

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Waste Management 2L-401**

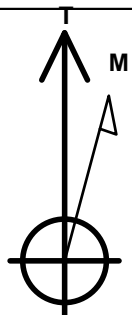
Surface Location: Waste Management 2Q-HZ Pad Sec.2-T2N-R64W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4934.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1302940.50	3273634.80	40.160820	-104.520940	

RKB - 15' WELL @ 4949.0ft (RKB - 15')

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
BHL 500'FNL, 1490'FWL	6901.0	4531.9	-539.3	Point



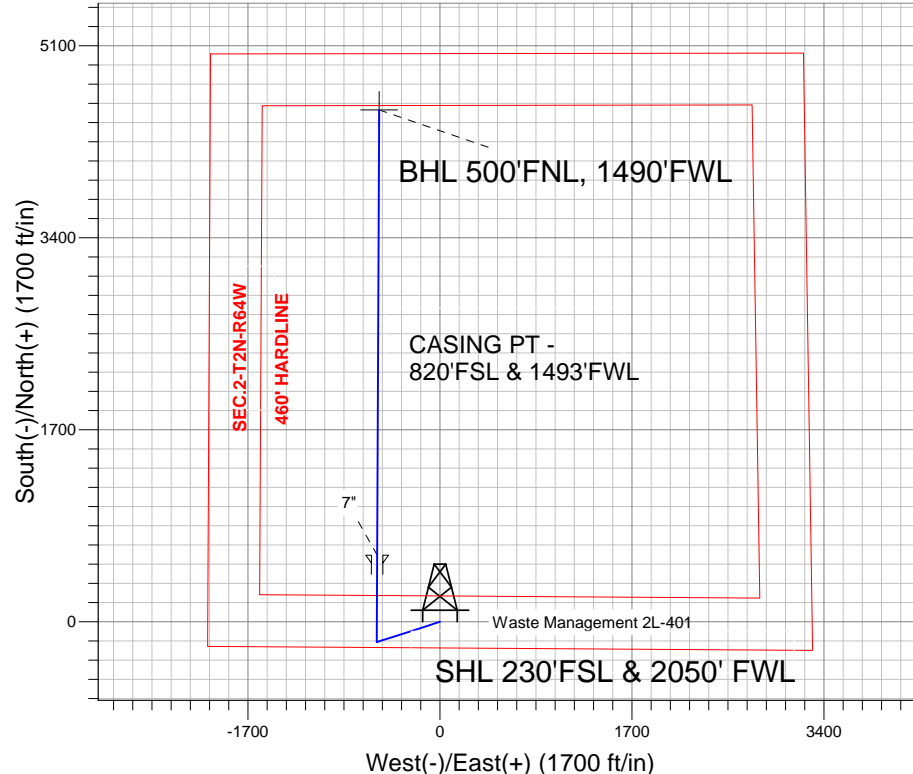
Azimuths to True North
Magnetic North: 8.49°

Magnetic Field
Strength: 52857.2snT
Dip Angle: 66.84°
Date: 2/6/2013
Model: IGRF2010

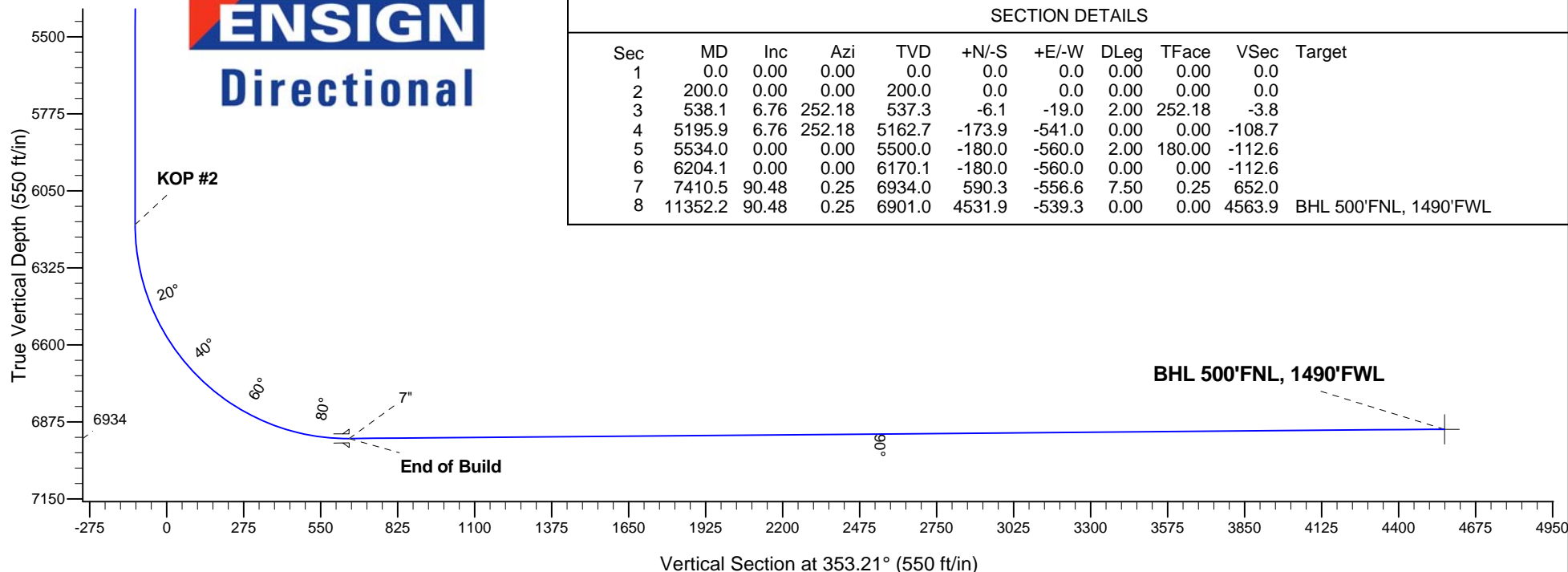
Waste Management 2Q-HZ Pad Sec.2-T2N-R64W
Waste Management 2L-401
Plan #1 (2-06-13)
15:02, February 06 2013

ANNOTATIONS

TVD	MD	Annotation
200.0	200.0	KOP #1
6170.1	6204.1	KOP #2
6934.0	7410.5	End of Build



ENSIGN
Directional



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	538.1	6.76	252.18	537.3	-6.1	-19.0	2.00	252.18	-3.8	
4	5195.9	6.76	252.18	5162.7	-173.9	-541.0	0.00	0.00	-108.7	
5	5534.0	0.00	0.00	5500.0	-180.0	-560.0	2.00	180.00	-112.6	
6	6204.1	0.00	0.00	6170.1	-180.0	-560.0	0.00	0.00	-112.6	
7	7410.5	90.48	0.25	6934.0	590.3	-556.6	7.50	0.25	652.0	
8	11352.2	90.48	0.25	6901.0	4531.9	-539.3	0.00	0.00	4563.9	BHL 500'FNL, 1490'FWL



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.2-T2N-R64W

Waste Management 2Q-HZ Pad Sec.2-T2N-R64W

Waste Management 2L-401

Wellbore #1

Plan: Plan #1 (2-06-13)

Standard Planning Report

06 February, 2013

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
538.1	6.76	252.18	537.3	-6.1	-19.0	2.00	2.00	0.00	252.18	
5,195.9	6.76	252.18	5,162.7	-173.9	-541.0	0.00	0.00	0.00	0.00	
5,534.0	0.00	0.00	5,500.0	-180.0	-560.0	2.00	-2.00	0.00	180.00	
6,204.1	0.00	0.00	6,170.1	-180.0	-560.0	0.00	0.00	0.00	0.00	
7,410.5	90.48	0.25	6,934.0	590.3	-556.6	7.50	7.50	0.00	0.25	
11,352.2	90.48	0.25	6,901.0	4,531.9	-539.3	0.00	0.00	0.00	0.00	BHL 500°FNL, 1490

