

AP-111

AGWMR

10 of 12

2013

**WESTERN REFINING - GALLUP REFINERY**  
**4th QTR 2013**

NAPIS-3		TEST PARAMETERS								
			Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE	11/12/2013	(1)	1037	7.21	14.68	3.846	3.113	2.58	123.1	-40.3
GAUGE TIME	900	(2)	1039	8.03	18.62	3.880	2.872	2.37	46.1	-38.1
DTB (feet)										
Depth to Bottom	30.42	(3)	1041	8.10	18.42	3.872	2.879	2.37	45.5	-34.6
DEDICATED PUMP	N	(4)	1043	8.13	18.26	3.858	2.878	2.37	44.7	-33.6
DTW (feet)		WEATHER CONDITIONS								
Depth to Water	8.61									
DTB - DTW	21.81									
Capacity per foot	0.163									
3 Well Volumes	10.67									
PURGE DATE	11/12/2013	WATER APPEARANCE								
PURGE TIME	900									
SAMPLE DAY	11/12/2013									
SAMPLE TIME	1045									
PUMP DEPTH	N/A									
DTW (feet)		Clear to slightly cloudy. Turned murky at end of bailing. No odor detected.								
at end of Purging	N/A									

**SAMPLE LOG**

Upon uncovering flush mount cover, water was observed inside housing. Bailed water out before removing well plug. Began purge using new bailer. Purged approximately 9 gallons of water, water turned brown/murky at end of purging. Collected water samples, labeled and placed on ice in cooler. Purge water collected in a 5 gallon plastic bucket to be drained into the sewer

KA-3		TEST PARAMATERS								
			Time (hrs)	pH	Temperature Deg C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE	11/12/2013	(1)	1028	7.74	21.94	1.624	1.121	0.87	53.6	-66.6
GAUGE TIME	900	(2)	1030	7.72	21.78	1.614	1.118	0.87	54.9	-53.9
DTB (feet)										
Depth to Bottom	23.20	(3)	1032	7.71	21.38	1.601	1.118	0.87	52.9	-47.9
DEDICATED PUMP	N	(4)	1034	7.70	21.04	1.592	1.119	0.87	53.6	-44.3
DTW (feet)		WEATHER CONDITIONS								
Depth to Water	7.91									
DTB - DTW	15.29									
Capacity per foot	0.163									
3 Well Volumes	7.48									
PURGE DATE	11/12/2013	Clear, slight breeze 0-5 mph, 50-55 Deg F.								
PURGE TIME	900									
SAMPLE DAY	11/12/2013									
SAMPLE TIME	1030									
PUMP DEPTH	N/A									
DTW (feet)		WATER APPEARANCE								
at end of Purging	N/A									
		Clear with slight yellow tint, turned murky brown at end of bailing								
		No odor detected								

**SAMPLE LOG**

Upon uncovering flush mount cover, water was observed inside housing. Bailed water out before removing well plug. Began purge using new bailer. Purged approximately 6 gallons of water. Collected water samples, labeled and placed on ice in cooler. Purge water collected in a 5 gallon plastic bucket to be drained into the sewer system upstream of the NAPIS.

**INSTRUMENTS USED:**

YSI 556 MPS instrument used to collect water quality parameters.  
 Water Level - Heron Instrument 100 feet DipperT electric water depth tape.  
 Disposable polyethylene bailer (1.5" x 36" OAL) Individually sealed.

Signature: \_\_\_\_\_

Cheryl Johnson - Environmental Specialist/Western Refining

WESTERN REFINING - GALLUP REFINERY  
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East LDU		TEST PARAMETERS								
			Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE	11/12/2013	(1)	Not applicable							
GAUGE TIME	1215	(2)								
DTB (feet)	N/A	(3)								
Depth to Bottom		(4)								
DEDICATED PUMP	N	WEATHER CONDITIONS								
DTW (feet)	6.75									
Depth to Water	N/A									
DTB - DTW	N/A									
Capacity per foot	N/A									
3 Well Volumes	N/A	Clear, slight breeze 0-5 mph, 50-55 Deg F.								
PURGE DATE	N/A									
PURGE TIME	N/A									
		WATER APPEARANCE								
SAMPLE DAY	11/12/2013									
SAMPLE TIME	1230	Yellow with green (dye) tint, oil sheen, and has slight odor								
PUMP DEPTH	N/A									
DTW (feet)	N/A									
at end of Purging										

**SAMPLE LOG**

Used bailer to collect samples.

West LDU		TEST PARAMATERS								
			Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE	11/12/2013	(1)	Not applicable							
GAUGE TIME	1215	(2)								
DTB (feet)	N/A	(3)								
Depth to Bottom		(4)								
DEDICATED PUMP	N	WEATHER CONDITIONS								
DTW (feet)	3.93									
Depth to Water	N/A									
DTB - DTW	N/A									
Capacity per foot	N/A									
3 Well Volumes	N/A	Clear, slight breeze 0-5 mph, 50-55 Deg F.								
PURGE DATE	N/A									
PURGE TIME	N/A									
		WATER APPEARANCE								
SAMPLE DAY	11/12/2013									
SAMPLE TIME	1215	Green tint with odor								
PUMP DEPTH	N/A									
DTW (feet)	N/A									
at end of Purging										

**SAMPLE LOG**

The west bay of the NAPIS unit is out of service at this time. However there was water inside the standpipe and went ahead and collected a grab sample. Has traces of green dye.

**INSTRUMENTS USED:**

Disposable polyethylene bailer (1.5" x 36" OAL) Individually sealed.

Signature:

  
Cheryl Johnson - Environmental Specialist/Western Refining

**WESTERN REFINING - GALLUP REFINERY**  
**4th QTR 2013**

<b>Oil Sump LDU</b>		<b>TEST PARAMATERS</b>								
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE	11/12/2013	(1)	Not applicable							
GAUGE TIME	1215	(2)								
DTB (feet)		(3)								
Depth to Bottom	N/A	(4)								
DEDICATED PUMP	N	<b>WEATHER CONDITIONS</b>								
DTW (feet)										
Depth to Water	DRY									
DTB - DTW	N/A									
Capacity per foot	N/A									
3 Well Volumes	N/A	Clear, slight breeze 0-5 mph, 50-55 Deg F.								
PURGE DATE	N/A									
PURGE TIME	N/A									
		<b>WATER APPEARANCE</b>								
SAMPLE DAY	11/12/2013									
SAMPLE TIME	N/A									
PUMP DEPTH	N/A									
DTW (feet) at end of Purging	N/A									

**SAMPLE LOG**

No samples collected.

**INSTRUMENTS USED:**

Disposable polyethylene bailer (1.5" x 36" OAL) Individually sealed.

**Signature:**

  
 Cheryl Johnson - Environmental Specialist/Western Refining



**WESTERN REFINING - GALLUP REFINERY**  
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OW-1		TEST PARAMATERS								
			Time (hrs)	pH	Temperature Deg C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE	11/11/2013	(1)	917	9.08	12.32	1.009	0.865	0.670	389.69	-55.0
GAUGE TIME	900	(2)	919	9.17	13.00	1.025	0.865	0.670	7.4	-53.6
DTB (feet)										
Depth to Bottom	94.55	(3)	921	9.19	12.94	1.024	0.865	0.670	4.1	-62.4
DEDICATED PUMP	Y	(4)	923	9.21	12.99	1.025	0.864	0.670	3	-69.3
DTW (feet)	0.00	WEATHER CONDITIONS								
Depth to Water										
DTB - DTW	94.55									
Capacity per foot	0.650									
3 Well Volumes	184.37	Clear day, 0-5 mph, 40-45 Deg F.								
PURGE DATE	11/11/2013	WATER APPEARANCE								
PURGE TIME	900									
SAMPLE DAY	11/11/2013									
SAMPLE TIME	0930									
PUMP DEPTH	89	Clear to murky brown at beginning of purge. Clear and no odor at end of								
DTW (feet)		purge.								
at end of Purging	N/A									

**SAMPLE LOG**

Purged approximately 100 gallons, collected water samples, labeled and placed on ice in cooler. Purge water collected in labeled 55 gal drum to be drained into the sewer system upstream of the NAPIS .

OW-10		TEST PARAMATERS								
			Time (hrs)	pH	Temperature Deg C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE	11/11/2013	(1)	815	8.17	12.64	2.941	2.502	2.05	17	-28.6
GAUGE TIME	755	(2)	817	7.87	12.55	2.913	2.484	2.03	2.9	-33.2
DTB (feet)										
Depth to Bottom	60.33	(3)	819	7.79	12.55	2.872	2.449	2.00	2.5	-37.0
DEDICATED PUMP	Y	(4)	821	7.75	12.55	2.883	2.459	2.01	2.4	-39.5
DTW (feet)	0.00	WEATHER CONDITIONS								
Depth to Water										
DTB - DTW	60.33									
Capacity per foot	0.740									
3 Well Volumes	133.93	Clear day, 0-5 mph, 40-45 Deg F.								
PURGE DATE	11/11/2013	WATER APPEARANCE								
PURGE TIME	755									
SAMPLE DAY	11/11/2013	Clear - No odor detected.								
SAMPLE TIME	830									
PUMP DEPTH	55									
DTW (feet)										
at end of Purging	N/A									

**SAMPLE LOG**

Purged approximately 100 gals. Collected water samples, labeled and placed on ice in cooler. Purge water collected in labeled 55 gal drum to be drained into the sewer system upstream of the NAPIS .

**INSTRUMENTS USED:**

YSI 556 MPS instrument used to collect water quality parameters.

Water Level - Heron Instrument 100 feet DipperT electric water depth tape.

Submersible bladder pump, Grundfos Redi-flo2 2" and the adjustable rate controller.

