10.9
Max	73	26	250	89	8	333	7	743	0.6	3.7	0.2	16.1
Min	14	10	53	9	1	45	1	65	0.1	0.1	0.1	3.4
No. Samples> WDEQ Class I	NA	NA	NA	NA	0	NA	NA	8	2	NA	0	NA
No. Samples> MCL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	NA

Table 3.4.3-16 Comparison of Moore Ranch 2007 Baseline Monitoring Results to Water Quality Standards

	TRACE METALS															
	Al	As	Ba	B	Cd	Cr	Cu	Fe	Pb	Mn	Hg	Mo	Ni	Se	V	Zn
WYO Class I Standard	NA	0.050	2	0.75	0.005	0.1	1	0.3	0.015	0.05	0.002	NA	NA	0.05	NA	5
EPA MCL	NA ⁴	0.010	2	NA	0.005	0.1	NA ⁵	NA ⁶	0.015	NA ⁷	0.002	NA	NA	0.05	NA	NA ⁸
68, 70 and 72 Sand Monitor Wells (See wells listed below for each Sand)																
Number of Samples	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62
Average	0.1	0.012	0.1	0.1	0.005	0.05	0.01	0.12	0.00	0.04	0.001	0.1	0.05	0.046	0.1	0.01
Max	0.1	0.006	0.1	0.1	0.005	0.05	0.03	0.85	0.032	0.22	0.001	0.1	0.05	0.527	0.1	0.02
Min	0.1	0.001	0.1	0.1	0.005	0.05	0.01	0.03	0.001	0.001	0.001	0.1	0.05	0.001	0.1	0.01
No. Samples> WDEQ Class I	NA	0	0	0	0	0	0	11	3	7	0	NA	NA	10	NA	0
No. Samples> MCL	NA	0	0	NA	0	0	NA	NA	3	NA	0	NA	NA	10	NA	NA
68 Sand Monitor Wells (UMW-1, UMW-2, UMW-3 and UMW-4)																
Number of Samples	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
Average	0.1	0.002	0.1	0.1	0.005	0.05	0.011	0.048	0.007	0.014	0.001	0.1	0.05	0.117	0.1	0.01
Max	0.1	0.006	0.1	0.1	0.005	0.05	0.030	0.310	0.027	0.030	0.001	0.1	0.05	0.458	0.1	0.01
Min	0.1	0.001	0.1	0.1	0.005	0.05	0.010	0.030	0.001	0.010	0.001	0.1	0.05	0.004	0.1	0.01
No. Samples> WDEQ Class I	NA	0	0	0	0	0	0	1	2	0	0	NA	NA	7	NA	0
No. Samples> MCL	NA	0	0	NA	0	0	NA	NA	2	NA	0	NA	NA	7	NA	NA
70 Sand Monitor Wells (MW-2, MW-3, MW-4, MW-6, MW-7, MW-9, MW-11 and PW-1)																
Number of Samples	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Average	0.1	0.020	0.1	0.1	0.005	0.05	0.010	0.164	0.002	0.030	0.001	0.1	0.05	0.028	0.1	0.01
Max	0.1	0.005	0.1	0.1	0.005	0.05	0.010	0.850	0.032	0.060	0.001	0.1	0.05	0.527	0.1	0.02
Min	0.1	0.001	0.1	0.1	0.005	0.05	0.010	0.030	0.001	0.015	0.001	0.1	0.05	0.001	0.1	0.01
No. Samples> WDEQ Class I	NA	0	0	0	0	0	0	8	1	1	0	NA	NA	3	NA	0
No. Samples> MCL	NA	0	0	NA	0	0	NA	NA	1	NA	0	NA	NA	3	NA	NA
72 Sand Monitor Wells, (OMW-1, OMW-2, OMW-3, OMW-4)																
Number of Samples	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
Average	0.1	0.001	0.1	0.1	0.005	0.05	0.010	0.098	0.001	0.080	0.001	0.1	0.05	0.001	0.1	0.01
Max	0.1	0.003	0.1	0.1	0.005	0.05	0.010	0.460	0.001	0.220	0.001	0.1	0.05	0.003	0.1	0.02
Min	0.1	0.001	0.1	0.1	0.005	0.05	0.010	0.030	0.001	0.001	0.001	0.1	0.05	0.001	0.1	0.01
No. Samples> WDEQ Class I	NA	0	0	0	0	0	0	2	0	6	0	NA	NA	0	NA	0
No. Samples> MCL	NA	0	0	NA	0	0	NA	NA	0	NA	0	NA	NA	0	NA	NA

Table 3.4.3-16 Comparison of Moore Ranch 2007 Baseline Monitoring Results to Water Quality Standards