Database:	Landmark	Local Co-ordinate Reference:	Well Waste Management 2L-401
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4949.0ft (RKB - 15')
Project:	SEC.2-T2N-R64W	MD Reference:	WELL @ 4949.0ft (RKB - 15')
Site:	Waste Management 2Q-HZ Pad Sec.2-T2N-R64W	North Reference:	True
Well:	Waste Management 2L-401	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (2-06-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
40.0	0.00	0.00	40.0	0.0	0.0	0.0	0.00	0.00	0.00
80.0	0.00	0.00	80.0	0.0	0.0	0.0	0.00	0.00	0.00
120.0	0.00	0.00	120.0	0.0	0.0	0.0	0.00	0.00	0.00
160.0	0.00	0.00	160.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
240.0	0.80	252.18	240.0	-0.1	-0.3	-0.1	2.00	2.00	0.00
280.0	1.60	252.18	280.0	-0.3	-1.1	-0.2	2.00	2.00	0.00
320.0	2.40	252.18	320.0	-0.8	-2.4	-0.5	2.00	2.00	0.00
360.0	3.20	252.18	359.9	-1.4	-4.3	-0.9	2.00	2.00	0.00
400.0	4.00	252.18	399.8	-2.1	-6.6	-1.3	2.00	2.00	0.00
440.0	4.80	252.18	439.7	-3.1	-9.6	-1.9	2.00	2.00	0.00
480.0	5.60	252.18	479.6	-4.2	-13.0	-2.6	2.00	2.00	0.00
520.0	6.40	252.18	519.3	-5.5	-17.0	-3.4	2.00	2.00	0.00
538.1	6.76	252.18	537.3	-6.1	-19.0	-3.8	2.00	2.00	0.00
560.0	6.76	252.18	559.1	-6.9	-21.4	-4.3	0.00	0.00	0.00
600.0	6.76	252.18	598.8	-8.3	-25.9	-5.2	0.00	0.00	0.00
640.0	6.76	252.18	638.5	-9.8	-30.4	-6.1	0.00	0.00	0.00
680.0	6.76	252.18	678.2	-11.2	-34.9	-7.0	0.00	0.00	0.00
720.0	6.76	252.18	718.0	-12.7	-39.4	-7.9	0.00	0.00	0.00
760.0	6.76	252.18	757.7	-14.1	-43.8	-8.8	0.00	0.00	0.00
800.0	6.76	252.18	797.4	-15.5	-48.3	-9.7	0.00	0.00	0.00
840.0	6.76	252.18	837.1	-17.0	-52.8	-10.6	0.00	0.00	0.00
880.0	6.76	252.18	876.8	-18.4	-57.3	-11.5	0.00	0.00	0.00
920.0	6.76	252.18	916.6	-19.9	-61.8	-12.4	0.00	0.00	0.00
960.0	6.76	252.18	956.3	-21.3	-66.3	-13.3	0.00	0.00	0.00
1,000.0	6.76	252.18	996.0	-22.7	-70.7	-14.2	0.00	0.00	0.00
1,040.0	6.76	252.18	1,035.7	-24.2	-75.2	-15.1	0.00	0.00	0.00
1,080.0	6.76	252.18	1,075.4	-25.6	-79.7	-16.0	0.00	0.00	0.00
1,120.0	6.76	252.18	1,115.2	-27.1	-84.2	-16.9	0.00	0.00	0.00
1,160.0	6.76	252.18	1,154.9	-28.5	-88.7	-17.8	0.00	0.00	0.00
1,200.0	6.76	252.18	1,194.6	-29.9	-93.2	-18.7	0.00	0.00	0.00
1,240.0	6.76	252.18	1,234.3	-31.4	-97.6	-19.6	0.00	0.00	0.00
1,280.0	6.76	252.18	1,274.1	-32.8	-102.1	-20.5	0.00	0.00	0.00
1,320.0	6.76	252.18	1,313.8	-34.3	-106.6	-21.4	0.00	0.00	0.00
1,360.0	6.76	252.18	1,353.5	-35.7	-111.1	-22.3	0.00	0.00	0.00
1,400.0	6.76	252.18	1,393.2	-37.1	-115.6	-23.2	0.00	0.00	0.00
1,440.0	6.76	252.18	1,432.9	-38.6	-120.1	-24.1	0.00	0.00	0.00
1,480.0	6.76	252.18	1,472.7	-40.0	-124.5	-25.0	0.00	0.00	0.00
1,520.0	6.76	252.18	1,512.4	-41.5	-129.0	-25.9	0.00	0.00	0.00
1,560.0	6.76	252.18	1,552.1	-42.9	-133.5	-26.8	0.00	0.00	0.00
1,600.0	6.76	252.18	1,591.8	-44.4	-138.0	-27.7	0.00	0.00	0.00
1,640.0	6.76	252.18	1,631.6	-45.8	-142.5	-28.6	0.00	0.00	0.00
1,680.0	6.76	252.18	1,671.3	-47.2	-147.0	-29.5	0.00	0.00	0.00
1,720.0	6.76	252.18	1,711.0	-48.7	-151.4	-30.4	0.00	0.00	0.00
1,760.0	6.76	252.18	1,750.7	-50.1	-155.9	-31.3	0.00	0.00	0.00
1,800.0	6.76	252.18	1,790.4	-51.6	-160.4	-32.2	0.00	0.00	0.00
1,840.0	6.76	252.18	1,830.2	-53.0	-164.9	-33.1	0.00	0.00	0.00
1,880.0	6.76	252.18	1,869.9	-54.4	-169.4	-34.0	0.00	0.00	0.00
1,920.0	6.76	252.18	1,909.6	-55.9	-173.9	-34.9	0.00	0.00	0.00
1,960.0	6.76	252.18	1,949.3	-57.3	-178.3	-35.8	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Waste Management 2L-401
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4949.0ft (RKB - 15')
Project:	SEC.2-T2N-R64W	MD Reference:	WELL @ 4949.0ft (RKB - 15')
Site:	Waste Management 2Q-HZ Pad Sec.2-T2N-R64W	North Reference:	True
Well:	Waste Management 2L-401	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (2-06-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
2,000.0	6.76	252.18	1,989.0	-58.8	-182.8	-36.7	0.00	0.00	0.00
2,040.0	6.76	252.18	2,028.8	-60.2	-187.3	-37.6	0.00	0.00	0.00
2,080.0	6.76	252.18	2,068.5	-61.6	-191.8	-38.6	0.00	0.00	0.00
2,120.0	6.76	252.18	2,108.2	-63.1	-196.3	-39.5	0.00	0.00	0.00
2,160.0	6.76	252.18	2,147.9	-64.5	-200.8	-40.4	0.00	0.00	0.00
2,200.0	6.76	252.18	2,187.7	-66.0	-205.2	-41.3	0.00	0.00	0.00
2,240.0	6.76	252.18	2,227.4	-67.4	-209.7	-42.2	0.00	0.00	0.00
2,280.0	6.76	252.18	2,267.1	-68.9	-214.2	-43.1	0.00	0.00	0.00
2,320.0	6.76	252.18	2,306.8	-70.3	-218.7	-44.0	0.00	0.00	0.00
2,360.0	6.76	252.18	2,346.5	-71.7	-223.2	-44.9	0.00	0.00	0.00
2,400.0	6.76	252.18	2,386.3	-73.2	-227.7	-45.8	0.00	0.00	0.00
2,440.0	6.76	252.18	2,426.0	-74.6	-232.1	-46.7	0.00	0.00	0.00
2,480.0	6.76	252.18	2,465.7	-76.1	-236.6	-47.6	0.00	0.00	0.00
2,520.0	6.76	252.18	2,505.4	-77.5	-241.1	-48.5	0.00	0.00	0.00
2,560.0	6.76	252.18	2,545.2	-78.9	-245.6	-49.4	0.00	0.00	0.00
2,600.0	6.76	252.18	2,584.9	-80.4	-250.1	-50.3	0.00	0.00	0.00
2,640.0	6.76	252.18	2,624.6	-81.8	-254.6	-51.2	0.00	0.00	0.00
2,680.0	6.76	252.18	2,664.3	-83.3	-259.0	-52.1	0.00	0.00	0.00
2,720.0	6.76	252.18	2,704.0	-84.7	-263.5	-53.0	0.00	0.00	0.00
2,760.0	6.76	252.18	2,743.8	-86.1	-268.0	-53.9	0.00	0.00	0.00
2,800.0	6.76	252.18	2,783.5	-87.6	-272.5	-54.8	0.00	0.00	0.00
2,840.0	6.76	252.18	2,823.2	-89.0	-277.0	-55.7	0.00	0.00	0.00
2,880.0	6.76	252.18	2,862.9	-90.5	-281.5	-56.6	0.00	0.00	0.00
2,920.0	6.76	252.18	2,902.7	-91.9	-285.9	-57.5	0.00	0.00	0.00
2,960.0	6.76	252.18	2,942.4	-93.4	-290.4	-58.4	0.00	0.00	0.00
3,000.0	6.76	252.18	2,982.1	-94.8	-294.9	-59.3	0.00	0.00	0.00
3,040.0	6.76	252.18	3,021.8	-96.2	-299.4	-60.2	0.00	0.00	0.00
3,080.0	6.76	252.18	3,061.5	-97.7	-303.9	-61.1	0.00	0.00	0.00
3,120.0	6.76	252.18	3,101.3	-99.1	-308.4	-62.0	0.00	0.00	0.00
3,160.0	6.76	252.18	3,141.0	-100.6	-312.8	-62.9	0.00	0.00	0.00
3,200.0	6.76	252.18	3,180.7	-102.0	-317.3	-63.8	0.00	0.00	0.00
3,240.0	6.76	252.18	3,220.4	-103.4	-321.8	-64.7	0.00	0.00	0.00
3,280.0	6.76	252.18	3,260.1	-104.9	-326.3	-65.6	0.00	0.00	0.00
3,320.0	6.76	252.18	3,299.9	-106.3	-330.8	-66.5	0.00	0.00	0.00
3,360.0	6.76	252.18	3,339.6	-107.8	-335.3	-67.4	0.00	0.00	0.00
3,400.0	6.76	252.18	3,379.3	-109.2	-339.7	-68.3	0.00	0.00	0.00
3,440.0	6.76	252.18	3,419.0	-110.6	-344.2	-69.2	0.00	0.00	0.00
3,480.0	6.76	252.18	3,458.8	-112.1	-348.7	-70.1	0.00	0.00	0.00
3,520.0	6.76	252.18	3,498.5	-113.5	-353.2	-71.0	0.00	0.00	0.00
3,560.0	6.76	252.18	3,538.2	-115.0	-357.7	-71.9	0.00	0.00	0.00
3,600.0	6.76	252.18	3,577.9	-116.4	-362.2	-72.8	0.00	0.00	0.00
3,640.0	6.76	252.18	3,617.6	-117.8	-366.6	-73.7	0.00	0.00	0.00
3,680.0	6.76	252.18	3,657.4	-119.3	-371.1	-74.6	0.00	0.00	0.00
3,720.0	6.76	252.18	3,697.1	-120.7	-375.6	-75.5	0.00	0.00	0.00
3,760.0	6.76	252.18	3,736.8	-122.2	-380.1	-76.4	0.00	0.00	0.00
3,800.0	6.76	252.18	3,776.5	-123.6	-384.6	-77.3	0.00	0.00	0.00
3,840.0	6.76	252.18	3,816.3	-125.1	-389.1	-78.2	0.00	0.00	0.00
3,880.0	6.76	252.18	3,856.0	-126.5	-393.5	-79.1	0.00	0.00	0.00
3,920.0	6.76	252.18	3,895.7	-127.9	-398.0	-80.0	0.00	0.00	0.00
3,960.0	6.76	252.18	3,935.4	-129.4	-402.5	-80.9	0.00	0.00	0.00
4,000.0	6.76	252.18	3,975.1	-130.8	-407.0	-81.8	0.00	0.00	0.00