**Signature:**

  
Cheryl Johnson - Environmental Specialist/Western Refining

**WESTERN REFINING - GALLUP REFINERY**  
**4th QTR 2013**

OW-13		TEST PARAMATERS								
			Time (hrs)	pH	Temperature Deg C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE	11/11/2013	(1)	1351	9.19	13.08	0.963	0.811	0.69	306.1	-62.9
GAUGE TIME	1300	(2)	1353	8.94	13.27	0.965	0.809	0.62	8	-68.4
DTB (feet)	99.15	(3)	1355	8.86	13.12	0.961	0.808	0.62	3.6	-81.9
Depth to Bottom										
DEDICATED PUMP	Y	(4)	WEATHER CONDITIONS  Clear, slight breeze 0-5 mph, 70-75 deg.							
DTW (feet)	22.38									
Depth to Water	76.77									
DTB - DTW	0.740									
Capacity per foot	170.43									
3 Well Volumes		WATER APPEARANCE  Clear - no odor detected.								
PURGE DATE	11/11/2013									
PURGE TIME	1300									
SAMPLE DAY	11/11/2013									
SAMPLE TIME	1400									
PUMP DEPTH	80 ft									
DTW (feet)										
at end of Purging	N/A									

**SAMPLE LOG**

Began with purge. Pumped approximately 110 gals. Collected water samples, labeled and placed on ice in cooler. Purge water collected in labeled 55 gal drum to be drained into the sewer system upstream of the NAPIS .

OW-14		TEST PARAMATERS								
			Time (hrs)	pH	Temperature Deg C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE	11/11/2013	(1)	1121	8.51	13.89	0.854	1.537	1.22	86.2	-188.9
GAUGE TIME	1100	(2)	1123	8.01	13.69	1.854	1.536	1.22	8.3	-243.7
DTB (feet)	46.52 Y	(3)	1125	7.83	13.68	1.852	1.176	1.22	5.6	-255.0
Depth to Bottom										
DEDICATED PUMP										
DTW (feet)		24.59								
Depth to Water	21.93	WEATHER CONDITIONS  Clear, slight breeze 0-5 mph, 60-65 deg.								
DTB - DTW	0.740									
Capacity per foot	48.68									
3 Well Volumes										
PURGE DATE	11/11/2013	WATER APPEARANCE								
PURGE TIME	1100									
SAMPLE DAY	11/11/2013	Clear - no odor detected.								
SAMPLE TIME	1130									
PUMP DEPTH	30 ft									
DTW (feet)										
at end of Purging	N/A									

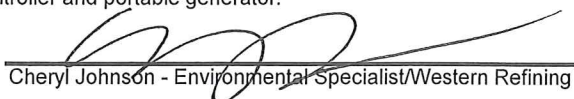
**SAMPLE LOG**

Began with purge. Pumped approximately 40 gals. Collected water samples, labeled and placed on ice in cooler. Purge water collected in labeled 55 gal drum to be drained into the sewer system upstream of the NAPIS .

**INSTRUMENTS USED:**

YSI 556 MPS instrument used to collect water quality parameters.  
 Water Level - Heron Instrument 100 feet DipperT electric water depth tape.  
 Low flow pump controller and portable generator.

**Signature:**

  
 Cheryl Johnson - Environmental Specialist/Western Refining

**WESTERN REFINING - GALLUP REFINERY**  
**4th QTR 2013**

OW-29		TEST PARAMATERS								
			Time (hrs)	pH	Temperature Deg C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE	11/11/2013	(1)	1038	8.98	12.81	1.388	1.176	0.92	376.3	-93.8
GAUGE TIME	1010	(2)	1040	8.42	12.74	1.388	1.178	0.93	9.0	-116.1
DTB (feet)										
Depth to Bottom	51.08	(3)	1042	8.22	12.76	1.389	1.178	0.93	6.1	-119.0
DEDICATED PUMP	Y	(4)	1044	8.10	12.75	1.390	1.179	0.93	4.3	-120.9
DTW (feet)		WEATHER CONDITIONS Clear, slight breeze, 0-5 mph; 50-55 Deg F.								
Depth to Water	19.30									
DTB - DTW	31.78									
Capacity per foot	0.740									
3 Well Volumes	70.55									
PURGE DATE	11/11/2013	WATER APPEARANCE  Clear - No odor detected.								
PURGE TIME	1010									
SAMPLE DAY	11/11/2013									
SAMPLE TIME	1045									
PUMP DEPTH	40 ft									
DTW (feet)										
at end of Purging	N/A									

**SAMPLE LOG**

Began with purge. Pumped approximately 60 gals. Collected water samples, labeled and placed on ice in cooler. Purge water collected in labeled 55 gal drum to be drained into the sewer system upstream of the NAPIS .

OW-30		TEST PARAMATERS								
			Time (hrs)	pH	Temperature Deg C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE	11/11/2013	(1)	1448	8.58	19.46	0.072	0.052	0.04	106.6	-14.4
GAUGE TIME	1425	(2)	1450	8.60	19.48	0.072	0.052	0.04	107.7	-10.7
DTB (feet)	49.90 Y	(3)	1452	8.61	19.48	0.072	0.053	0.04	108.5	-13.2
Depth to Bottom		(4)	1454	8.63	19.47	0.071	0.052	0.04	108.9	-13.9
DEDICATED PUMP		WEATHER CONDITIONS  Clear, slight breeze, 0-5 mph; 70-75 Deg F.								
DTW (feet)										
Depth to Water										
DTB - DTW										
Capacity per foot										
3 Well Volumes	57.72	WATER APPEARANCE  Clear - No odor detected.								
PURGE DATE	11/11/2013									
PURGE TIME	1425									
SAMPLE DAY	11/11/2013									
SAMPLE TIME	1455									
PUMP DEPTH	35									
DTW (feet)										
at end of Purging	N/A									

**SAMPLE LOG**

Began with purge. Pumped approximately 50 gals. Collected water samples, labeled and placed on ice in cooler. Purge water collected in labeled 55 gal drum to be drained into the sewer system upstream of the NAPIS .

**INSTRUMENTS USED:**

YSI 556 MPS instrument used to collect water quality parameters.  
Water Level - Heron Instrument 100 feet DipperT electric water depth tape.  
Low flow pump controller and portable generator.

**Signature:**

  
Cheryl Johnson - Environmental Specialist/Western Refining

FIELD LOGS FOR HYDROCARBON RECOVERY WELLS

FIRST, SECOND, THIRD  
AND FOURTH QUARTERS - 2013



WESTERN REFINING - GALLUP REFINERY  
2013 QUARTERLY INSPECTION

RW-1 (Recovery Well)				WEATHER CONDITIONS
GAUGE DATE	3/26/2013	Product Thickness (ft)	3.490	Clear, breezy 5-10 mph.
		Volume of Product Purged (Gallons)	0.028	
GAUGE TIME	10:25			
DTB (feet)		Volume of Water Purged (Gallons)	24	Notes
Depth to Bottom	43.04			
DEDICATED PUMP	N	PURGE DATE		N/A
DTP (feet)		PURGE TIME		
Depth to Product	29.11			
DTW (feet)		SAMPLE DAY		
Depth to Water	32.60	SAMPLE TIME		
DTB - DTW	10.44			
WELL PURGING				Notes
START DATE	START TIME	END DATE	END TIME	Recovery wells (1, 2, 5, 6) were included as part of the annual ground water sampling for the first time in 2011. These wells were only monitored for product level thickness and product recovery on a quarterly basis. Sampling of wells was not a requirement.
3/26/2013	8:30	3/26/2013	8:50	
3/26/2013	10:30	3/26/2013	10:45	
3/26/2013	12:45	3/26/2013	13:00	

ADDITIONAL NOTES:

Purging for product recover only - no samples collected.

RW-2 (Recovery Well)				WEATHER CONDITIONS
GAUGE DATE	3/26/2013	Product Thickness (ft)	0.000	Clear, breezy 5-10 mph.
		Volume of Product Purged (Gallons)	N/A	
GAUGE TIME	9:45			
DTB (feet)		Volume of Water Purged (Gallons)	N/A	WATER APPEARANCE
Depth to Bottom	39.80			
DEDICATED PUMP	N	PURGE DATE		No measurable product layer.
DTP (feet)		PURGE TIME		
Depth to Product	0.00			
DTW (feet)		SAMPLE DAY		
Depth to Water	24.74	SAMPLE TIME		
DTB - DTW	15.06			
WELL PURGING				Notes
START DATE	START TIME	END DATE	END TIME	Recovery wells (1, 2, 5, 6) were included as part of the annual ground water sampling for the first time in 2011. These wells were only monitored for product level thickness and product recovery on a quarterly basis. Sampling of wells was not a requirement.

ADDITIONAL NOTES:

INSTRUMENTS USED:

Water Level - Heron Instrument 100 feet DipperT electric water depth tape.  
5 gallon buckets to catch purge water.  
Dedicated pump used for RW-1 to purge water.

SIGNATURE: /s/ Cheryl Johnson / Environmental Specialist





WESTERN REFINING - GALLUP REFINERY  
2013 QUARTERLY INSPECTION

RW-5 (Recovery Well)				WEATHER CONDITIONS
GAUGE DATE	3/26/2013	Product Thickness (ft)	0.000	Clear, breezy 5-10 mph.
GAUGE TIME	9:10	Volume of Product Purged (Gallons)	N/A	
DTB (feet) Depth to Bottom	39.59	Volume of Water Purged (Gallons)	15	WATER APPEARANCE
DEDICATED PUMP	N	PURGE DATE		Clear and had small yellow particles. Odor detected when plug was removed from well
DTP (feet) Depth to Product	0.00	PURGE TIME		
DTW (feet) Depth to Water	29.45	SAMPLE DAY		
DTB - DTW	10.14	SAMPLE TIME		
WELL PURGING				Notes
START DATE	START TIME	END DATE	END TIME	Recovery wells (1, 2, 5, 6) were included as part of the annual ground water sampling for the first time in 2011. These wells were only monitored for product level thickness and product recovery on a quarterly basis. Sampling of wells was not a requirement.

ADDITIONAL NOTES:

Although no measurable product layer was observed - 10 gallons was bailed from this well.