	General Water Quality Parameters			Radionuclides												
	TDS	Conduct.	pH (units)	Gross Alpha	Gross Beta	Pb-210	Po-210	Ra-226	Ra-228	Th-230	U	Pb-210 (sus.)	Po-210 (sus.)	Ra-226 (sus.)	Th-230 (sus.)	U (sus.)
WYO Class I Standard	500	NA	6.5-8.5	15*	NA	NA	NA	5 ^a	5 ^a	NA	NA	NA	NA	NA	NA	NA
EPA MCL	NA ⁹	NA	NA ¹⁰	NA*	NA	NA	NA	5 ^a	5 ^a	NA	0.03	NA	NA	NA	NA	NA
68, 70 and 72 Sand Monitor Wells (See wells listed below for each Sand)																
Number of Samples	62	62	62	33	33	62	62	62	62	62	62	61	61	61	61	61
Average	641.8	971.9	8.24	134.9	45.7	4.7	2.8	35.8	1.6	0.3	0.094	5.1	3.7	1.6	1.1	0.0061
Max	1350	1700	11.50	1050	327	69	51	335.0	9.5	1.0	0.884	80.0	23.0	40.6	43.7	0.2360
Min	240	316	7.13	2	9	1	1	0.6	1.0	0.2	0.000	1.0	1.0	0.2	0.2	0.0003
No. Samples> WDEQ Class I	34	NA	11	21	NA	NA	NA	24	2	NA	NA	NA	NA	NA	NA	NA
No. Samples> MCL	NA	NA	NA	NA	NA	NA	NA	24	2	NA	34	NA	NA	NA	NA	NA
68 Sand Monitor Wells (UMW-1, UMW-2, UMW-3 and UMW-4)																
Number of Samples	14	14	14	7	7	14	14	14	14	14	14	14	14	14	14	14
Average	420.6	812.3	9.48	32.41	22.85	1.69	1.16	3.0	1.1	0.2	0.035	5.0	7.5	3.2	2.9	0.0166
Max	570	1620	11.50	83.3	36.8	13.0	2.3	14.9	3.3	0.2	0.112	18.0	23.0	40.6	43.7	0.2360
Min	240	316	7.40	3.40	12.8	1.0	1.0	0.6	1.0	0.2	0.0003	1.0	1.3	0.2	0.2	0.0004
No. Samples> WDEQ Class I	3	NA	7	4	NA	NA	NA	3	0	NA	NA	NA	NA	NA	NA	NA
No. Samples> MCL	NA	NA	NA	NA	NA	NA	NA	3	0	NA	8	NA	NA	NA	NA	NA
70 Sand Monitor Wells (MW-2, MW-3, MW-4, MW-6, MW-7, MW-9, MW-11 and PW-1)																
Number of Samples	32	32	32	18	18	32	32	32	32	32	32	31	31	31	31	31
Average	688.1	1011.8	7.72	250.8	72.8	7.5	4.4	69.6	1.6	0.3	0.169	7.3	3.2	1.5	0.5	0.0035
Max	1200	1590	11.50	1050	327	69	51	335.0	5.9	0.9	0.884	80.0	19.0	14.9	7.3	0.0519
Min	298	514	7.13	4	11	1	1	0.7	1.0	0.2	0.005	1.0	1.0	0.2	0.2	0.0003
No. Samples> WDEQ Class I	23	NA	1	17	NA	NA	NA	21	1	NA	NA	NA	NA	NA	NA	NA
No. Samples> MCL	NA	NA	NA	NA	NA	NA	NA	21	1	NA	26	NA	NA	NA	NA	NA
72 Sand Monitor Wells, (OMW-1, OMW-2, OMW-3, OMW-4)																
Number of Samples	16	16	16	8	8	16	16	16	16	16	16	15	16	16	16	16
Average	770.6	1051.6	8.07	5.7	14.4	2.0	1.3	1.1	1.9	0.3	0.001	1.0	1.0	0.3	0.3	0.0006
Max	1350	1700	9.20	10	20	8	3	3.0	9.5	1.0	0.003	1.0	1.0	2.0	0.7	0.0044
Min	310	527	7.18	2	9	1	1	0.6	1.4	0.2	0.001	1.0	1.0	0.2	0.2	0.0003
No. Samples> WDEQ Class I	8	NA	3	0	NA	NA	NA	0	1	NA	NA	NA	NA	NA	NA	NA
No. Samples> MCL	NA	NA	NA	NA	NA	NA	NA	0	1	NA	0	NA	NA	NA	NA	NA

Table 3.4.3-16 Comparison of Moore Ranch 2007 Baseline Monitoring Results to Water Quality Standards

Data used in this table derived from table D6.3-14a. All samples used in this table were collected by EMC in 2007
Samples that were below detection were valued at the detection limit for purposes of calculating the average.
All samples were reported as non-detect for Al, Ba, B, Cd, Cr, Cu, Hg, Mo, Ni and V.

- 1 - EPA Secondary Drinking Water Standard for chloride is 250 mg/l
- 2 - EPA Secondary Drinking Water Standard for sulfate is 250 mg/l
- 3 - WDEQ Class I and EPA MCL standards for Nitrate (as N) and Nitrite (as N) are 10 mg/l and 1 mg/l respectively. Only two samples exceeded the lower 1.0 mg/l standard.
- 4 - EPA Secondary Drinking Water Standard for aluminum is 0.05 to 2.0 mg/l
- 5 - EPA Secondary Drinking Water Standard for copper is 1.0 mg/l
- 6 - EPA Secondary Drinking Water Standard for iron is 0.3 mg/l
- 7 - EPA Secondary Drinking Water Standard for manganese is 0.05 mg/l
- 8 - EPA Secondary Drinking Water Standard for zinc is 5.0 mg/l
- 9 - EPA Secondary Drinking Water Standard for TDS is 500 mg/l
- 10 - EPA Secondary Drinking Water Standard for pH is 6.5 to 8.5 s.u.

^a - Radium standards are for combined Ra226 +228. Only two samples exceeded the standard based only on the Radium 228 concentration.
All other samples that exceeded the combined standard did so based only on the Ra226 concentration.