4,040.0	6.76	252.18	4,014.9	-132.3	-411.5	-82.7	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Waste Management 2L-401
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4949.0ft (RKB - 15')
Project:	SEC.2-T2N-R64W	MD Reference:	WELL @ 4949.0ft (RKB - 15')
Site:	Waste Management 2Q-HZ Pad Sec.2-T2N-R64W	North Reference:	True
Well:	Waste Management 2L-401	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (2-06-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,080.0	6.76	252.18	4,054.6	-133.7	-416.0	-83.6	0.00	0.00	0.00
4,120.0	6.76	252.18	4,094.3	-135.1	-420.4	-84.5	0.00	0.00	0.00
4,160.0	6.76	252.18	4,134.0	-136.6	-424.9	-85.4	0.00	0.00	0.00
4,200.0	6.76	252.18	4,173.7	-138.0	-429.4	-86.3	0.00	0.00	0.00
4,240.0	6.76	252.18	4,213.5	-139.5	-433.9	-87.2	0.00	0.00	0.00
4,280.0	6.76	252.18	4,253.2	-140.9	-438.4	-88.1	0.00	0.00	0.00
4,320.0	6.76	252.18	4,292.9	-142.3	-442.9	-89.0	0.00	0.00	0.00
4,360.0	6.76	252.18	4,332.6	-143.8	-447.3	-89.9	0.00	0.00	0.00
4,400.0	6.76	252.18	4,372.4	-145.2	-451.8	-90.8	0.00	0.00	0.00
4,440.0	6.76	252.18	4,412.1	-146.7	-456.3	-91.7	0.00	0.00	0.00
4,480.0	6.76	252.18	4,451.8	-148.1	-460.8	-92.6	0.00	0.00	0.00
4,520.0	6.76	252.18	4,491.5	-149.6	-465.3	-93.5	0.00	0.00	0.00
4,560.0	6.76	252.18	4,531.2	-151.0	-469.8	-94.4	0.00	0.00	0.00
4,600.0	6.76	252.18	4,571.0	-152.4	-474.2	-95.3	0.00	0.00	0.00
4,640.0	6.76	252.18	4,610.7	-153.9	-478.7	-96.2	0.00	0.00	0.00
4,680.0	6.76	252.18	4,650.4	-155.3	-483.2	-97.1	0.00	0.00	0.00
4,720.0	6.76	252.18	4,690.1	-156.8	-487.7	-98.0	0.00	0.00	0.00
4,760.0	6.76	252.18	4,729.9	-158.2	-492.2	-98.9	0.00	0.00	0.00
4,800.0	6.76	252.18	4,769.6	-159.6	-496.7	-99.8	0.00	0.00	0.00
4,840.0	6.76	252.18	4,809.3	-161.1	-501.1	-100.7	0.00	0.00	0.00
4,880.0	6.76	252.18	4,849.0	-162.5	-505.6	-101.6	0.00	0.00	0.00
4,920.0	6.76	252.18	4,888.7	-164.0	-510.1	-102.5	0.00	0.00	0.00
4,960.0	6.76	252.18	4,928.5	-165.4	-514.6	-103.4	0.00	0.00	0.00
5,000.0	6.76	252.18	4,968.2	-166.8	-519.1	-104.3	0.00	0.00	0.00
5,040.0	6.76	252.18	5,007.9	-168.3	-523.6	-105.2	0.00	0.00	0.00
5,080.0	6.76	252.18	5,047.6	-169.7	-528.0	-106.1	0.00	0.00	0.00
5,120.0	6.76	252.18	5,087.4	-171.2	-532.5	-107.0	0.00	0.00	0.00
5,160.0	6.76	252.18	5,127.1	-172.6	-537.0	-107.9	0.00	0.00	0.00
5,195.9	6.76	252.18	5,162.7	-173.9	-541.0	-108.7	0.00	0.00	0.00
5,200.0	6.68	252.18	5,166.8	-174.1	-541.5	-108.8	2.00	-2.00	0.00
5,240.0	5.88	252.18	5,206.6	-175.4	-545.7	-109.7	2.00	-2.00	0.00
5,280.0	5.08	252.18	5,246.4	-176.6	-549.3	-110.4	2.00	-2.00	0.00
5,320.0	4.28	252.18	5,286.2	-177.6	-552.4	-111.0	2.00	-2.00	0.00
5,360.0	3.48	252.18	5,326.1	-178.4	-555.0	-111.5	2.00	-2.00	0.00
5,400.0	2.68	252.18	5,366.1	-179.0	-557.0	-112.0	2.00	-2.00	0.00
5,440.0	1.88	252.18	5,406.1	-179.5	-558.5	-112.3	2.00	-2.00	0.00
5,480.0	1.08	252.18	5,446.0	-179.8	-559.5	-112.5	2.00	-2.00	0.00
5,520.0	0.28	252.18	5,486.0	-180.0	-560.0	-112.6	2.00	-2.00	0.00
5,534.0	0.00	0.00	5,500.0	-180.0	-560.0	-112.6	2.00	-2.00	0.00
5,560.0	0.00	0.00	5,526.0	-180.0	-560.0	-112.6	0.00	0.00	0.00
5,600.0	0.00	0.00	5,566.0	-180.0	-560.0	-112.6	0.00	0.00	0.00
5,640.0	0.00	0.00	5,606.0	-180.0	-560.0	-112.6	0.00	0.00	0.00
5,680.0	0.00	0.00	5,646.0	-180.0	-560.0	-112.6	0.00	0.00	0.00
5,720.0	0.00	0.00	5,686.0	-180.0	-560.0	-112.6	0.00	0.00	0.00
5,760.0	0.00	0.00	5,726.0	-180.0	-560.0	-112.6	0.00	0.00	0.00
5,800.0	0.00	0.00	5,766.0	-180.0	-560.0	-112.6	0.00	0.00	0.00
5,840.0	0.00	0.00	5,806.0	-180.0	-560.0	-112.6	0.00	0.00	0.00
5,880.0	0.00	0.00	5,846.0	-180.0	-560.0	-112.6	0.00	0.00	0.00
5,920.0	0.00	0.00	5,886.0	-180.0	-560.0	-112.6	0.00	0.00	0.00
5,960.0	0.00	0.00	5,926.0	-180.0	-560.0	-112.6	0.00	0.00	0.00
6,000.0	0.00	0.00	5,966.0	-180.0	-560.0	-112.6	0.00	0.00	0.00
6,040.0	0.00	0.00	6,006.0	-180.0	-560.0	-112.6	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Waste Management 2L-401
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4949.0ft (RKB - 15')
Project:	SEC.2-T2N-R64W	MD Reference:	WELL @ 4949.0ft (RKB - 15')
Site:	Waste Management 2Q-HZ Pad Sec.2-T2N-R64W	North Reference:	True
Well:	Waste Management 2L-401	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (2-06-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,080.0	0.00	0.00	6,046.0	-180.0	-560.0	-112.6	0.00	0.00	0.00
6,120.0	0.00	0.00	6,086.0	-180.0	-560.0	-112.6	0.00	0.00	0.00
6,160.0	0.00	0.00	6,126.0	-180.0	-560.0	-112.6	0.00	0.00	0.00
6,200.0	0.00	0.00	6,166.0	-180.0	-560.0	-112.6	0.00	0.00	0.00
6,204.1	0.00	0.00	6,170.1	-180.0	-560.0	-112.6	0.00	0.00	0.00
KOP #2									
6,240.0	2.70	0.25	6,206.0	-179.2	-560.0	-111.7	7.51	7.51	0.00
6,280.0	5.70	0.25	6,245.9	-176.2	-560.0	-108.8	7.50	7.50	0.00
6,320.0	8.70	0.25	6,285.6	-171.2	-560.0	-103.8	7.50	7.50	0.00
6,360.0	11.70	0.25	6,325.0	-164.1	-559.9	-96.8	7.50	7.50	0.00
6,400.0	14.70	0.25	6,363.9	-155.0	-559.9	-87.8	7.50	7.50	0.00
6,440.0	17.70	0.25	6,402.3	-143.9	-559.8	-76.7	7.50	7.50	0.00
6,480.0	20.70	0.25	6,440.1	-130.7	-559.8	-63.6	7.50	7.50	0.00
6,520.0	23.70	0.25	6,477.1	-115.6	-559.7	-48.6	7.50	7.50	0.00
6,560.0	26.70	0.25	6,513.3	-98.6	-559.6	-31.7	7.50	7.50	0.00
6,600.0	29.70	0.25	6,548.6	-79.7	-559.6	-13.0	7.50	7.50	0.00
6,640.0	32.70	0.25	6,582.8	-59.0	-559.5	7.6	7.50	7.50	0.00
6,680.0	35.70	0.25	6,615.8	-36.5	-559.4	29.9	7.50	7.50	0.00
6,720.0	38.70	0.25	6,647.7	-12.3	-559.3	53.9	7.50	7.50	0.00
6,760.0	41.70	0.25	6,678.3	13.5	-559.2	79.5	7.50	7.50	0.00
6,800.0	44.70	0.25	6,707.4	40.9	-559.0	106.7	7.50	7.50	0.00
6,840.0	47.70	0.25	6,735.1	69.7	-558.9	135.3	7.50	7.50	0.00
6,880.0	50.70	0.25	6,761.2	100.0	-558.8	165.4	7.50	7.50	0.00
6,920.0	53.70	0.25	6,785.7	131.6	-558.6	196.7	7.50	7.50	0.00
6,960.0	56.70	0.25	6,808.6	164.5	-558.5	229.3	7.50	7.50	0.00
7,000.0	59.70	0.25	6,829.7	198.5	-558.3	263.0	7.50	7.50	0.00
7,040.0	62.70	0.25	6,848.9	233.5	-558.2	297.8	7.50	7.50	0.00
7,080.0	65.70	0.25	6,866.3	269.5	-558.0	333.6	7.50	7.50	0.00
7,120.0	68.70	0.25	6,881.8	306.4	-557.9	370.2	7.50	7.50	0.00
7,160.0	71.70	0.25	6,895.4	344.0	-557.7	407.5	7.50	7.50	0.00
7,200.0	74.70	0.25	6,907.0	382.3	-557.5	445.5	7.50	7.50	0.00
7,240.0	77.70	0.25	6,916.5	421.1	-557.4	484.0	7.50	7.50	0.00
7,280.0	80.70	0.25	6,924.0	460.4	-557.2	523.0	7.50	7.50	0.00
7,320.0	83.70	0.25	6,929.4	500.0	-557.0	562.4	7.50	7.50	0.00
7,360.0	86.70	0.25	6,932.8	539.9	-556.8	601.9	7.50	7.50	0.00
7,400.0	89.70	0.25	6,934.0	579.9	-556.7	641.6	7.50	7.50	0.00
7,410.5	90.48	0.25	6,934.0	590.4	-556.6	652.0	7.48	7.48	0.00
End of Build - 7"									
7,440.0	90.48	0.25	6,933.8	619.9	-556.5	681.3	0.00	0.00	0.00
7,480.0	90.48	0.25	6,933.4	659.9	-556.3	721.0	0.00	0.00	0.00
7,520.0	90.48	0.25	6,933.1	699.9	-556.1	760.7	0.00	0.00	0.00
7,560.0	90.48	0.25	6,932.8	739.9	-556.0	800.4	0.00	0.00	0.00
7,600.0	90.48	0.25	6,932.4	779.9	-555.8	840.1	0.00	0.00	0.00
7,640.0	90.48	0.25	6,932.1	819.9	-555.6	879.8	0.00	0.00	0.00
7,680.0	90.48	0.25	6,931.8	859.9	-555.4	919.5	0.00	0.00	0.00