RW-6 (Recovery Well)				WEATHER CONDITIONS
GAUGE DATE	3/26/2013	Product Thickness (ft)	0.000	Clear, breezy 5-10 mph.
GAUGE TIME	9:15	Volume of Product Purged (Gallons)	0	
DTB (feet) Depth to Bottom	40.90	Volume of Water Purged (Gallons)	20	WATER APPEARANCE
DEDICATED PUMP	N	PURGE DATE		Water clear in color - has slight odor and has a slight sheen to water purged. No measurable layer.
DTP (feet) Depth to Product	0.00	PURGE TIME		
DTW (feet) Depth to Water	29.59	SAMPLE DAY		
DTB - DTW	11.31	SAMPLE TIME		
WELL PURGING				Notes
START DATE	START TIME	END DATE	END TIME	Recovery wells (1, 2, 5, 6) were included as part of the annual ground water sampling for the first time in 2011. These wells were only monitored for product level thickness and product recovery on a quarterly basis. Sampling of wells was not a requirement.

ADDITIONAL NOTES:

Although no measurable product layer was observed - 20 gallons was bailed from this well.

INSTRUMENTS USED:

Water Level - Heron Instrument 100 feet DipperT electric water depth tape.  
5 gallon buckets to catch purge water.  
3 foot disposable bailers.

SIGNATURE: /s/ *Cheryl Johnson* / Environmental Specialist



WESTERN REFINING - GALLUP REFINERY  
2013 QUARTERLY INSPECTION

RW-1 (Recovery Well)				WEATHER CONDITIONS
GAUGE DATE	6/17/2013	Product Thickness (ft)	3.730	N/A
GAUGE TIME	1150	Volume of Product Purged (Gallons)	0.750	
DTB (feet)	43.04	Volume of Water Purged (Gallons)	18	WATER APPEARANCE
DEDICATED PUMP	N	PURGE DATE	6/17/2013	Water yellow with strong odor to clear.
DTP (feet)	29.37	PURGE TIME	1152	
Depth to Product	33.10	SAMPLE DAY	N/A	
DTW (feet)	9.94	SAMPLE TIME		
Depth to Water				
DTB - DTW				
WELL PURGING				Notes
START DATE	START TIME	END DATE	END TIME	Recovery wells (1, 2, 5, 6) were included as part of the annual ground water sampling for the first time in 2011. These wells were only monitored for product level thickness and product recovery on a quarterly basis. Sampling of wells was not a requirement.
6/17/2013	1152	6/17/2013	1205	
6/17/2013	1245	6/17/2013	1300	
6/17/2013	1400	6/17/2013	1410	

ADDITIONAL NOTES:

Purging for product recover only - no samples collected.

RW-2 (Recovery Well)				WEATHER CONDITIONS
GAUGE DATE	6/17/2013	Product Thickness (ft)	0.000	N/A
GAUGE TIME	1000	Volume of Product Purged (Gallons)		
DTB (feet)	39.80	Volume of Water Purged (Gallons)	N/A	WATER APPEARANCE
DEDICATED PUMP	N	PURGE DATE	N/A	N/A
DTP (feet)	0.00	PURGE TIME		
Depth to Product	24.80	SAMPLE DAY	N/A	
DTW (feet)	15.00	SAMPLE TIME		
Depth to Water				
DTB - DTW				
WELL PURGING				Notes
START DATE	START TIME	END DATE	END TIME	Recovery wells (1, 2, 5, 6) were included as part of the annual ground water sampling for the first time in 2011. These wells were only monitored for product level thickness and product recovery on a quarterly basis. Sampling of wells was not a requirement.
N/A				

ADDITIONAL NOTES:

Purging for product recover only - no samples collected.

INSTRUMENTS USED:

YSI 556 MPS Instrument with flow cell. Used to collect water quality parameters.

Water Level - Heron Instrument 100 feet DipperT electric water depth tape.

5 gallon buckets to catch purge water.

Dedicated portable pump used for RW-1.

SIGNATURE: /s/ *Cheryl Johnson* / Environmental Specialist



WESTERN REFINING - GALLUP REFINERY  
2013 QUARTERLY INSPECTION

RW-5 (Recovery Well)				WEATHER CONDITIONS
GAUGE DATE	6/17/2013	Product Thickness (ft)		N/A
GAUGE TIME	1020	Volume of Product Purged (Gallons)	0	
DTB (feet)		Volume of Water Purged (Gallons)	14	WATER APPEARANCE
Depth to Bottom	39.59			Water clear in color - has slight odor and has a slight sheen to water purged. No measurable layer.
DEDICATED PUMP	N	PURGE DATE	6/17/2013	
DTP (feet)		PURGE TIME	1047	
Depth to Product	0.00			
DTW (feet)		SAMPLE DAY	N/A	
Depth to Water	29.44			
DTB - DTW	10.15	SAMPLE TIME		
WELL PURGING				Notes
START DATE	START TIME	END DATE	END TIME	Recovery wells (1, 2, 5, 6) were included as part of the annual ground water sampling for the first time in 2011. These wells were only monitored for product level thickness and product recovery on a quarterly basis. Sampling of wells was not a requirement.
6/17/2013	1047	6/17/2013	1115	

ADDITIONAL NOTES:

Although no measurable product layer was observed - 14 gallons was bailed from this well. Water had slight odor and a visible sheen on water purged.

RW-6 (Recovery Well)				WEATHER CONDITIONS
GAUGE DATE	6/17/2013	Product Thickness (ft)	0.000	N/A
GAUGE TIME	1025	Volume of Product Purged (Gallons)	N/A	
DTB (feet)		Volume of Water Purged (Gallons)	15	WATER APPEARANCE
Depth to Bottom	40.90			Water clear in color - has slight odor and has a slight sheen to water purged. No measurable layer.
DEDICATED PUMP	N	PURGE DATE	6/17/2013	
DTP (feet)		PURGE TIME	1027	
Depth to Product	0.00			
DTW (feet)		SAMPLE DAY	N/A	
Depth to Water	29.52			
DTB - DTW	11.38	SAMPLE TIME		
WELL PURGING				Notes
START DATE	START TIME	END DATE	END TIME	Recovery wells (1, 2, 5, 6) were included as part of the annual ground water sampling for the first time in 2011. These wells were only monitored for product level thickness and product recovery on a quarterly basis. Sampling of wells was not a requirement.
6/17/2013	1027	6/17/2013	1045	

ADDITIONAL NOTES:

Although no measurable product layer was observed - 15 gallons was bailed from this well.

INSTRUMENTS USED:

YSI 556 MPS Instrument with flow cell. Used to collect water quality parameters.

Water Level - Heron Instrument 100 feet DipperT electric water depth tape.

5 gallon buckets to catch purge water.

3 foot disposable bailer.

SIGNATURE: /s/ *Cheryl Johnson* / Environmental Specialist



WESTERN REFINING - GALLUP REFINERY  
2013 QUARTERLY INSPECTION - ANNUAL SAMPLING

RW-1 (Recovery Well)				WEATHER CONDITIONS
GAUGE DATE	9/16/2013	Product Thickness (ft)	4.340	Cloudy, overcast, thunderstorms; 5-10 mph winds; 70-75 Deg F.
GAUGE TIME	11:05	Volume of Product Purged (Gallons)	0.800	
DTB (feet) Depth to Bottom	43.04	Volume of Water Purged (Gallons)	19	WATER APPEARANCE
DEDICATED PUMP	N	PURGE DATE	9/16/2013	Water has visible hydrocarbon layer and strong odor
DTP (feet) Depth to Product	28.75	PURGE TIME	11:08	
DTW (feet) Depth to Water	33.09	SAMPLE DAY	9/16/2013	
DTB - DTW	9.95	SAMPLE TIME	14:45	
WELL PURGING				Notes
START DATE	START TIME	END DATE	END TIME	Recovery wells (1, 2, 5, 6) were included as part of the annual ground water sampling for the first time in 2011. These wells were only monitored for product level thickness and product recovery on a quarterly basis. Sampling of wells was not a requirement.
9/16/2013	11:08 14:00	9/16/2013	11:20 14:30	

**ADDITIONAL NOTES:**

Quarterly inspection and also collected Annual water samples; Dropped in portable pump to pump well. At end of purging, used new polyethylene bailer to collect water samples. There was still a visible layer of hydrocarbons in the bailer. Purged approximately 19 gallons of water of which it is estimated that there was 0.8 gallons of product recovered. Purged water collected in 55 gal drum to be disposed of upstream of the NAPIS.

RW-2 (Recovery Well)				WEATHER CONDITIONS
GAUGE DATE	9/16/2013	Product Thickness (ft)	0.000	Cloudy, overcast, thunderstorms; 5-10 mph winds; 70-75 Deg F.
GAUGE TIME		Volume of Product Purged (Gallons)	N/A	
DTB (feet) Depth to Bottom	9:00 39.80	Volume of Water Purged (Gallons)	N/A 10	WATER APPEARANCE
DEDICATED PUMP	N	PURGE DATE		No measurable product layer. Water clear with slight odor present, small particulates floating in water.
DTP (feet) Depth to Product	0.00	PURGE TIME		
DTW (feet) Depth to Water	24.64	SAMPLE DAY	9/16/2013	
DTB - DTW	15.16	SAMPLE TIME	9:20	
WELL PURGING				Notes
START DATE	START TIME	END DATE	END TIME	Recovery wells (1, 2, 5, 6) were included as part of the annual ground water sampling for the first time in 2011. These wells were only monitored for product level thickness and product recovery on a quarterly basis. Sampling of wells was not a requirement.
N/A				

**ADDITIONAL NOTES:**

Purged approximately 10 gallons of water using new disposable bailer.  
Collected water samples for Annual sampling.

**INSTRUMENTS USED:**

YSI 556 MPS Instrument with flow cell. Used to collect water quality parameters.  
Water Level - Heron Instrument 100 feet DipperT electric water depth tape.  
Dedicated portable pump used for RW-1  
5 gallon buckets to catch purge water.