7,720.0	90.48	0.25	6,931.4	899.9	-555.3	959.2	0.00	0.00	0.00
7,760.0	90.48	0.25	6,931.1	939.9	-555.1	998.9	0.00	0.00	0.00
7,800.0	90.48	0.25	6,930.8	979.9	-554.9	1,038.6	0.00	0.00	0.00
7,840.0	90.48	0.25	6,930.4	1,019.9	-554.7	1,078.3	0.00	0.00	0.00
7,880.0	90.48	0.25	6,930.1	1,059.9	-554.6	1,118.0	0.00	0.00	0.00
7,920.0	90.48	0.25	6,929.8	1,099.8	-554.4	1,157.7	0.00	0.00	0.00
7,960.0	90.48	0.25	6,929.4	1,139.8	-554.2	1,197.4	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Waste Management 2L-401
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4949.0ft (RKB - 15')
Project:	SEC.2-T2N-R64W	MD Reference:	WELL @ 4949.0ft (RKB - 15')
Site:	Waste Management 2Q-HZ Pad Sec.2-T2N-R64W	North Reference:	True
Well:	Waste Management 2L-401	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (2-06-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,000.0	90.48	0.25	6,929.1	1,179.8	-554.0	1,237.1	0.00	0.00	0.00
8,040.0	90.48	0.25	6,928.7	1,219.8	-553.9	1,276.7	0.00	0.00	0.00
8,080.0	90.48	0.25	6,928.4	1,259.8	-553.7	1,316.4	0.00	0.00	0.00
8,120.0	90.48	0.25	6,928.1	1,299.8	-553.5	1,356.1	0.00	0.00	0.00
8,160.0	90.48	0.25	6,927.7	1,339.8	-553.3	1,395.8	0.00	0.00	0.00
8,200.0	90.48	0.25	6,927.4	1,379.8	-553.2	1,435.5	0.00	0.00	0.00
8,240.0	90.48	0.25	6,927.1	1,419.8	-553.0	1,475.2	0.00	0.00	0.00
8,280.0	90.48	0.25	6,926.7	1,459.8	-552.8	1,514.9	0.00	0.00	0.00
8,320.0	90.48	0.25	6,926.4	1,499.8	-552.6	1,554.6	0.00	0.00	0.00
8,360.0	90.48	0.25	6,926.1	1,539.8	-552.5	1,594.3	0.00	0.00	0.00
8,400.0	90.48	0.25	6,925.7	1,579.8	-552.3	1,634.0	0.00	0.00	0.00
8,440.0	90.48	0.25	6,925.4	1,619.8	-552.1	1,673.7	0.00	0.00	0.00
8,480.0	90.48	0.25	6,925.1	1,659.8	-551.9	1,713.4	0.00	0.00	0.00
8,520.0	90.48	0.25	6,924.7	1,699.8	-551.8	1,753.1	0.00	0.00	0.00
8,560.0	90.48	0.25	6,924.4	1,739.8	-551.6	1,792.8	0.00	0.00	0.00
8,600.0	90.48	0.25	6,924.1	1,779.8	-551.4	1,832.5	0.00	0.00	0.00
8,640.0	90.48	0.25	6,923.7	1,819.8	-551.2	1,872.2	0.00	0.00	0.00
8,680.0	90.48	0.25	6,923.4	1,859.8	-551.1	1,911.9	0.00	0.00	0.00
8,720.0	90.48	0.25	6,923.1	1,899.8	-550.9	1,951.6	0.00	0.00	0.00
8,760.0	90.48	0.25	6,922.7	1,939.8	-550.7	1,991.3	0.00	0.00	0.00
8,800.0	90.48	0.25	6,922.4	1,979.8	-550.5	2,031.0	0.00	0.00	0.00
8,840.0	90.48	0.25	6,922.0	2,019.8	-550.4	2,070.7	0.00	0.00	0.00
8,880.0	90.48	0.25	6,921.7	2,059.8	-550.2	2,110.4	0.00	0.00	0.00
8,920.0	90.48	0.25	6,921.4	2,099.8	-550.0	2,150.1	0.00	0.00	0.00
8,960.0	90.48	0.25	6,921.0	2,139.8	-549.8	2,189.8	0.00	0.00	0.00
9,000.0	90.48	0.25	6,920.7	2,179.8	-549.7	2,229.5	0.00	0.00	0.00
9,040.0	90.48	0.25	6,920.4	2,219.8	-549.5	2,269.2	0.00	0.00	0.00
9,080.0	90.48	0.25	6,920.0	2,259.8	-549.3	2,308.9	0.00	0.00	0.00
9,120.0	90.48	0.25	6,919.7	2,299.8	-549.1	2,348.6	0.00	0.00	0.00
9,160.0	90.48	0.25	6,919.4	2,339.8	-549.0	2,388.3	0.00	0.00	0.00
9,200.0	90.48	0.25	6,919.0	2,379.8	-548.8	2,428.0	0.00	0.00	0.00
9,240.0	90.48	0.25	6,918.7	2,419.8	-548.6	2,467.7	0.00	0.00	0.00
9,280.0	90.48	0.25	6,918.4	2,459.8	-548.4	2,507.4	0.00	0.00	0.00
9,320.0	90.48	0.25	6,918.0	2,499.8	-548.3	2,547.1	0.00	0.00	0.00
9,360.0	90.48	0.25	6,917.7	2,539.8	-548.1	2,586.8	0.00	0.00	0.00
9,400.0	90.48	0.25	6,917.4	2,579.8	-547.9	2,626.5	0.00	0.00	0.00
9,440.0	90.48	0.25	6,917.0	2,619.8	-547.7	2,666.2	0.00	0.00	0.00
9,480.0	90.48	0.25	6,916.7	2,659.8	-547.6	2,705.8	0.00	0.00	0.00
9,520.0	90.48	0.25	6,916.3	2,699.8	-547.4	2,745.5	0.00	0.00	0.00
9,560.0	90.48	0.25	6,916.0	2,739.8	-547.2	2,785.2	0.00	0.00	0.00
9,600.0	90.48	0.25	6,915.7	2,779.8	-547.0	2,824.9	0.00	0.00	0.00
9,640.0	90.48	0.25	6,915.3	2,819.8	-546.9	2,864.6	0.00	0.00	0.00
9,680.0	90.48	0.25	6,915.0	2,859.8	-546.7	2,904.3	0.00	0.00	0.00
9,720.0	90.48	0.25	6,914.7	2,899.8	-546.5	2,944.0	0.00	0.00	0.00
9,760.0	90.48	0.25	6,914.3	2,939.8	-546.3	2,983.7	0.00	0.00	0.00
9,800.0	90.48	0.25	6,914.0	2,979.8	-546.1	3,023.4	0.00	0.00	0.00
9,840.0	90.48	0.25	6,913.7	3,019.8	-546.0	3,063.1	0.00	0.00	0.00
9,880.0	90.48	0.25	6,913.3	3,059.8	-545.8	3,102.8	0.00	0.00	0.00
9,920.0	90.48	0.25	6,913.0	3,099.8	-545.6	3,142.5	0.00	0.00	0.00
9,960.0	90.48	0.25	6,912.7	3,139.8	-545.4	3,182.2	0.00	0.00	0.00
10,000.0	90.48	0.25	6,912.3	3,179.8	-545.3	3,221.9	0.00	0.00	0.00
10,040.0	90.48	0.25	6,912.0	3,219.8	-545.1	3,261.6	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Waste Management 2L-401
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4949.0ft (RKB - 15')
Project:	SEC.2-T2N-R64W	MD Reference:	WELL @ 4949.0ft (RKB - 15')
Site:	Waste Management 2Q-HZ Pad Sec.2-T2N-R64W	North Reference:	True
Well:	Waste Management 2L-401	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (2-06-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,080.0	90.48	0.25	6,911.7	3,259.8	-544.9	3,301.3	0.00	0.00	0.00
10,120.0	90.48	0.25	6,911.3	3,299.8	-544.7	3,341.0	0.00	0.00	0.00
10,160.0	90.48	0.25	6,911.0	3,339.7	-544.6	3,380.7	0.00	0.00	0.00
10,200.0	90.48	0.25	6,910.7	3,379.7	-544.4	3,420.4	0.00	0.00	0.00
10,240.0	90.48	0.25	6,910.3	3,419.7	-544.2	3,460.1	0.00	0.00	0.00
10,280.0	90.48	0.25	6,910.0	3,459.7	-544.0	3,499.8	0.00	0.00	0.00
10,320.0	90.48	0.25	6,909.6	3,499.7	-543.9	3,539.5	0.00	0.00	0.00
10,360.0	90.48	0.25	6,909.3	3,539.7	-543.7	3,579.2	0.00	0.00	0.00
10,400.0	90.48	0.25	6,909.0	3,579.7	-543.5	3,618.9	0.00	0.00	0.00
10,440.0	90.48	0.25	6,908.6	3,619.7	-543.3	3,658.6	0.00	0.00	0.00
10,480.0	90.48	0.25	6,908.3	3,659.7	-543.2	3,698.3	0.00	0.00	0.00
10,520.0	90.48	0.25	6,908.0	3,699.7	-543.0	3,738.0	0.00	0.00	0.00
10,560.0	90.48	0.25	6,907.6	3,739.7	-542.8	3,777.7	0.00	0.00	0.00
10,600.0	90.48	0.25	6,907.3	3,779.7	-542.6	3,817.4	0.00	0.00	0.00
10,640.0	90.48	0.25	6,907.0	3,819.7	-542.5	3,857.1	0.00	0.00	0.00
10,680.0	90.48	0.25	6,906.6	3,859.7	-542.3	3,896.8	0.00	0.00	0.00
10,720.0	90.48	0.25	6,906.3	3,899.7	-542.1	3,936.5	0.00	0.00	0.00
10,760.0	90.48	0.25	6,906.0	3,939.7	-541.9	3,976.2	0.00	0.00	0.00
10,800.0	90.48	0.25	6,905.6	3,979.7	-541.8	4,015.9	0.00	0.00	0.00
10,840.0	90.48	0.25	6,905.3	4,019.7	-541.6	4,055.6	0.00	0.00	0.00
10,880.0	90.48	0.25	6,905.0	4,059.7	-541.4	4,095.3	0.00	0.00	0.00
10,920.0	90.48	0.25	6,904.6	4,099.7	-541.2	4,134.9	0.00	0.00	0.00
10,960.0	90.48	0.25	6,904.3	4,139.7	-541.1	4,174.6	0.00	0.00	0.00
11,000.0	90.48	0.25	6,904.0	4,179.7	-540.9	4,214.3	0.00	0.00	0.00
11,040.0	90.48	0.25	6,903.6	4,219.7	-540.7	4,254.0	0.00	0.00	0.00
11,080.0	90.48	0.25	6,903.3	4,259.7	-540.5	4,293.7	0.00	0.00	0.00
11,120.0	90.48	0.25	6,902.9	4,299.7	-540.4	4,333.4	0.00	0.00	0.00
11,160.0	90.48	0.25	6,902.6	4,339.7	-540.2	4,373.1	0.00	0.00	0.00
11,200.0	90.48	0.25	6,902.3	4,379.7	-540.0	4,412.8	0.00	0.00	0.00
11,240.0	90.48	0.25	6,901.9	4,419.7	-539.8	4,452.5	0.00	0.00	0.00
11,280.0	90.48	0.25	6,901.6	4,459.7	-539.7	4,492.2	0.00	0.00	0.00
11,320.0	90.48	0.25	6,901.3	4,499.7	-539.5	4,531.9	0.00	0.00	0.00
11,352.2	90.48	0.25	6,901.0	4,531.9	-539.3	4,563.9	0.00	0.00	0.00
BHL 500'FNL, 1490'FWL									

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,410.5	6,934.0	7"	7	8-3/4

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
200.0	200.0	0.0	0.0	KOP #1
6,204.1	6,170.1	-180.0	-560.0	KOP #2
7,410.5	6,934.0	590.4	-556.6	End of Build



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.2-T2N-R64W

Waste Management 2Q-HZ Pad Sec.2-T2N-R64W

Waste Management 2L-401

Wellbore #1

Plan #1 (2-06-13)

Anticollision Report

06 February, 2013

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Waste Management 2L-401
Project:	SEC.2-T2N-R64W	TVD Reference:	WELL @ 4949.0ft (RKB - 15')
Reference Site:	Waste Management 2Q-HZ Pad Sec.2-T2N-R64W	MD Reference:	WELL @ 4949.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Waste Management 2L-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (2-06-13)	Offset TVD Reference:	Offset Datum

Offset Design		Waste Management 2Q-HZ Pad Sec.2-T2N-R64W - Waste Management 2L-221 - Wellbore #1 - Plan #										Offset Site Error:		0.0 ft	
Survey Program: 0-MWD												Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
2,000.0	1,989.0	2,007.1	2,001.7	5.7	4.6	-163.31	-56.4	-51.9	131.6	122.6	8.97	14.661			
2,100.0	2,088.4	2,107.0	2,101.0	6.0	4.9	-161.96	-63.1	-61.4	133.3	123.8	9.50	14.027			
2,200.0	2,187.7	2,206.9	2,200.3	6.3	5.2	-160.64	-69.8	-70.9	135.0	125.0	10.03	13.456			
2,300.0	2,287.0	2,306.9	2,299.5	6.7	5.5	-159.36	-76.5	-80.4	136.8	126.3	10.58	12.938			
2,400.0	2,386.3	2,406.8	2,398.8	7.0	5.8	-158.12	-83.2	-89.9	138.7	127.6	11.13	12.468			
2,500.0	2,485.6	2,506.7	2,498.0	7.3	6.1	-156.91	-89.9	-99.4	140.7	129.0	11.68	12.040			
2,600.0	2,584.9	2,606.7	2,597.3	7.6	6.4	-155.73	-96.6	-108.9	142.7	130.4	12.25	11.649			
2,700.0	2,684.2	2,706.6	2,696.6	7.9	6.7	-154.58	-103.3	-118.4	144.8	131.9	12.82	11.292			
2,800.0	2,783.5	2,806.6	2,795.8	8.3	7.0	-153.47	-110.0	-127.8	146.9	133.5	13.40	10.964			
2,900.0	2,882.8	2,906.5	2,895.1	8.6	7.3	-152.39	-116.7	-137.3	149.1	135.1	13.98	10.663			
3,000.0	2,982.1	3,006.4	2,994.3	8.9	7.6	-151.34	-123.4	-146.8	151.3	136.7	14.57	10.385			
3,100.0	3,081.4	3,106.4	3,093.6	9.2	7.9	-150.32	-130.1	-156.3	153.6	138.4	15.16	10.129			
3,200.0	3,180.7	3,206.3	3,192.8	9.5	8.2	-149.34	-136.8	-165.8	155.9	140.2	15.76	9.892			
3,300.0	3,280.0	3,306.2	3,292.1	9.9	8.5	-148.38	-143.5	-175.3	158.3	141.9	16.37	9.673			
3,400.0	3,379.3	3,406.2	3,391.4	10.2	8.8	-147.45	-150.2	-184.8	160.7	143.7	16.97	9.469			
3,500.0	3,478.6	3,506.1	3,490.6	10.5	9.1	-146.55	-156.9	-194.3	163.2	145.6	17.58	9.280			
3,600.0	3,577.9	3,606.1	3,589.9	10.8	9.5	-145.67	-163.6	-203.8	165.7	147.5	18.20	9.104			
3,700.0	3,677.2	3,705.2	3,688.4	11.1	9.8	-144.85	-170.2	-213.2	168.3	149.5	18.80	8.949			
3,800.0	3,776.5	3,800.0	3,782.8	11.5	10.0	-144.68	-175.3	-220.3	172.3	153.0	19.28	8.935			
3,900.0	3,875.8	3,897.8	3,880.4	11.8	10.2	-145.35	-178.6	-225.0	178.4	158.7	19.70	9.057			
4,000.0	3,975.1	3,993.6	3,976.1	12.1	10.3	-146.75	-180.0	-227.0	186.6	166.6	20.03	9.317			
4,100.0	4,074.4	4,091.9	4,074.4	12.4	10.5	-148.59	-180.0	-227.0	196.5	176.2	20.33	9.665			
4,200.0	4,173.7	4,191.2	4,173.7	12.7	10.6	-150.29	-180.0	-227.0	206.7	186.0	20.65	10.010			
4,300.0	4,273.1	4,290.5	4,273.1	13.1	10.8	-151.82	-180.0	-227.0	217.0	196.0	20.97	10.348			
4,400.0	4,372.4	4,389.8	4,372.4	13.4	11.0	-153.22	-180.0	-227.0	227.5	206.1	21.30	10.676			
4,500.0	4,471.7	4,489.1	4,471.7	13.7	11.2	-154.50	-180.0	-227.0	238.0	216.4	21.65	10.995			
4,600.0	4,571.0	4,588.4	4,571.0	14.0	11.3	-155.66	-180.0	-227.0	248.7	226.7	22.00	11.303			
4,700.0	4,670.3	4,687.7	4,670.3	14.3	11.5	-156.73	-180.0	-227.0	259.5	237.1	22.37	11.602			
4,800.0	4,769.6	4,787.0	4,769.6	14.7	11.7	-157.72	-180.0	-227.0	270.4	247.6	22.74	11.891			
4,900.0	4,868.9	4,886.3	4,868.9	15.0	11.9	-158.63	-180.0	-227.0	281.3	258.2	23.12	12.170			
5,000.0	4,968.2	4,985.6	4,968.2	15.3	12.0	-159.47	-180.0	-227.0	292.3	268.8	23.50	12.440			
5,100.0	5,067.5	5,084.9	5,067.5	15.6	12.2	-160.25	-180.0	-227.0	303.4	279.5	23.89	12.701			
5,200.0	5,166.8	5,184.2	5,166.8	15.9	12.4	-160.97	-180.0	-227.0	314.5	290.2	24.28	12.953			
5,300.0	5,266.3	5,283.8	5,266.3	16.2	12.6	-161.60	-180.0	-227.0	323.9	299.3	24.62	13.154			
5,400.0	5,366.1	5,383.5	5,366.1	16.3	12.8	-161.99	-180.0	-227.0	330.0	305.0	24.95	13.224			
5,500.0	5,466.0	5,483.5	5,466.0	16.5	13.0	-162.17	-180.0	-227.0	332.8	307.5	25.27	13.169			
5,600.0	5,566.0	5,583.5	5,566.0	16.6	13.2	90.00	-180.0	-227.0	333.0	307.3	25.61	12.999			
5,700.0	5,666.0	5,683.5	5,666.0	16.8	13.4	90.00	-180.0	-227.0	333.0	307.0	25.99	12.811			
5,800.0	5,766.0	5,783.5	5,766.0	16.9	13.5	90.00	-180.0	-227.0	333.0	306.6	26.37	12.628			
5,900.0	5,866.0	5,883.5	5,866.0	17.1	13.7	90.00	-180.0	-227.0	333.0	306.2	26.75	12.448			
6,000.0	5,966.0	5,983.5	5,966.0	17.2	13.9	90.00	-180.0	-227.0	333.0	305.8	27.13	12.272			
6,100.0	6,066.0	6,083.5	6,066.0	17.4	14.1	90.00	-180.0	-227.0	333.0	305.4	27.51	12.101			
6,200.0	6,166.0	6,183.5	6,166.0	17.5	14.3	90.00	-180.0	-227.0	333.0	305.0	27.90	11.933			
6,247.9	6,213.9	6,231.3	6,213.9	17.6	14.4	90.00	-180.0	-227.0	332.9	304.8	28.11	11.846			
6,300.0	6,265.8	6,283.3	6,265.8	17.7	14.5	90.78	-180.0	-227.0	333.0	304.6	28.35	11.747			
6,400.0	6,363.9	6,383.9	6,366.1	17.8	14.7	92.83	-172.9	-227.0	333.4	304.6	28.77	11.586			
6,500.0	6,458.7	6,486.2	6,466.2	17.8	14.8	94.85	-152.3	-226.9	334.2	305.1	29.10	11.483			
6,600.0	6,548.6	6,590.2	6,564.3	17.9	14.9	96.79	-117.8	-226.7	335.4	306.0	29.35	11.426			
6,700.0	6,631.9	6,695.9	6,658.1	17.9	15.0	98.60	-69.4	-226.5	336.8	307.3	29.56	11.394			
6,800.0	6,707.4	6,803.2	6,745.7	18.0	15.1	100.27	-7.6	-226.2	338.5	308.7	29.82	11.351			
6,900.0	6,773.7	6,912.0	6,824.8	18.1	15.2	101.75	67.1	-225.8	340.3	310.0	30.24	11.252			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Waste Management 2L-401
Project:	SEC.2-T2N-R64W	TVD Reference:	WELL @ 4949.0ft (RKB - 15')
Reference Site:	Waste Management 2Q-HZ Pad Sec.2-T2N-R64W	MD Reference:	WELL @ 4949.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Waste Management 2L-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (2-06-13)	Offset TVD Reference:	Offset Datum

Offset Design Waste Management 2Q-HZ Pad Sec.2-T2N-R64W - Waste Management 2L-221 - Wellbore #1 - Plan #													Offset Site Error:	0.0ft
Survey Program: 0-MWD													Offset Well Error:	0.0ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
7,000.0	6,829.7	7,022.3	6,893.3	18.3	15.4	103.01	153.4	-225.4	341.9	311.0	30.93	11.054		
7,100.0	6,874.3	7,133.9	6,949.2	18.6	16.0	104.03	249.8	-224.9	343.4	311.4	32.01	10.729		
7,200.0	6,907.0	7,246.4	6,990.8	19.1	16.8	104.78	354.2	-224.4	344.6	311.1	33.53	10.277		
7,300.0	6,927.0	7,359.6	7,016.8	19.8	17.9	105.26	464.3	-223.9	345.5	309.9	35.53	9.724		
7,400.0	6,934.0	7,464.3	7,028.8	20.8	19.1	105.87	568.3	-223.4	346.7	308.9	37.80	9.171		
7,500.0	6,933.3	7,572.6	7,035.8	21.9	20.4	107.10	676.3	-222.9	348.8	308.7	40.15	8.688		
7,600.0	6,932.4	7,674.4	7,036.1	23.2	21.7	107.27	778.2	-222.4	349.2	306.5	42.69	8.179		
7,700.0	6,931.6	7,774.4	7,036.2	24.5	23.1	107.41	878.1	-221.9	349.5	304.1	45.37	7.704		
7,800.0	6,930.8	7,874.4	7,036.2	25.9	24.6	107.55	978.1	-221.4	349.8	301.6	48.17	7.262		
7,900.0	6,929.9	7,974.4	7,036.3	27.4	26.1	107.69	1,078.1	-220.9	350.1	299.1	51.08	6.855		
8,000.0	6,929.1	8,074.4	7,036.4	28.9	27.7	107.83	1,178.1	-220.4	350.5	296.4	54.07	6.481		
8,100.0	6,928.2	8,174.4	7,036.5	30.5	29.3	107.97	1,278.1	-219.9	350.8	293.7	57.14	6.139		
8,200.0	6,927.4	8,274.4	7,036.5	32.1	31.0	108.11	1,378.1	-219.4	351.1	290.9	60.27	5.826		
8,300.0	6,926.6	8,374.4	7,036.6	33.7	32.7	108.25	1,478.1	-218.9	351.5	288.0	63.45	5.539		
8,400.0	6,925.7	8,474.4	7,036.7	35.4	34.4	108.39	1,578.1	-218.5	351.8	285.1	66.67	5.277		
8,500.0	6,924.9	8,574.4	7,036.8	37.0	36.1	108.53	1,678.1	-218.0	352.1	282.2	69.93	5.036		
8,600.0	6,924.1	8,674.4	7,036.9	38.8	37.8	108.66	1,778.1	-217.5	352.5	279.3	73.22	4.814		
8,700.0	6,923.2	8,774.4	7,036.9	40.5	39.6	108.80	1,878.1	-217.0	352.8	276.3	76.53	4.610		
8,800.0	6,922.4	8,874.4	7,037.0	42.2	41.4	108.94	1,978.1	-216.5	353.2	273.3	79.87	4.422		
8,900.0	6,921.5	8,974.4	7,037.1	44.0	43.1	109.08	2,078.1	-216.0	353.5	270.3	83.22	4.248		
9,000.0	6,920.7	9,074.4	7,037.2	45.8	44.9	109.21	2,178.1	-215.5	353.9	267.3	86.59	4.087		
9,100.0	6,919.9	9,174.4	7,037.2	47.5	46.7	109.35	2,278.1	-215.0	354.2	264.2	89.97	3.937		
9,200.0	6,919.0	9,274.3	7,037.3	49.3	48.6	109.49	2,378.1	-214.5	354.6	261.2	93.36	3.798		
9,300.0	6,918.2	9,374.3	7,037.4	51.1	50.4	109.63	2,478.1	-214.0	354.9	258.2	96.76	3.668		
9,400.0	6,917.4	9,474.3	7,037.5	52.9	52.2	109.76	2,578.1	-213.6	355.3	255.1	100.17	3.547		
9,500.0	6,916.5	9,574.3	7,037.6	54.7	54.0	109.90	2,678.0	-213.1	355.6	252.0	103.59	3.433		
9,600.0	6,915.7	9,674.3	7,037.6	56.6	55.9	110.03	2,778.0	-212.6	356.0	249.0	107.01	3.327		
9,700.0	6,914.8	9,774.3	7,037.7	58.4	57.7	110.17	2,878.0	-212.1	356.4	245.9	110.43	3.227		
9,800.0	6,914.0	9,874.3	7,037.8	60.2	59.6	110.30	2,978.0	-211.6	356.7	242.9	113.86	3.133		
9,900.0	6,913.2	9,974.3	7,037.9	62.1	61.4	110.44	3,078.0	-211.1	357.1	239.8	117.29	3.045		
10,000.0	6,912.3	10,074.3	7,037.9	63.9	63.3	110.57	3,178.0	-210.6	357.5	236.7	120.72	2.961		
10,100.0	6,911.5	10,174.3	7,038.0	65.8	65.1	110.71	3,278.0	-210.1	357.8	233.7	124.15	2.882		
10,200.0	6,910.7	10,274.3	7,038.1	67.6	67.0	110.84	3,378.0	-209.6	358.2	230.6	127.59	2.808		
10,300.0	6,909.8	10,374.3	7,038.2	69.5	68.9	110.98	3,478.0	-209.2	358.6	227.6	131.02	2.737		
10,400.0	6,909.0	10,474.3	7,038.3	71.3	70.7	111.11	3,578.0	-208.7	358.9	224.5	134.45	2.670		
10,500.0	6,908.1	10,574.3	7,038.3	73.2	72.6	111.24	3,678.0	-208.2	359.3	221.4	137.88	2.606		
10,600.0	6,907.3	10,674.3	7,038.4	75.0	74.5	111.38	3,778.0	-207.7	359.7	218.4	141.31	2.546		
10,700.0	6,906.5	10,774.3	7,038.5	76.9	76.4	111.51	3,878.0	-207.2	360.1	215.4	144.74	2.488		
10,800.0	6,905.6	10,874.3	7,038.6	78.8	78.2	111.64	3,978.0	-206.7	360.5	212.3	148.16	2.433		
10,900.0	6,904.8	10,974.3	7,038.6	80.7	80.1	111.77	4,078.0	-206.2	360.9	209.3	151.59	2.381		
11,000.0	6,904.0	11,074.3	7,038.7	82.5	82.0	111.90	4,178.0	-205.7	361.2	206.2	155.01	2.331		
11,100.0	6,903.1	11,174.3	7,038.8	84.4	83.9	112.04	4,278.0	-205.2	361.6	203.2	158.43	2.283		
11,200.0	6,902.3	11,274.3	7,038.9	86.3	85.8	112.17	4,378.0	-204.7	362.0	200.2	161.84	2.237		
11,300.0	6,901.4	11,374.3	7,039.0	88.2	87.7	112.30	4,477.9	-204.3	362.4	197.2	165.25	2.193		
11,352.2	6,901.0	11,426.4	7,039.0	89.1	88.6	112.37	4,530.1	-204.0	362.6	195.6	167.03	2.171 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Waste Management 2L-401
Project:	SEC.2-T2N-R64W	TVD Reference:	WELL @ 4949.0ft (RKB - 15')
Reference Site:	Waste Management 2Q-HZ Pad Sec.2-T2N-R64W	MD Reference:	WELL @ 4949.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Waste Management 2L-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (2-06-13)	Offset TVD Reference:	Offset Datum