SIGNATURE: /s/ Cheryl Johnson / Environmental Specialist

WESTERN REFINING - GALLUP REFINERY  
2013 QUARTERLY INSPECTION - ANNUAL SAMPLING

RW-5 (Recovery Well)				WEATHER CONDITIONS
GAUGE DATE	9/16/2013	Product Thickness (ft)	0.000	Cloudy, overcast, thunderstorms; 5-10 mph winds; 70-75 Deg F.
GAUGE TIME	9:30	Volume of Product Purged (Gallons)	N/A	
DTB (feet)	39.59	Volume of Water Purged (Gallons)	15	WATER APPEARANCE
DEDICATED PUMP	N	PURGE DATE	9/16/2013	Water clear in color - has slight odor and has a slight sheen to water purged. No measurable product layer.
DTP (feet)	0.00	PURGE TIME	9:32	
DTW (feet)	28.98	SAMPLE DAY	9/16/2013	
DTB - DTW	10.61	SAMPLE TIME	10:00	
WELL PURGING				Notes
START DATE	START TIME	END DATE	END TIME	Recovery wells (1, 2, 5, 6) were included as part of the annual ground water sampling for the first time in 2011. These wells were only monitored for product level thickness and product recovery on a quarterly basis. Sampling of wells was not a requirement.

ADDITIONAL NOTES:

Although no measurable product layer was observed - 15 gallons was bailed from this well.  
New bailer used to collect Annual water samples. Purged water disposed of in the sewer system.

RW-6 (Recovery Well)				WEATHER CONDITIONS
GAUGE DATE	9/16/2013	Product Thickness (ft)	0.000	Cloudy, overcast, thunderstorms; 5-10 mph winds; 70-75 Deg F.
GAUGE TIME	10:10	Volume of Product Purged (Gallons)	N/A	
DTB (feet)	40.90	Volume of Water Purged (Gallons)	20	WATER APPEARANCE
DEDICATED PUMP	N	PURGE DATE	9/16/2013	Water clear in color - has slight odor and has a slight sheen to water purged. No measurable layer.
DTP (feet)	0.00	PURGE TIME	10:02	
DTW (feet)	29.13	SAMPLE DAY	9/16/2013	
DTB - DTW	11.77	SAMPLE TIME	10:50	
WELL PURGING				Notes
START DATE	START TIME	END DATE	END TIME	Recovery wells (1, 2, 5, 6) were included as part of the annual ground water sampling for the first time in 2011. These wells were only monitored for product level thickness and product recovery on a quarterly basis. Sampling of wells was not a requirement.

ADDITIONAL NOTES:

Although no measurable product layer was observed - 20 gallons was bailed from this well.  
New bailer used to collect Annual water samples. Purged water disposed of in the sewer system.

INSTRUMENTS USED:

YSI 556 MPS Instrument with flow cell. Used to collect water quality parameters.  
Water Level - Heron Instrument 100 feet DipperT electric water depth tape.  
5 gallon buckets to catch purge water.  
3 foot disposable bailer.

SIGNATURE: /s/ *Cheryl Johnson* / Environmental Specialist



WESTERN REFINING - GALLUP REFINERY  
2013 QUARTERLY INSPECTION

RW-1 (Recovery Well)				WEATHER CONDITIONS
GAUGE DATE	11/12/2013	Product Thickness (ft)	4.380	N/A
GAUGE TIME	9:25	Volume of Product Purged (Gallons)	0.750	
DTB (feet)		Volume of Water Purged (Gallons)	25	WATER APPEARANCE
Depth to Bottom	43.04			N/A
DEDICATED PUMP	N	PURGE DATE	11/12/2013	
DTP (feet)		PURGE TIME	9:27	
Depth to Product	28.73			
DTW (feet)		SAMPLE DAY	N/A	
Depth to Water	33.11	SAMPLE TIME	N/A	
DTB - DTW	9.93			
WELL PURGING				Notes
START DATE	START TIME	END DATE	END TIME	Recovery wells (1, 2, 5, 6) were included as part of the annual ground water sampling for the first time in 2011. These wells were only monitored for product level thickness and product recovery on a quarterly basis. Sampling of wells was not a requirement.
11/12/2013	9:27	11/12/2013	9:40	
11/12/2013				

ADDITIONAL NOTES:

Purging for product recover only - no samples collected.

RW-2 (Recovery Well)				WEATHER CONDITIONS
GAUGE DATE	11/12/2013	Product Thickness (ft)	0.000	N/A
GAUGE TIME	9:30	Volume of Product Purged (Gallons)	N/A	
DTB (feet)		Volume of Water Purged (Gallons)	N/A	WATER APPEARANCE
Depth to Bottom	39.80			N/A
DEDICATED PUMP	N	PURGE DATE	N/A	
DTP (feet)		PURGE TIME	N/A	
Depth to Product	0.00			
DTW (feet)		SAMPLE DAY	N/A	
Depth to Water	24.66	SAMPLE TIME	N/A	
DTB - DTW	15.14			
WELL PURGING				Notes
START DATE	START TIME	END DATE	END TIME	Recovery wells (1, 2, 5, 6) were included as part of the annual ground water sampling for the first time in 2011. These wells were only monitored for product level thickness and product recovery on a quarterly basis. Sampling of wells was not a requirement.
N/A				

ADDITIONAL NOTES:

Purging for product recover only - no samples collected.

INSTRUMENTS USED:

Water Level - Heron Instrument 100 feet DipperT electric water depth tape.

5 gallon buckets to catch purge water.

Dedicated portable pump used for RW-1

SIGNATURE: /s/ Cheryl Johnson / Environmental Specialist



WESTERN REFINING - GALLUP REFINERY  
2013 QUARTERLY INSPECTION

RW-5 (Recovery Well)				WEATHER CONDITIONS
GAUGE DATE	11/12/2013	Product Thickness (ft)	0.000	N/A
		Volume of Product Purged (Gallons)	N/A	
GAUGE TIME	9:50			
DTB (feet)		Volume of Water Purged (Gallons)	16	WATER APPEARANCE
Depth to Bottom	39.59			
DEDICATED PUMP	N	PURGE DATE	11/12/2013	Water clear in color - has slight odor and has a slight sheen to water purged. No measurable layer.
DTP (feet)		PURGE TIME	9:55	
Depth to Product	0.00			
DTW (feet)		SAMPLE DAY	N/A	
Depth to Water	28.96	SAMPLE TIME	N/A	
DTB - DTW	10.63			
WELL PURGING				Notes
START DATE	START TIME	END DATE	END TIME	Recovery wells (1, 2, 5, 6) were included as part of the annual ground water sampling for the first time in 2011. These wells were only monitored for product level thickness and product recovery on a quarterly basis. Sampling of wells was not a requirement.

ADDITIONAL NOTES:

Although no measurable product layer was observed - 16 gallons was bailed from this well.

RW-6 (Recovery Well)				WEATHER CONDITIONS
GAUGE DATE	11/12/2013	Product Thickness (ft)	0.000	N/A
		Volume of Product Purged (Gallons)	N/A	
GAUGE TIME	9:50			
DTB (feet)		Volume of Water Purged (Gallons)	15	WATER APPEARANCE
Depth to Bottom	40.90			
DEDICATED PUMP	N	PURGE DATE	11/12/2013	Water clear in color - has slight odor and has a slight sheen to water purged. No measurable layer.
DTP (feet)		PURGE TIME	10:15	
Depth to Product	0.00			
DTW (feet)		SAMPLE DAY	N/A	
Depth to Water	29.10	SAMPLE TIME	N/A	
DTB - DTW	11.80			
WELL PURGING				Notes
START DATE	START TIME	END DATE	END TIME	Recovery wells (1, 2, 5, 6) were included as part of the annual ground water sampling for the first time in 2011. These wells were only monitored for product level thickness and product recovery on a quarterly basis. Sampling of wells was not a requirement.

ADDITIONAL NOTES:

Although no measurable product layer was observed - 15 gallons was bailed from this well.

INSTRUMENTS USED:

YSI 556 MPS Instrument with flow cell. Used to collect water quality parameters.

Water Level - Heron Instrument 100 feet DipperT electric water depth tape.

5 gallon buckets to catch purge water.

3 foot disposable bailer.

SIGNATURE: /s/ Cheryl Johnson / Environmental Specialist



## **APPENDIX D**

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### **Summary of Waste Water Monthly Flow Rate**

**APPENDIX D - 2013 WASTE WATER AVERAGE MONTHLY FLOW RATE**

**2013 WASTE WATER AVERAGE MONTHLY FLOW RATE**

MONTH	API INFLUENT TO MPPE (GPM)	MPPE INFLUENT (GPM)	NORTH MPPE FLOW TO STP-1 (GPM)	SOUTH MPPE FLOW TO STP-1 (GPM)	TOTAL FLOW TO STP-1 (GPM)
	84FT043.PV	84FC806A.PV	84FT842.PV	84FT843.PV	
JANUARY	165.95	199.55	226.15	6.00	<b>232.14</b>
FEBRUARY	165.17	179.52	212.84	7.91	<b>220.76</b>
MARCH	148.90	168.34	194.55	8.27	<b>202.82</b>
APRIL	160.85	176.23	205.02	8.14	<b>213.16</b>
MAY	141.95	153.77	177.26	8.16	<b>185.43</b>
JUNE	144.76	156.55	180.44	12.97	<b>193.40</b>
JULY	133.19	146.76	158.00	20.80	<b>178.80</b>
AUGUST	175.33	190.54	187.39	22.69	<b>210.08</b>
SEPTEMBER	168.70	180.47	67.29	22.71	<b>90.00</b>
OCTOBER	177.55	187.26	56.68	22.91	<b>79.59</b>
NOVEMBER	183.83	193.12	204.80	24.91	<b>229.71</b>
DECEMBER	180.35	188.24	191.56	13.96	<b>205.52</b>
				<b>YEAR AVG</b>	<b>186.78</b>

**NOTES:**

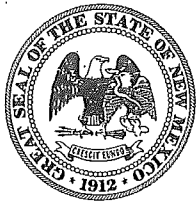
1. Startup of new Waste Water Treatment Plant (WWTP) on 5/8/12.
2. N & S benzene strippers taken off line permanently on 11/10/12.
3. Aeration lagoons taken out of service February 2013. All effluent going to WWTP.
4. Pilot effluent routed to WWTP in June 2013.

## **APPENDIX E**

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**NMED “Approval with Modifications Annual Ground  
Water Monitoring Report: Gallup Refinery 2010,  
Revision 1”, 12/12/12**





SUSANA MARTINEZ  
Governor

JOHN A. SANCHEZ  
Lieutenant Governor

NEW MEXICO  
ENVIRONMENT DEPARTMENT

*Hazardous Waste Bureau*

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DAVE MARTIN  
Secretary

BUTCH TONGATE  
Deputy Secretary

JAMES H. DAVIS, Ph.D.  
Director  
Resource Protection Division

**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

December 12, 2012

Ed Riege  
Environmental Superintendent  
Western Refining, Southwest Inc., Gallup Refinery  
Route 3, Box 7  
Gallup, New Mexico 87301

**RE: APPROVAL WITH MODIFICATIONS  
ANNUAL GROUNDWATER MONITORING REPORT:  
GALLUP REFINERY 2010, REVISION 1  
WESTERN REFINING COMPANY, SOUTHWEST, INC., GALLUP REFINERY  
HWB-WRG-11-004  
EPA ID # NMD000333211**

Dear Mr. Riege:

The New Mexico Environment Department (NMED) has completed its review of the *Annual Groundwater Monitoring Report: Gallup Refinery – 2010, Revision 1* (Report), dated July 12, 2012, submitted on behalf of Western Refining Company, Southwest Inc., Gallup Refinery (Permittee). NMED has reviewed the Report and hereby issues this Approval with the following modifications. However, the Permittee is not required to submit another revision of this Report, but must address and incorporate changes from the following comments in the 2011 Annual Groundwater Monitoring Report and all future Annual Groundwater Monitoring Reports.

**Comment 1**

In NMED's Comment 6 of the April 11, 2012 Notice of Disapproval (NOD), the Permittee was required to correct the incorrect page numbers in the Table of Contents. In the Table of Contents and Section 8.0 (Data Tables), the page numbers for the data tables from pages 82 through 118 were not corrected. In future submittals, the Permittee must ensure the accuracy of all page numbers listed in all table of contents of work plans and reports.

**Comment 2**

In the Executive Summary, *East Side Ground Water*, page 3, paragraph 1, the Permittee states, "[i]n OW-13 trace levels of MTBE was detected in the first quarter of 2010 ranging from 2.3E-03 mg/L first quarter to 4.8E-03 mg/L in the fourth quarter of 2010 which is below the EPA RSL of 0.012 mg/L." The Permittee reported an incorrect result for the fourth quarter. In the laboratory analytical data and Table 8.5 (OW-13, OW-14, OW-29, OW-30: BTEX Analytical Result Summary), page 78, the correct result is 3.8E-03 mg/L. In addition, the Permittee did not discuss the detected results in Section 6.2 (Wells with Constituent Levels below Standards). The Permittee continues to show inconsistency with its discussion of data results and the accurate reporting of information. The Permittee must conduct comprehensive document reviews prior to submitting future plans and reports to NMED to prevent multiple disapprovals.

**Comment 3**

In the Executive Summary, *West Side Ground Water*, page 4, paragraph 1, the Permittee states, "[b]enzene levels range from 0.83 mg/L to 0.015 in the fourth quarter which are above the NMWQCC standards of 0.01 mg/L for benzene." The Permittee did not provide the units of measure for the fourth quarter result. In future reports, provide units of measure for all numerical values.

**Comment 4**

In the Table of Contents, page 6, the Permittee is not consistent with the format of the table. For example, under Section 8.0 (Data Tables), all subsections are "tabbed in" for this section while the rest of the sections with subsections are not formatted the same way. The rest of the subsections in the Table of Contents are not presented in the same format. In addition, the Permittee labeled two sections as "Section 6.3" in both the Table of Contents and the text. In future reports, the Permittee must ensure all formatting is consistent and that all sections are numbered correctly.

**Comment 5**

In the List of Figures, page 7, there is a typographical error in the Figure 9 title, *Sonsela Water – Piezometric Surface*. The figure presented in the Report is a potentiometric surface map. The Refinery does not have any piezometers at the facility. In addition, the same error occurs in Figure 10 (Chinle Gp./Alluvium Interface Water, Piezometric Surface (September 2010)). Revise the figures for future reports.

**Comment 6**

In the List of Acronyms, page 10, there are two typographical errors. EPA MCL is “EPA Maximum Contaminant Level” and In. is “Inch(es).” Correct the errors in future reports.

**Comment 7**

In Table 1 (2010 Monitoring Schedule), pages 19 and 20, there appears to be information missing from the data table.

- a. In the *General Monitoring and Sampling Comments* column for wells OW-1 and OW-10, the Permittee includes GRO analysis with the list of analytes for these wells. However, the laboratory analytical data for these wells include DRO, GRO, and MRO analytical results.
- b. In the *General Monitoring and Sampling Comments* column for wells GW-2, GW-3, NAPIS-1 through 3, and KA-3, the Permittee did not include MTBE in the list of analytes.
- c. In the *General Monitoring and Sampling Comments* column for wells MW-1, MW-2, MW-4, and MW-5, the Permittee refers to the RCRA Skinner List metals as RCRA List constituents. Use the correct designation for all constituents listed in Table 1.

In future reports, the Permittee must review the current approved Facility-Wide Groundwater Monitoring Plan to determine the correct constituents for analysis and ensure that Table 1 has correct information prior to submitting to NMED for review.

**Comment 8**

In Section 2.7 (Remediation Activities), page 25, paragraph 1, the Permittee states, “SPH thickness level for the year in RW-6 averages 0.23 feet for 2010 and year to date product recovery is 0.15 gallons for 2010.” Review of Appendix A: *RW-6 Hydrocarbon Recovery Log*

(2/22/05 thru 11/2/10) indicates that the SPH thickness level average for 2010 is incorrect. The Permittee must ensure all information is accurate prior to reporting it in future submittals.

**Comment 9**

In Section 5.1 (Potentiometric Map), page 28, there are two typographical errors where the Permittee references Figure 8 (South-North Section Westerly Plant Area) as the Potentiometric Elevation Map and Section 10 (Figures) containing groundwater elevation data from 2010. Figure 8 is a cross-section figure of decommissioned monitoring wells located near the land treatment unit and Section 10 contains only figures. The correct references are Figure 9 (Sonsela Water, Piezometric Surface (July – Sept 2010)) and Section 9 (Well Summary Table). Review cross references to figures, tables, and appendices to ensure the references are correct prior to submitting future reports to NMED.

**Comment 10**

In Section 6.0 (Ground water Monitoring Results), pages 29 through 48, the Permittee discusses the analytical results from the 2012 groundwater monitoring events in three sections, Sections 6.1 (Monitoring Wells That Have Constituent Levels Above Standards), 6.2 (Wells with Constituent Levels below Standards), and 6.3 (Evaporation Ponds, Influent, Effluent, Boiler Water to EP-2 and Leak Detection Units – Constituent Levels). However, the Permittee does not consistently discuss exceedances and detections below the screening levels in their appropriate sections. For example, in Section 6.2, *BW-2A*, *BW-2B*, *BW-2C*, page 37, the Permittee discusses analytical results for constituents above and below the screening levels, repeating information from Section 6.1. To avoid redundancy, the Permittee must discuss all analytical results in one section but keep monitoring wells grouped as in Sections 6.1 and 6.2 for the discussions in future reports. In addition, the Permittee does not consistently report the screening levels with the results for every constituent mentioned. The Permittee must be consistent when comparing screening levels to analytical results in future reports.

**Comment 11**

In Section 6.1 (Monitoring Wells That Have Constituent Levels Above Standards), *NAPIS-1*, *NAPIS-2*, *NAPIS-3*, *KA-3*, page 32, paragraph 2, the Permittee states, “*NAPIS-1* is an up gradient well located on the southeast side of and *NAPIS-2* is located immediately down gradient on the southwest side of the *NAPIS*.” The Permittee did not finish describing the location of *NAPIS-1* in the statement. In future reports, the Permittee must review the entire report for completeness prior to submitting for review by NMED.

#### **Comment 12**

In Section 6.1 (Monitoring Wells That Have Constituent Levels Above Standards), *NAPIS-1*, *NAPIS-2*, *NAPIS-3*, *KA-3*; *OW-1*, *OW-10*; *OW-11*, pages 33 through 35, the Permittee discusses analytical results for uranium that are greater than the screening level, 0.03 mg/L. The Permittee must sample wells up gradient from *NAPIS-1*, *NAPIS-2*, *NAPIS-3*, *KA-3*, *OW-1*, *OW-10*, and *OW-11* and review groundwater analytical results to determine if uranium detections are similar to concentrations in unaffected wells. The Permittee must discuss the results in the 2011 Annual Groundwater Monitoring Report.

#### **Comment 13**

In Section 6.1 (Monitoring Wells That Have Constituent Levels Above Standards), *OW-1*, *OW-10*, page 34, the Permittee states, “[t]otal metals ranged from 5.25E-03 mg/L first quarter to 0.052 mg/L fourth quarter for uranium levels which are above the NMWQCC and EPA MCL standard of 0.03 mg/L.” There is a typographical error with the first quarter analytical result presented in the text. The analytical lab result and Table 8.4.2 (*OW-1*, *OW-10*: Total Metals Analytical Result Summary) report the first quarter result as 0.0525 mg/L. In future reports, review all analytical results reported in the text, data tables, and lab reports to ensure the correct result is being reported. In addition, the Permittee continues to have problems reporting the values using scientific notation. Review all data results prior to submitting reports so that all results are accurate.

#### **Comment 14**

In Section 6.2 (Wells with Constituent Levels below Standards), *BW-2A*, *BW-2B*, *BW-2C*, page 37, paragraph 2, the Permittee states, “[g]eneral chemistry parameters were below the applicable NMWQCC standards except for fluoride which had detectable concentration levels in all three wells above the NMWQCC standard of 1.6 mg/L. Phosphorous was also detected at a concentration levels above the EPA RSL standard of 3.1E-04 for *BW-2A* at 0.68 mg/L.” There are two typographical errors in these statements. First, the Permittee omitted the punctuation at the end of the first sentence and second, did not provide a unit of measure for the phosphorus EPA RSL standard, 3.1E-04 mg/L. In future reports, the Permittee must review entire reports for accuracy and correct all errors and omissions prior to submission for review.