Offset Design Waste Management 2Q-HZ Pad Sec.2-T2N-R64W - Waste Management 2Q-201 - Wellbore #1 - Plan #														Offset Site Error:	0.0ft
Survey Program: 0-MWD														Offset Well Error:	0.0ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning		
0.0	0.0	0.0	0.0	0.0	0.0	90.02	0.0	89.4	89.5						
100.0	100.0	98.0	98.0	0.1	0.1	90.02	0.0	89.4	89.4	89.2	0.22	401.945			
200.0	200.0	198.0	198.0	0.3	0.3	90.02	0.0	89.4	89.4	88.8	0.67	133.534 CC, ES			
300.0	300.0	298.0	298.0	0.5	0.6	-162.49	0.0	89.4	91.1	90.0	1.11	81.996			
400.0	399.8	397.8	397.8	0.8	0.8	-163.40	0.0	89.4	96.1	94.6	1.56	61.797			
500.0	499.5	497.5	497.5	1.0	1.0	-164.72	0.0	89.4	104.5	102.5	2.01	52.001			
600.0	598.8	596.8	596.8	1.3	1.2	-166.21	0.0	89.4	115.7	113.2	2.46	46.996			
700.0	698.1	696.1	696.1	1.6	1.5	-167.47	0.0	89.4	127.1	124.2	2.91	43.648			
800.0	797.4	795.4	795.4	1.9	1.7	-168.53	0.0	89.4	138.6	135.3	3.37	41.177			
900.0	896.7	894.7	894.7	2.2	1.9	-169.42	0.0	89.4	150.2	146.4	3.82	39.286			
1,000.0	996.0	994.0	994.0	2.5	2.1	-170.18	0.0	89.4	161.8	157.5	4.28	37.795			
1,100.0	1,095.3	1,088.9	1,088.9	2.8	2.3	-170.55	-0.6	90.7	174.6	169.9	4.72	37.026			
1,200.0	1,194.6	1,182.8	1,182.7	3.2	2.5	-170.32	-2.7	94.6	190.0	184.9	5.14	36.962 SF			
1,300.0	1,293.9	1,275.8	1,275.4	3.5	2.7	-169.64	-6.0	101.3	208.1	202.6	5.57	37.338			
1,400.0	1,393.2	1,371.8	1,370.8	3.8	2.9	-168.69	-10.6	110.3	228.3	222.3	6.02	37.924			
1,500.0	1,492.5	1,469.6	1,468.1	4.1	3.1	-167.86	-15.3	119.6	248.8	242.3	6.47	38.421			
1,600.0	1,591.8	1,567.4	1,565.3	4.4	3.4	-167.15	-20.1	129.0	269.2	262.3	6.93	38.832			
1,700.0	1,691.1	1,665.3	1,662.6	4.7	3.6	-166.55	-24.8	138.3	289.7	282.3	7.40	39.169			
1,800.0	1,790.4	1,763.1	1,759.9	5.1	3.9	-166.02	-29.6	147.7	310.2	302.3	7.86	39.449			
1,900.0	1,889.7	1,860.9	1,857.2	5.4	4.2	-165.56	-34.3	157.1	330.8	322.4	8.34	39.676			
2,000.0	1,989.0	1,958.8	1,954.4	5.7	4.4	-165.15	-39.0	166.4	351.3	342.5	8.81	39.877			
2,100.0	2,088.4	2,056.6	2,051.7	6.0	4.7	-164.79	-43.8	175.8	371.9	362.6	9.29	40.045			
2,200.0	2,187.7	2,154.4	2,149.0	6.3	5.0	-164.47	-48.5	185.1	392.5	382.7	9.77	40.190			
2,300.0	2,287.0	2,252.3	2,246.2	6.7	5.2	-164.17	-53.3	194.5	413.1	402.8	10.25	40.315			
2,400.0	2,386.3	2,350.1	2,343.5	7.0	5.5	-163.91	-58.0	203.8	433.7	422.9	10.73	40.424			
2,500.0	2,485.6	2,448.0	2,440.8	7.3	5.8	-163.67	-62.8	213.2	454.3	443.1	11.21	40.519			
2,600.0	2,584.9	2,545.8	2,538.1	7.6	6.1	-163.45	-67.5	222.5	474.9	463.2	11.70	40.604			
2,700.0	2,684.2	2,643.6	2,635.3	7.9	6.4	-163.25	-72.2	231.9	495.5	483.3	12.18	40.679			
2,800.0	2,783.5	2,741.5	2,732.6	8.3	6.7	-163.06	-77.0	241.2	516.2	503.5	12.67	40.745			
2,900.0	2,882.8	2,839.3	2,829.9	8.6	6.9	-162.89	-81.7	250.6	536.8	523.6	13.15	40.805			
3,000.0	2,982.1	2,937.1	2,927.2	8.9	7.2	-162.74	-86.5	259.9	557.4	543.8	13.64	40.859			
3,100.0	3,081.4	3,035.0	3,024.4	9.2	7.5	-162.59	-91.2	269.3	578.1	563.9	14.13	40.907			
3,200.0	3,180.7	3,132.8	3,121.7	9.5	7.8	-162.45	-96.0	278.6	598.7	584.1	14.62	40.951			
3,300.0	3,280.0	3,230.6	3,219.0	9.9	8.1	-162.32	-100.7	288.0	619.4	604.3	15.11	40.991			
3,400.0	3,379.3	3,328.5	3,316.2	10.2	8.4	-162.21	-105.4	297.3	640.0	624.4	15.60	41.027			
3,500.0	3,478.6	3,426.3	3,413.5	10.5	8.7	-162.09	-110.2	306.7	660.7	644.6	16.09	41.060			
3,600.0	3,577.9	3,524.1	3,510.8	10.8	9.0	-161.99	-114.9	316.1	681.3	664.8	16.58	41.090			
3,700.0	3,677.2	3,622.0	3,608.1	11.1	9.3	-161.89	-119.7	325.4	702.0	684.9	17.07	41.118			
3,800.0	3,776.5	3,719.8	3,705.3	11.5	9.6	-161.80	-124.4	334.8	722.7	705.1	17.56	41.144			
3,900.0	3,875.8	3,817.6	3,802.6	11.8	9.9	-161.71	-129.2	344.1	743.3	725.3	18.06	41.168			
4,000.0	3,975.1	3,915.5	3,899.9	12.1	10.1	-161.62	-133.9	353.5	764.0	745.4	18.55	41.189			
4,100.0	4,074.4	4,013.3	3,997.1	12.4	10.4	-161.55	-138.6	362.8	784.7	765.6	19.04	41.210			
4,200.0	4,173.7	4,111.2	4,094.4	12.7	10.7	-161.47	-143.4	372.2	805.3	785.8	19.53	41.228			
4,300.0	4,273.1	4,209.0	4,191.7	13.1	11.0	-161.40	-148.1	381.5	826.0	806.0	20.03	41.246			
4,400.0	4,372.4	4,306.8	4,289.0	13.4	11.3	-161.33	-152.9	390.9	846.7	826.1	20.52	41.262			
4,500.0	4,471.7	4,404.7	4,386.2	13.7	11.6	-161.27	-157.6	400.2	867.3	846.3	21.01	41.277			
4,600.0	4,571.0	4,502.5	4,483.5	14.0	11.9	-161.21	-162.4	409.6	888.0	866.5	21.51	41.291			
4,700.0	4,670.3	4,600.3	4,580.8	14.3	12.2	-161.15	-167.1	418.9	908.7	886.7	22.00	41.304			
4,800.0	4,769.6	4,698.2	4,678.0	14.7	12.5	-161.09	-171.8	428.3	929.4	906.9	22.49	41.317			
4,900.0	4,868.9	4,831.1	4,810.5	15.0	12.8	-161.08	-177.2	438.8	948.5	925.5	23.03	41.194			
5,000.0	4,968.2	4,924.4	4,951.6	15.3	13.1	-161.25	-179.8	444.1	963.4	939.8	23.52	40.953			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Waste Management 2L-401
Project:	SEC.2-T2N-R64W	TVD Reference:	WELL @ 4949.0ft (RKB - 15')
Reference Site:	Waste Management 2Q-HZ Pad Sec.2-T2N-R64W	MD Reference:	WELL @ 4949.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Waste Management 2L-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (2-06-13)	Offset TVD Reference:	Offset Datum

Offset Design										Waste Management 2Q-HZ Pad Sec.2-T2N-R64W - Waste Management 2Q-201 - Wellbore #1 - Plan #				Offset Site Error:	0.0 ft
Survey Program: 0-MWD											Offset Well Error:	0.0 ft			
Reference		Offset		Semi Major Axis			Distance								
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
5,100.0	5,067.5	5,086.3	5,065.5	15.6	13.3	-161.50	-180.0	444.4	974.8	950.8	23.98	40.654			
5,200.0	5,166.8	5,185.6	5,164.8	15.9	13.4	-161.72	-180.0	444.4	985.9	961.5	24.41	40.392			
5,300.0	5,266.3	5,285.1	5,264.3	16.2	13.6	-161.96	-180.0	444.4	995.4	970.5	24.82	40.098			