#### **Comment 15**

In Section 7.0 (Conclusions), *East Side Ground Water*, page 49, paragraph 2, the Permittee states, “*RW-6* had a total of 0.15 gallons of product recovered in 2010 compared to 22 gallons recovered in 2009.” There is a reporting error with the amount of product recovered from *RW-6* in 2009. The error carries over to the table titled, *Summary of Total Product Removed and Total*



*Water Purged per yer from Recovery Wells (RW-1, RW-2, RW-3).* The Permittee reports that 22 gallons of product was removed from RW-16 in 2009. Calculation for the actual amount of product recovered in 2009 for the *Product Bailed/Purged (gal)* column on the table titled, *RW-6 Hydrocarbon Recovery Log (2/22/05 thru 11/3/2010)*, is 0.22 gallons. In addition, there are typographical errors on the table titled, *Summary of Total Product Removed and Total Water Purged per yer from Recovery Wells (RW-1, RW-2, RW-3)*; “year” is misspelled, and the recovery wells listed in the table are RW-1, RW-5, and RW-6. Correct the information on the tables and ensure in all future reports, that all reported results are correct and do not conflict with information in other sections of the report.

#### **Comment 16**

In Table 8.8 (NAPIS 1, NAPIS 2, NAPIS 3, KA-3, BTEX Analytical Result Summary), page 92, the Permittee summarizes BTEX and MTBE results. There is conversion error for the 3/8/2010 NAPIS-2 benzene result, 0.83 mg/L. The analytical lab result is 83 µg/L; the correct conversion is 0.083 mg/L. For future reports, review all analytical results and ensure all conversions (e.g., µg/L to mg/L) are correct prior to submittal to NMED. In addition, ensure all text, figures, and graphs report consistent results in future reports.

#### **Comment 17**

In Table 8.13.2 (MW-1, MW-2, MW-4, MW-5, DRO/GRO Analytical Result Summary), the Permittee summarizes DRO and GRO analytical results for monitoring wells MW-1, MW-2, MW-4, and MW-5. There is a typographical error in the table where the incorrect superscript is used to describe a sample event date (3/1/2010) for monitoring wells MW-4 and MW-5. The Permittee uses superscript “2,” which should be “3.” Ensure all superscripts and notes are correct in data tables in future reports prior to submittal to NMED.

#### **Comment 18**

In the Attachments for Appendix A, the Permittee submitted three hydrocarbon recovery logs and a table summarizing total product removed and water purged from wells RW-1, RW-5, and RW-6. For all future reports, the Permittee must include page numbers on all tables and ensure the title of the table is included on every page. In addition, the total product removed from RW-6 for 2009 is incorrect (*see also Comment 15*).

#### **Comment 19**

In the Attachments for Binders 2 & 3, the Permittee was required to submit corrected title pages for Binders 2 and 3 (Analytical data) per NMED’s Comment 8 of the April 11, 2012 NOD. However, the title pages are still incorrect. The title pages submitted are for Binder 2 with

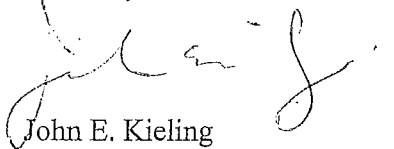
Ed Riege  
December 12, 2012  
Page 7 of 7

Section 8.8-8.16; Binder 2 contains analytical data results for Sections 8.1-8.7 and Binder 3 contains analytical data results for Sections 8.8-8.16. In future reports and work plans, the Permittee must review all documents prior to submitting them to NMED for review to ensure their correctness.

The Permittee is not required to submit a revised Report but must address all comments included in this Approval with Modifications in the 2011 Annual Groundwater Monitoring Report and future Annual Reports.

If you have questions regarding this Disapproval please contact Leona Tsinnajinnie of my staff at 505-476-6057.

Sincerely,



John E. Kielsing  
Chief  
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB  
K. Van Horn, NMED HWB  
L. Tsinnajinnie, NMED HWB  
C. Chavez, OCD  
A. Haines, Western Refining Company, El Paso, Texas  
T. Larson, Western Refining Company, Gallup Refinery  
C. Johnson, Western Refining Company, Gallup Refinery

File: Reading File and WRG 2012 File  
HWB-WRG-11-004

## **APPENDIX F**

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### **MKTF 1 - 18 – Survey, Boring Logs, Analytical Data**



February 11, 2014

Mr. Ed Riege, Environmental Manager  
Western Refining-Gallup Refinery  
Route 3 Box 7  
Gallup, NM 87301

Re: Western Refining Monitoring Wells

Dear Mr. Riege:

DePauli Engineering & Surveying, LLC completed the field survey of the 18 monitoring wells at Western Refining-Gallup Refinery on January 21, 2014. The wells were surveyed for the following parameter: ground level elevation, ground level elevation inside steel sleeve, center top steel lid elevation, well casing rim elevation and corresponding measuring point description associated with each elevation. Survey conducted enlisted NM Surveyor in Training and a Technician (under my direct supervision), from DePauli Engineering Surveying, LLC and one Gallup Refinery representative to assist with the location of the wells.

The instruments used to complete the survey consisted of a Leica VIVA GS10 GPS (global positing system) and System 1200 GPS. The method used to survey the wells was Real-time Kinematic GPS Surveying (RTK). RTK surveying requires that two or more receivers are operated simultaneously. The aspect of the procedure involves a radio transmitting a signal from the base station. The base station's coordinates are utilized to make the appropriate corrections to the error involved with the GPS signals. The rover receives the corrections thence giving the rover observation corrected values. The horizontal and vertical positions are determined by differential GPS involving the base line surveyed from local base station to survey position. The base line measurements are surveyed for one minute (60 observations). This is verified by surveying known local control points and bench marks.

The horizontal and vertical positions of the top of the PVC casing (unless otherwise noted) and the vertical positions for the lid, ground elevation inside the steel casing, and the surrounding ground elevation is shown on the attached sheet labeled "Western Refining Monitoring Wells January 21, 2014." The horizontal position is NAD 83 datum and the vertical positions are NGVD 1929. Elevations were taken using the concrete pad surrounding each well and locations

noted on the report. Ground elevation was taken using the concrete pad surrounding each well and locations shown on the report.

The requested field survey was complete on January 21, 2014 in accordance with sections 500.1 through 500.12 of the Regulations and Rules of the Board of Registration for Professional Engineers and Surveyors Minimum Standards for Surveying in New Mexico; which horizontal positions were measured to the nearest 0.1-ft and vertical elevations were measured to an accuracy of 0.01-ft.

If you have any questions concerning this survey please do not hesitate to contact our office.

Sincerely,

A handwritten signature in black ink that reads "Marc DePauli". The signature is written in a cursive, flowing style.

Marc DePauli, PE/PS

## Western Refining Monitoring Wells January 21, 2014

Well #	Northing	Easting	Elevation	Description
MKTf-10	1,633,807.47	2,545,853.54	6937.16	North edge PVC casing
			6937.51	Center steel lid
			6936.63	North side ground elev. inside steel sleeve
			6937.51	Average corner elevation of concrete collar
MKTf-15	1,633,845.57	2,545,934.58	6943.48	North edge PVC casing
			6943.73	Center steel lid
			6943.19	North side ground elev. inside steel sleeve
			6943.74	**Average elevation of concrete collar
			** Concrete collar is in general circular shape	
MKTf-16	1,633,718.14	2,546,068.55	6950.58	North edge PVC casing
			6950.97	Center steel lid
			6950.58	North side ground elev. inside steel sleeve
			6951.00	Average corner elevation of concrete collar
MKTf-11	1,633,806.93	2,545,754.77	6931.34	South edge PVC casing
			6931.61	Center steel lid
			6930.86	North side ground elev. inside steel sleeve
			6931.61	Average corner elevation of concrete collar
MKTf-03	1,633,746.53	2,545,756.87	6931.31	North edge PVC casing
			6931.69	Center steel lid
			6930.85	North side ground elev. inside steel sleeve
			6931.73	Average corner elevation of concrete collar
MKTf-04	1,633,649.46	2,545,752.83	6933.57	North edge PVC casing
			6933.91	Center steel lid
			6933.24	North side ground elev. inside steel sleeve
			6933.90	Average corner elevation of concrete collar
MKTf-05	1,633,472.30	2,545,769.95	6942.22	North edge PVC casing
			6942.80	Center steel lid
			6941.95	South side ground elev. inside steel sleeve
			6939.49	Average corner elevation of concrete collar
MKTf-09	1,633,681.33	2,545,895.93	6946.50	North edge PVC casing
			6947.21	Center steel lid
			6945.90	South side ground elev. inside steel sleeve
			6943.57	Average corner elevation of concrete collar

<b>Well #</b>	<b>Northing</b>	<b>Easting</b>	<b>Elevation</b>	<b>Description</b>
MKTF-08	1,633,598.94	2,545,885.02	6947.09	North edge PVC casing
			6947.48	Center steel lid
			6942.67	South side ground elev. inside steel sleeve
			6944.02	Average corner elevation of concrete collar
MKTF-07	1,633,555.11	2,545,885.42	6947.18	North edge PVC casing
			6947.84	Center steel lid
			6947.06	South side ground elev. inside steel sleeve
			6944.40	Average corner elevation of concrete collar
MKTF-06	1,633,556.28	2,545,811.85	6946.81	North edge PVC casing
			6947.29	Center steel lid
			6946.63	South side ground elev. inside steel sleeve
			6944.24	Average corner elevation of concrete collar
MKTF-18	1,633,497.53	2,546,006.29	6950.65	**North edge PVC casing
			6950.96	Center steel lid
			6950.17	North side ground elev. inside steel sleeve
			6950.97	Average corner elevation of concrete collar ** Mark was existing on PVC casing
MKTF-12	1,633,542.07	2,545,688.29	6942.11	North edge PVC casing
			6942.84	Center steel lid
			6941.88	South side ground elev. inside steel sleeve
			6939.70	Average corner elevation of concrete collar
MKTF-13	1,633,625.25	2,545,697.39	6935.18	**North edge PVC casing
			6936.89	Center steel lid
			6934.83	South side ground elev. inside steel sleeve
			6933.67	Average corner elevation of concrete collar ** PVC casing not typical
MKTF-14	1,633,719.43	2,545,625.96	6928.02	North edge PVC casing
			6928.75	Center steel lid
			6927.80	South side ground elev. inside steel sleeve
			6925.65	Average corner elevation of concrete collar
MKTF-01	1,633,864.41	2,545,561.73	6920.67	**North edge PVC casing
			6921.68	Center steel lid
			6920.67	South side ground elev. inside steel sleeve
			6918.28	**Average corner elevation of concrete collar ** Inside ground elev. is flush with PVC casing



Well #	Northing	Easting	Elevation	Description
MKTf-02	1,633,946.93	2,545,530.46	6917.45	** North edge PVC casing
			6918.31	Center steel lid
			6917.18	South side ground elev. inside steel sleeve
			6915.00	Average corner elevation of concrete collar
				** PVC casing not typical
MKTf-17	1,633,268.93	2,545,850.73	6945.76	North edge PVC casing
			6946.00	Center steel lid
			6945.64	North side ground elev. inside steel sleeve
			6945.79	** Average corner elevation of concrete collar
				** Concrete collar is in general circular shape

*Marc DePauli*

Marc DePauli PS13606

2-11-2014

Date



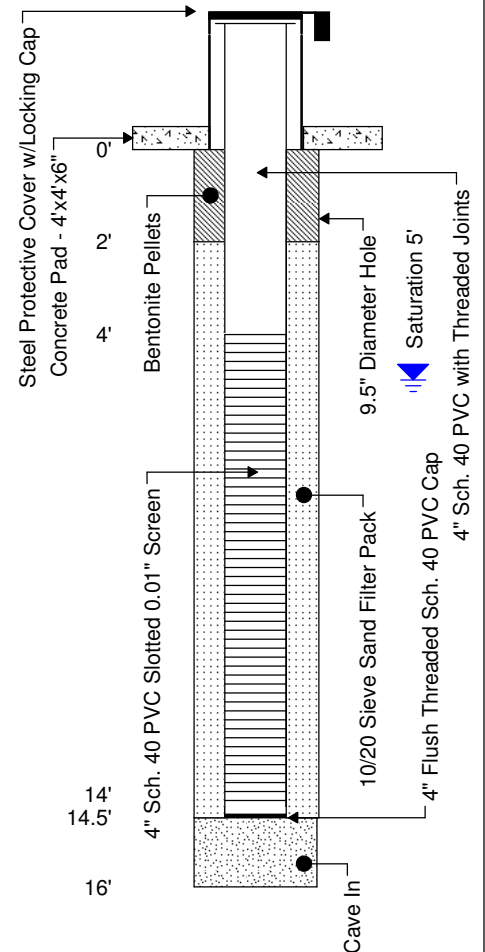


**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Split Spoon  
**Comments:** N 35°29.346' W 108°25.782'; Boring ID - HA1

**Total Depth:** 16' bgl  
**Ground Water:** Saturated @ 5' bgl  
**Elev., TOC (ft. msl):** 6920.67  
**Elev., PAD (ft. msl):** 6918.28  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,864.41 **E** 2,545,561.73

**Well No.:** MKTF-01  
**Start Date:** 11/14/2013  
**Finish Date:** 11/14/2013

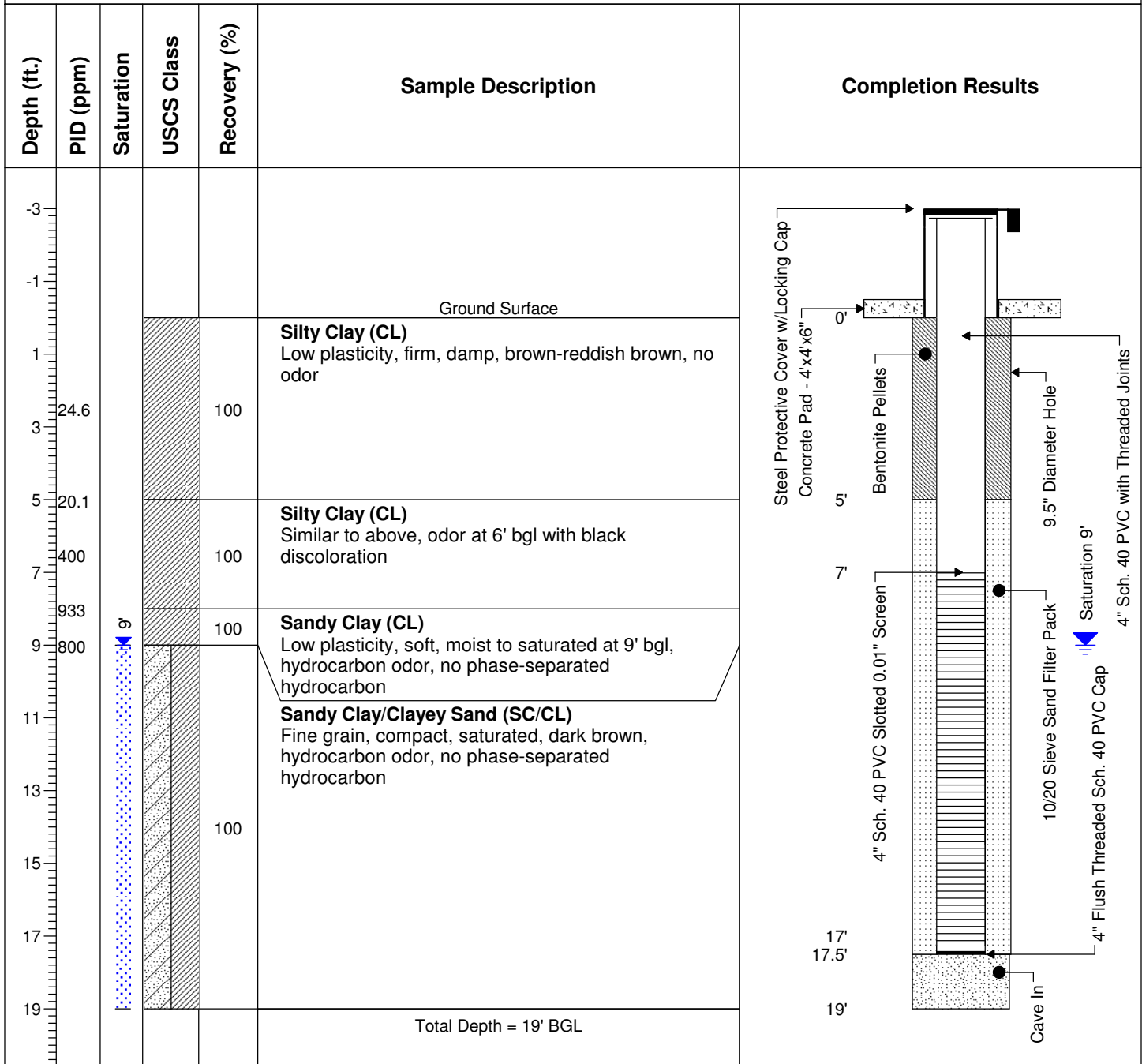
Depth (ft.)	PID (ppm)	Saturation	USCS Class	Recovery (%)	Sample Description	Completion Results
-3						
-1					Ground Surface	
1				100	<b>Silty Clay (CL)</b> Low plasticity, soft, damp, reddish brown to brown, no odor	
3						
5		5'				
7				100	<b>Silty Clay/Clayey Silt (CL/ML)</b> Low plasticity, very soft, moist to saturated, brown grading to black, gravelly, bio odor, no phase-separated hydrocarbon	
9						
11						
13						
15						
17					Total Depth = 16' BGL	
19						



**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Split Spoon  
**Comments:** N 35°29.360' W 108°25.789'; Boring ID HA3

**Total Depth:** 19' bgl  
**Ground Water:** Saturated @ 9' bgl  
**Elev., TOC (ft. msl):** 6917.45  
**Elev., PAD (ft. msl):** 6915.00  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,946.93 **E** 2,545,530.46

**Well No.:** MKTF-02  
**Start Date:** 11/14/2013  
**Finish Date:** 11/14/2013



**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Split Spoon  
**Comments:** N 35°29.328' W108°25.743'; Boring ID - SB01

**Total Depth:** 19' bgl  
**Ground Water:** Saturated @ 8' bgl  
**Elev., TOC (ft. msl):** 6931.31  
**Elev., PAD (ft. msl):** 6931.73  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,746.53 **E** 2,545,756.87

**Well No.:** MKTF-03  
**Start Date:** 11/7/2013  
**Finish Date:** 11/7/2013

Depth (ft.)	PID (ppm)	Saturation	USCS Class	Recovery (%)	Sample Description	Completion Results
-1					Ground Surface	<p>Flush Mount Steel Protective Cover  Concrete Pad - 4'x4'x6"  0'  1'  3'  Bentonite Pellets  9.5" Diameter Hole  4" Sch. 40 PVC with Threaded Joints  10/20 Sieve Sand Filter Pack  4" Sch. 40 PVC Slotted 0.01" Screen  Saturation 8</p>
1	164			60	<b>Fill (Silt/Sand)</b> Fine grain, loose, dry to damp, brown, no odor	
3	423			40	<b>Silty Clay (CL)</b> Low plasticity, firm, damp, brown/reddish brown, no odor	
5	330			70	<b>Silty Clay (CL)</b> Similar to above, no odor	
7	75			90	<b>Silty Clay (CL)</b> Similar to above, sandy at base from 7.75-8.0' bgl, no odor	
9	326	8		90	<b>Silty Clay (CL)</b> Fine grain sand seams throughout, saturated, phase-separated hydrocarbon, hydrocarbon odor, clear phase-separated hydrocarbon poured out of split spoon	
11	312			90	<b>Silty Clay (CL)</b> Similar to above with sand seams, saturated with phase-separated hydrocarbon, hydrocarbon odor, dark brown	
13	368			80	<b>Gravelly Sand (SW)</b> Fine to medium to coarse grain, loose, saturated with phase-separated hydrocarbon, black, hydrocarbon odor	
15	700			60	<b>Gravelly Sand (SW)</b> Similar to above	