Offset Design		Waste Management 2Q-HZ Pad Sec.2-T2N-R64W - Waste Management 2Q-441 - Wellbore #1 - Plan #											Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	90.01	0.0	58.7	58.7					
100.0	100.0	99.0	99.0	0.1	0.1	90.01	0.0	58.7	58.7	58.5	0.22	262.453		
200.0	200.0	199.0	199.0	0.3	0.3	90.01	0.0	58.7	58.7	58.0	0.67	87.339	CC, ES	
300.0	300.0	299.0	299.0	0.5	0.6	-162.67	0.0	58.7	60.4	59.2	1.11	54.216		
400.0	399.8	398.8	398.8	0.8	0.8	-164.01	0.0	58.7	65.4	63.8	1.56	41.975		
500.0	499.5	498.5	498.5	1.0	1.0	-165.83	0.0	58.7	73.8	71.8	2.01	36.687		
600.0	598.8	597.8	597.8	1.3	1.2	-167.71	0.0	58.7	85.0	82.6	2.46	34.532		
700.0	698.1	697.1	697.1	1.6	1.5	-169.20	0.0	58.7	96.6	93.6	2.91	33.154		
800.0	797.4	796.4	796.4	1.9	1.7	-170.37	0.0	58.7	108.1	104.8	3.37	32.131		
900.0	896.7	895.7	895.7	2.2	1.9	-171.31	0.0	58.7	119.8	115.9	3.82	31.344		
1,000.0	996.0	995.0	995.0	2.5	2.1	-172.09	0.0	58.7	131.4	127.1	4.28	30.723		
1,100.0	1,095.3	1,094.3	1,094.3	2.8	2.3	-172.74	0.0	58.7	143.1	138.4	4.74	30.219		
1,200.0	1,194.6	1,193.6	1,193.6	3.2	2.6	-173.29	0.0	58.7	154.8	149.6	5.19	29.804		
1,300.0	1,293.9	1,292.9	1,292.9	3.5	2.8	-173.76	0.0	58.7	166.5	160.8	5.65	29.455		
1,400.0	1,393.2	1,392.2	1,392.2	3.8	3.0	-174.17	0.0	58.7	178.2	172.1	6.11	29.158		
1,500.0	1,492.5	1,491.5	1,491.5	4.1	3.2	-174.53	0.0	58.7	189.9	183.3	6.57	28.903		
1,600.0	1,591.8	1,590.8	1,590.8	4.4	3.5	-174.85	0.0	58.7	201.6	194.6	7.03	28.681		
1,700.0	1,691.1	1,690.1	1,690.1	4.7	3.7	-175.13	0.0	58.7	213.4	205.9	7.49	28.486		
1,800.0	1,790.4	1,789.4	1,789.4	5.1	3.9	-175.39	0.0	58.7	225.1	217.1	7.95	28.313		
1,900.0	1,889.7	1,888.7	1,888.7	5.4	4.1	-175.62	0.0	58.7	236.8	228.4	8.41	28.159		
2,000.0	1,989.0	1,988.0	1,988.0	5.7	4.4	-175.83	0.0	58.7	248.6	239.7	8.87	28.021		
2,100.0	2,088.4	2,087.4	2,087.4	6.0	4.6	-176.01	0.0	58.7	260.3	251.0	9.33	27.897		
2,200.0	2,187.7	2,186.7	2,186.7	6.3	4.8	-176.19	0.0	58.7	272.1	262.3	9.79	27.784		
2,300.0	2,287.0	2,286.0	2,286.0	6.7	5.0	-176.34	0.0	58.7	283.8	273.6	10.25	27.682		
2,400.0	2,386.3	2,385.3	2,385.3	7.0	5.2	-176.49	0.0	58.7	295.6	284.8	10.71	27.588		
2,500.0	2,485.6	2,484.6	2,484.6	7.3	5.5	-176.62	0.0	58.7	307.3	296.1	11.17	27.502		
2,600.0	2,584.9	2,583.9	2,583.9	7.6	5.7	-176.75	0.0	58.7	319.1	307.4	11.64	27.422		
2,700.0	2,684.2	2,683.2	2,683.2	7.9	5.9	-176.86	0.0	58.7	330.8	318.7	12.10	27.349		
2,800.0	2,783.5	2,782.5	2,782.5	8.3	6.1	-176.97	0.0	58.7	342.6	330.0	12.56	27.281		
2,900.0	2,882.8	2,881.8	2,881.8	8.6	6.4	-177.07	0.0	58.7	354.3	341.3	13.02	27.218		
3,000.0	2,982.1	2,981.1	2,981.1	8.9	6.6	-177.17	0.0	58.7	366.1	352.6	13.48	27.159		
3,100.0	3,081.4	3,080.3	3,080.3	9.2	6.8	-177.08	-1.1	59.0	377.9	363.9	13.92	27.149		
3,200.0	3,180.7	3,179.3	3,179.2	9.5	7.0	-176.51	-5.4	60.2	389.7	375.3	14.33	27.186		
3,300.0	3,280.0	3,277.9	3,277.5	9.9	7.1	-175.48	-13.0	62.3	401.7	386.9	14.75	27.226		
3,400.0	3,379.3	3,376.5	3,375.5	10.2	7.3	-174.13	-23.2	65.1	413.9	398.7	15.19	27.258		
3,500.0	3,478.6	3,475.2	3,473.6	10.5	7.5	-172.81	-33.7	68.1	426.4	410.8	15.63	27.283		
3,600.0	3,577.9	3,574.0	3,571.8	10.8	7.7	-171.58	-44.2	71.0	439.1	423.1	16.08	27.303		
3,700.0	3,677.2	3,672.7	3,669.9	11.1	7.9	-170.41	-54.7	73.9	452.0	435.5	16.55	27.318		
3,800.0	3,776.5	3,771.5	3,768.1	11.5	8.1	-169.30	-65.2	76.8	465.1	448.1	17.02	27.328		
3,900.0	3,875.8	3,870.2	3,866.2	11.8	8.3	-168.26	-75.7	79.7	478.4	460.9	17.50	27.335		
4,000.0	3,975.1	3,969.0	3,964.4	12.1	8.5	-167.27	-86.2	82.6	491.8	473.8	17.99	27.340		
4,100.0	4,074.4	4,067.7	4,062.5	12.4	8.8	-166.34	-96.7	85.6	505.3	486.8	18.48	27.342		
4,200.0	4,173.7	4,166.5	4,160.7	12.7	9.0	-165.45	-107.2	88.5	518.9	500.0	18.98	27.342		
4,300.0	4,273.1	4,265.2	4,258.8	13.1	9.2	-164.61	-117.7	91.4	532.7	513.2	19.48	27.341		
4,400.0	4,372.4	4,364.0	4,357.0	13.4	9.5	-163.81	-128.2	94.3	546.6	526.6	19.99	27.339		
4,500.0	4,471.7	4,462.7	4,455.1	13.7	9.7	-163.05	-138.7	97.2	560.6	540.1	20.51	27.336		
4,600.0	4,571.0	4,561.5	4,553.3	14.0	9.9	-162.33	-149.2	100.1	574.6	553.6	21.02	27.333		
4,700.0	4,670.3	4,660.2	4,651.4	14.3	10.2	-161.64	-159.7	103.0	588.8	567.2	21.54	27.330		
4,800.0	4,769.6	4,763.2	4,753.8	14.7	10.5	-161.04	-169.8	105.9	602.8	580.7	22.07	27.313		
4,900.0	4,868.9	4,868.8	4,859.1	15.0	10.7	-160.78	-176.7	107.8	615.8	593.3	22.58	27.277		
5,000.0	4,968.2	4,974.7	4,965.0	15.3	10.9	-160.87	-179.8	108.6	627.9	604.8	23.05	27.239		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Waste Management 2L-401
Project:	SEC.2-T2N-R64W	TVD Reference:	WELL @ 4949.0ft (RKB - 15')
Reference Site:	Waste Management 2Q-HZ Pad Sec.2-T2N-R64W	MD Reference:	WELL @ 4949.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Waste Management 2L-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (2-06-13)	Offset TVD Reference:	Offset Datum

Offset Design		Waste Management 2Q-HZ Pad Sec.2-T2N-R64W - Waste Management 2Q-441 - Wellbore #1 - Plan #										Offset Site Error:		0.0 ft
Survey Program: 0-MWD												Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,100.0	5,067.5	5,076.2	5,066.5	15.6	11.1	-161.20	-180.0	108.7	639.1	615.6	23.49	27.206		
5,200.0	5,166.8	5,175.5	5,165.8	15.9	11.3	-161.54	-180.0	108.7	650.2	626.3	23.93	27.173		
5,300.0	5,266.3	5,275.0	5,265.3	16.2	11.5	-161.87	-180.0	108.7	659.6	635.3	24.33	27.111		
5,400.0	5,366.1	5,374.8	5,365.1	16.3	11.7	-162.08	-180.0	108.7	665.7	641.0	24.71	26.944		
5,500.0	5,466.0	5,474.7	5,465.0	16.5	12.0	-162.17	-180.0	108.7	668.5	643.4	25.06	26.676		
5,600.0	5,566.0	5,574.7	5,565.0	16.6	12.2	90.00	-180.0	108.7	668.7	643.3	25.43	26.300		
5,700.0	5,666.0	5,674.7	5,665.0	16.8	12.4	90.00	-180.0	108.7	668.7	642.9	25.81	25.909		
5,800.0	5,766.0	5,774.7	5,765.0	16.9	12.6	90.00	-180.0	108.7	668.7	642.5	26.20	25.527		
5,900.0	5,866.0	5,874.7	5,865.0	17.1	12.8	90.00	-180.0	108.7	668.7	642.1	26.58	25.154		
6,000.0	5,966.0	5,974.7	5,965.0	17.2	13.0	90.00	-180.0	108.7	668.7	641.7	26.97	24.790		
6,100.0	6,066.0	6,074.7	6,065.0	17.4	13.2	90.00	-180.0	108.7	668.7	641.3	27.37	24.436		
6,200.0	6,166.0	6,174.7	6,165.0	17.5	13.4	90.00	-180.0	108.7	668.7	640.9	27.76	24.089		
6,300.0	6,265.8	6,274.3	6,264.4	17.7	13.6	89.76	-174.2	108.7	668.7	640.6	28.12	23.783		
6,400.0	6,363.9	6,374.0	6,362.2	17.8	13.8	89.78	-155.5	108.8	668.7	640.3	28.38	23.564		
6,500.0	6,458.7	6,473.6	6,456.7	17.8	13.9	89.80	-124.2	109.0	668.7	640.1	28.59	23.392		
6,600.0	6,548.6	6,573.3	6,546.4	17.9	14.0	89.82	-80.9	109.2	668.7	639.9	28.79	23.225		
6,700.0	6,631.9	6,673.0	6,629.8	17.9	14.1	89.85	-26.3	109.4	668.8	639.7	29.07	23.004		
6,800.0	6,707.4	6,772.8	6,705.3	18.0	14.3	89.88	38.8	109.7	668.8	639.3	29.50	22.672		
6,900.0	6,773.7	6,872.6	6,771.8	18.1	14.7	89.91	113.2	110.1	668.8	638.7	30.15	22.180		
7,000.0	6,829.7	6,972.5	6,828.0	18.3	15.2	89.95	195.6	110.5	668.8	637.7	31.10	21.504		
7,100.0	6,874.3	7,072.4	6,873.0	18.6	15.8	89.98	284.8	110.9	668.9	636.5	32.39	20.652		
7,200.0	6,907.0	7,172.4	6,906.1	19.1	16.7	90.02	379.0	111.4	668.9	634.9	34.02	19.664		
7,300.0	6,927.0	7,272.4	6,926.5	19.8	17.7	90.05	476.9	111.9	669.0	633.0	35.97	18.599		
7,400.0	6,934.0	7,372.5	6,934.0	20.8	18.8	90.08	576.6	112.3	669.0	630.8	38.19	17.518		
7,500.0	6,933.3	7,472.5	6,933.3	21.9	20.0	90.09	676.7	112.8	669.1	628.4	40.65	16.459		
7,600.0	6,932.4	7,572.5	6,932.5	23.2	21.4	90.09	776.7	113.3	669.1	625.8	43.30	15.453		
7,700.0	6,931.6	7,672.5	6,931.6	24.5	22.8	90.09	876.6	113.8	669.1	623.0	46.12	14.510		
7,800.0	6,930.8	7,772.5	6,930.8	25.9	24.3	90.09	976.6	114.3	669.2	620.1	49.07	13.637		
7,900.0	6,929.9	7,872.5	6,929.9	27.4	25.8	90.09	1,076.6	114.7	669.2	617.1	52.14	12.835		
8,000.0	6,929.1	7,972.5	6,929.1	28.9	27.4	90.09	1,176.6	115.2	669.3	614.0	55.30	12.101		
8,100.0	6,928.2	8,072.5	6,928.3	30.5	29.1	90.09	1,276.6	115.7	669.3	610.8	58.55	11.432		
8,200.0	6,927.4	8,172.5	6,927.4	32.1	30.7	90.09	1,376.6	116.2	669.4	607.5	61.86	10.820		
8,300.0	6,926.6	8,272.5	6,926.6	33.7	32.4	90.09	1,476.6	116.7	669.4	604.2	65.23	10.262		
8,400.0	6,925.7	8,372.5	6,925.8	35.4	34.1	90.09	1,576.6	117.1	669.4	600.8	68.65	9.752		
8,500.0	6,924.9	8,472.5	6,924.9	37.0	35.9	90.09	1,676.6	117.6	669.5	597.4	72.11	9.284		
8,600.0	6,924.1	8,572.5	6,924.1	38.8	37.6	90.09	1,776.6	118.1	669.5	593.9	75.60	8.856		
8,700.0	6,923.2	8,672.5	6,923.2	40.5	39.4	90.09	1,876.6	118.6	669.6	590.4	79.13	8.462		
8,800.0	6,922.4	8,772.5	6,922.4	42.2	41.2	90.09	1,976.6	119.1	669.6	586.9	82.68	8.098		
8,900.0	6,921.5	8,872.5	6,921.6	44.0	43.0	90.09	2,076.6	119.5	669.7	583.4	86.26	7.763		
9,000.0	6,920.7	8,972.5	6,920.7	45.8	44.8	90.09	2,176.6	120.0	669.7	579.8	89.86	7.452		
9,100.0	6,919.9	9,072.5	6,919.9	47.5	46.6	90.09	2,276.6	120.5	669.7	576.3	93.48	7.164		
9,200.0	6,919.0	9,172.5	6,919.1	49.3	48.4	90.09	2,376.6	121.0	669.8	572.7	97.11	6.897		
9,300.0	6,918.2	9,272.5	6,918.2	51.1	50.3	90.09	2,476.6	121.5	669.8	569.1	100.76	6.647		
9,400.0	6,917.4	9,372.5	6,917.4	52.9	52.1	90.09	2,576.6	122.0	669.9	565.4	104.43	6.415		
9,500.0	6,916.5	9,472.5	6,916.5	54.7	53.9	90.09	2,676.6	122.4	669.9	561.8	108.10	6.197		
9,600.0	6,915.7	9,572.5	6,915.7	56.6	55.8	90.09	2,776.6	122.9	669.9	558.2	111.78	5.993		
9,700.0	6,914.8	9,672.5	6,914.9	58.4	57.6	90.09	2,876.6	123.4	670.0	554.5	115.48	5.802		
9,800.0	6,914.0	9,772.5	6,914.0	60.2	59.5	90.09	2,976.6	123.9	670.0	550.9	119.18	5.622		
9,900.0	6,913.2	9,872.5	6,913.2	62.1	61.3	90.09	3,076.5	124.4	670.1	547.2	122.89	5.453		
10,000.0	6,912.3	9,972.5	6,912.4	63.9	63.2	90.09	3,176.5	124.8	670.1	543.5	126.61	5.293		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

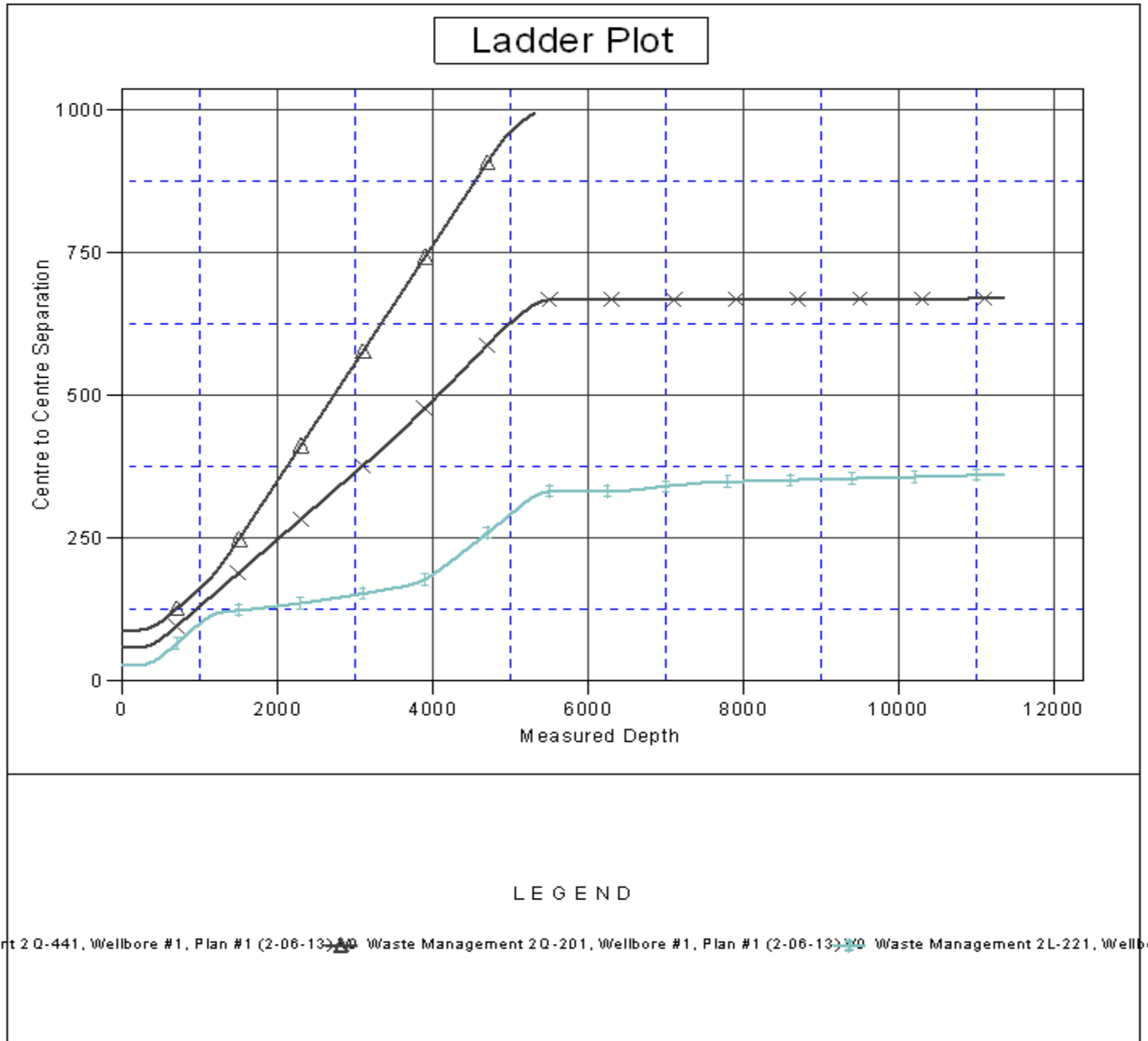
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Waste Management 2L-401
Project:	SEC.2-T2N-R64W	TVD Reference:	WELL @ 4949.0ft (RKB - 15')
Reference Site:	Waste Management 2Q-HZ Pad Sec.2-T2N-R64W	MD Reference:	WELL @ 4949.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Waste Management 2L-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (2-06-13)	Offset TVD Reference:	Offset Datum

Offset Design Waste Management 2Q-HZ Pad Sec.2-T2N-R64W - Waste Management 2Q-441 - Wellbore #1 - Plan #													Offset Site Error: 0.0 ft
Survey Program: 0-MWD													Offset Well Error: 0.0 ft
Reference	Offset	Semi Major Axis		Distance		Warning							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
10,100.0	6,911.5	10,072.5	6,911.5	65.8	65.1	90.09	3,276.5	125.3	670.2	539.8	130.34	5.142	
10,200.0	6,910.7	10,172.5	6,910.7	67.6	66.9	90.09	3,376.5	125.8	670.2	536.1	134.07	4.999	
10,300.0	6,909.8	10,272.5	6,909.8	69.5	68.8	90.09	3,476.5	126.3	670.2	532.4	137.80	4.864	
10,400.0	6,909.0	10,372.5	6,909.0	71.3	70.7	90.09	3,576.5	126.8	670.3	528.7	141.55	4.735	
10,500.0	6,908.1	10,472.5	6,908.2	73.2	72.5	90.09	3,676.5	127.2	670.3	525.0	145.29	4.614	
10,600.0	6,907.3	10,572.5	6,907.3	75.0	74.4	90.09	3,776.5	127.7	670.4	521.3	149.04	4.498	
10,700.0	6,906.5	10,672.5	6,906.5	76.9	76.3	90.09	3,876.5	128.2	670.4	517.6	152.80	4.388	
10,800.0	6,905.6	10,772.5	6,905.7	78.8	78.2	90.09	3,976.5	128.7	670.5	513.9	156.56	4.282	
10,900.0	6,904.8	10,872.5	6,904.8	80.7	80.1	90.09	4,076.5	129.2	670.5	510.2	160.32	4.182	
11,000.0	6,904.0	10,972.5	6,904.0	82.5	82.0	90.09	4,176.5	129.6	670.5	506.5	164.09	4.087	
11,100.0	6,903.1	11,072.5	6,903.1	84.4	83.8	90.09	4,276.5	130.1	670.6	502.7	167.85	3.995	
11,200.0	6,902.3	11,172.5	6,902.3	86.3	85.7	90.09	4,376.5	130.6	670.6	499.0	171.63	3.907	
11,300.0	6,901.4	11,272.5	6,901.5	88.2	87.6	90.09	4,476.5	131.1	670.7	495.3	175.40	3.824	
11,352.2	6,901.0	11,324.7	6,901.0	89.1	88.6	90.09	4,528.7	131.3	670.7	493.3	177.37	3.781 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Waste Management 2L-401
Project:	SEC.2-T2N-R64W	TVD Reference:	WELL @ 4949.0ft (RKB - 15')
Reference Site:	Waste Management 2Q-HZ Pad Sec.2-T2N-R64W	MD Reference:	WELL @ 4949.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Waste Management 2L-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (2-06-13)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4949.0ft (RKB - 15')
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Waste Management 2L-401
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.63°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Waste Management 2L-401
Project:	SEC.2-T2N-R64W	TVD Reference:	WELL @ 4949.0ft (RKB - 15')
Reference Site:	Waste Management 2Q-HZ Pad Sec.2-T2N-R64W	MD Reference:	WELL @ 4949.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Waste Management 2L-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (2-06-13)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4949.0ft (RKB - 15')
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Waste Management 2L-401
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.63°