**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Split Spoon  
**Comments:** N 35°29.328' W108°25.743'; Boring ID - SB01

**Total Depth:** 19' bgl  
**Ground Water:** Saturated @ 8' bgl  
**Elev., TOC (ft. msl):** 6931.31  
**Elev., PAD (ft. msl):** 6931.73  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,746.53 **E** 2,545,756.87

**Well No.:** MKTF-03  
**Start Date:** 11/7/2013  
**Finish Date:** 11/7/2013

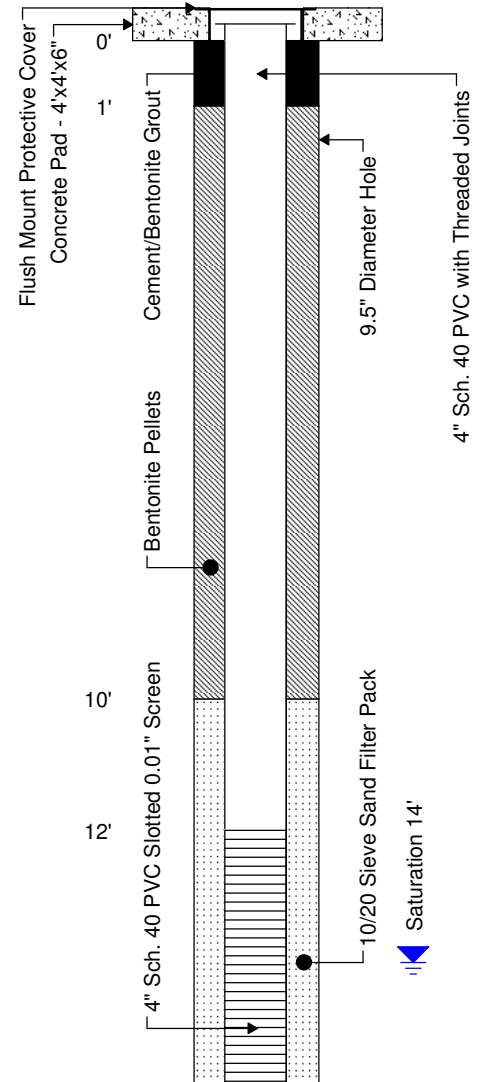
Depth (ft.)	PID (ppm)	Saturation	USCS Class	Recovery (%)	Sample Description	Completion Results
17				10	<b>Silty Sand/Silty Clay (SM/CL)</b> Low plasticity, firm, moist, brown, faint odor, no phase-separated hydrocarbon	<p>4" Sch. 40 PVC Slotted 0.01" Screen  10/20 Sieve Sand Filter Pack  Cave In  4" Flush Threaded Sch. 40 PVC Cap</p>
19	225			80	<b>Silty Clay (CL)</b> Poor recovery	
					<b>Clay (CH)</b> High plasticity, very dense, damp, light reddish brown, faint odor	
Total Depth = 19' BGL						

**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Split Spoon  
**Comments:** N 35°29.310' W 108°25.742'; Boring ID SB03

**Total Depth:** 24' bgl  
**Ground Water:** Saturated @ 14' bgl  
**Elev., TOC (ft. msl):** 6933.57  
**Elev., PAD (ft. msl):** 6933.90  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,649.46 **E** 2,545,752.83

**Well No.:** MKTF-04  
**Start Date:** 11/12/2013  
**Finish Date:** 11/12/2013

Depth (ft.)	PID (ppm)	Saturation	USCS Class	Recovery (%)	Sample Description	Completion Results
-1					Ground Surface	
1	10.2			90	<b>Fill (Silt/Gravel)</b> Low plasticity, very dense, dry, light brown, no odor	
3	11.7			80	<b>Fill (Silt/Gravel)</b> Similar to above, black, dense at base, no odor	
5	16			90	<b>Silty Clay (CL)</b> Low plasticity, stiff, damp, reddish brown, no odor, calcareous	
7	26			90	<b>Gravelly Sandy Clay (CL)</b> Low plasticity, loose to firm, damp, brown, no odor	
9	708			70	<b>Silty Clay (CL)</b> Low plasticity, very soft, damp, reddish brown, hydrocarbon odor	
11	369			80	<b>Clay (CH)</b> High plasticity, firm, damp, reddish brown, hydrocarbon odor	
13	660			90	<b>Sandy Clay/Clayey Sand (SC/CL)</b> Low plasticity, fine grain, soft, damp, reddish brown, hydrocarbon odor	
15	85			90	<b>Sandy Clay (SC)</b> Similar to above, saturated sand seams, hydrocarbon odor, brown	



**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Split Spoon  
**Comments:** N 35°29.310' W 108°25.742'; Boring ID SB03

**Total Depth:** 24' bgl  
**Ground Water:** Saturated @ 14' bgl  
**Elev., TOC (ft. msl):** 6933.57  
**Elev., PAD (ft. msl):** 6933.90  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,649.46 **E** 2,545,752.83

**Well No.:** MKTF-04  
**Start Date:** 11/12/2013  
**Finish Date:** 11/12/2013

Depth (ft.)	PID (ppm)	Saturation	USCS Class	Recovery (%)	Sample Description	Completion Results
17	64			70	<b>Sandy Clay (SC)</b> Similar to above, moist to saturated, hydrocarbon odor, brown	<p>22' 22.5' 24'</p> <p>4" Sch. 40 PVC Slotted 0.01" Screen</p> <p>10/20 Sieve Sand Filter Pack</p> <p>4" Flush Threaded Sch. 40 PVC Cap</p> <p>Cave In</p>
19	33			90	<b>Sandy Clay (SC)</b> Low plasticity, fine grain, soft, moist to saturated, light reddish brown, hydrocarbon odor, gravelly at base  <b>Silty Clay (CL)</b> Low plasticity, stiff, damp, light reddish brown grading to yellowish/greenish gray, becomes more silty at base	
21						
23						
25					Total Depth = 24' BGL	
27						
29						
31						

**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Split Spoon  
**Comments:** N 35°29.282' W 108°25.739'; Boring ID - SB06

**Total Depth:** 15' bgl  
**Ground Water:** Saturated @ 10' bgl  
**Elev., TOC (ft. msl):** 6942.22  
**Elev., PAD (ft. msl):** 6939.49  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,472.30 **E** 2,545,769.95

**Well No.:** MKTF-05  
**Start Date:** 11/12/2013  
**Finish Date:** 11/12/2013

Depth (ft.)	PID (ppm)	Saturation	USCS Class	Recovery (%)	Sample Description	Completion Results
-3					Ground Surface	<p>Steel Protective Cover w/Locking Cap  Concrete Pad - 4'x4'x6"  Bentonite Pellets  9.5" Diameter Hole  4" Sch. 40 PVC with Threaded Joints  4" Sch. 40 PVC Slotted 0.01" Screen  10/20 Sieve Sand Filter Pack  4" Flush Threaded Sch. 40 PVC Cap  Saturation 10'  Cave In</p>
1	52.6			60	<b>Fill (Silty Clay/Gravel)</b> Low plasticity, firm, damp, brown, faint odor	
3	180			100	<b>Silty Clay (CL)</b> Low plasticity, firm, damp, reddish brown, odor, calcareous	
5	224			90	<b>Sandy Clay/Clayey Sand (CL/SC)</b> Low plasticity, fine grain, damp, dark brown, hydrocarbon odor, sand seams present	
7	1202			90	<b>Sandy Clay/Clayey Sand (CL)</b> Similar to above	
9	1228			90	<b>Sandy Silty Clay (CL)</b> Low plasticity, soft, damp, dark brown, hydrocarbon odor	
11	1525			90	<b>Sandy Clay (CL)</b> Similar to above, with moist to saturated sand seams, hydrocarbon odor	
13	377			90	<b>Clayey Sand (SC)</b> Fine grain, loose to compact, saturated, hydrocarbon odor, dark brown	
15					<b>Sandy Clay (CL)</b> Low plasticity, soft to firm, moist, dark brown, hydrocarbon odor	
17					Total Depth = 15' BGL	

**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Split Spoon  
**Comments:** N 35°29.295' W 108°25.732'; Boring ID - SB08

**Total Depth:** 21' bgl  
**Ground Water:** Saturated @ 17.5' bgl  
**Elev., TOC (ft. msl):** 6946.81  
**Elev., PAD (ft. msl):** 6944.24  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,556.28 **E** 2,545,811.85

**Well No.:** MKTF-06  
**Start Date:** 11/11/2013  
**Finish Date:** 11/11/2013

Depth (ft.)	PID (ppm)	Saturation	USCS Class	Recovery (%)	Sample Description	Completion Results
-3					Ground Surface	
1	15.9			70	<b>Fill (Silt/Silty Clay)</b> Low plasticity, stiff, dry, light brown, no odor	
3	228			60	<b>Fill (Silty Clay/Gravel)</b> Similar to above, dry, no odor	
5	177			60	<b>Fill (Silty Clay)</b> Similar to above, damp, no odor	
7	264			40	<b>Fill (Silty Clay)</b> Low plasticity, soft, damp, brown, gravel and wood debris	
9				--	No recovery	
11	90			10	<b>Fill (Silty Clay/Gravel)</b> Similar to above	
13	660			100	<b>Sandy Silty Clay (CL)</b> Low plasticity, soft, damp to moist at base, brown, hydrocarbon odor	
15						



**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Split Spoon  
**Comments:** N 35°29.295' W 108°25.732'; Boring ID - SB08

**Total Depth:** 21' bgl  
**Ground Water:** Saturated @ 17.5' bgl  
**Elev., TOC (ft. msl):** 6946.81  
**Elev., PAD (ft. msl):** 6944.24  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,556.28 **E** 2,545,811.85

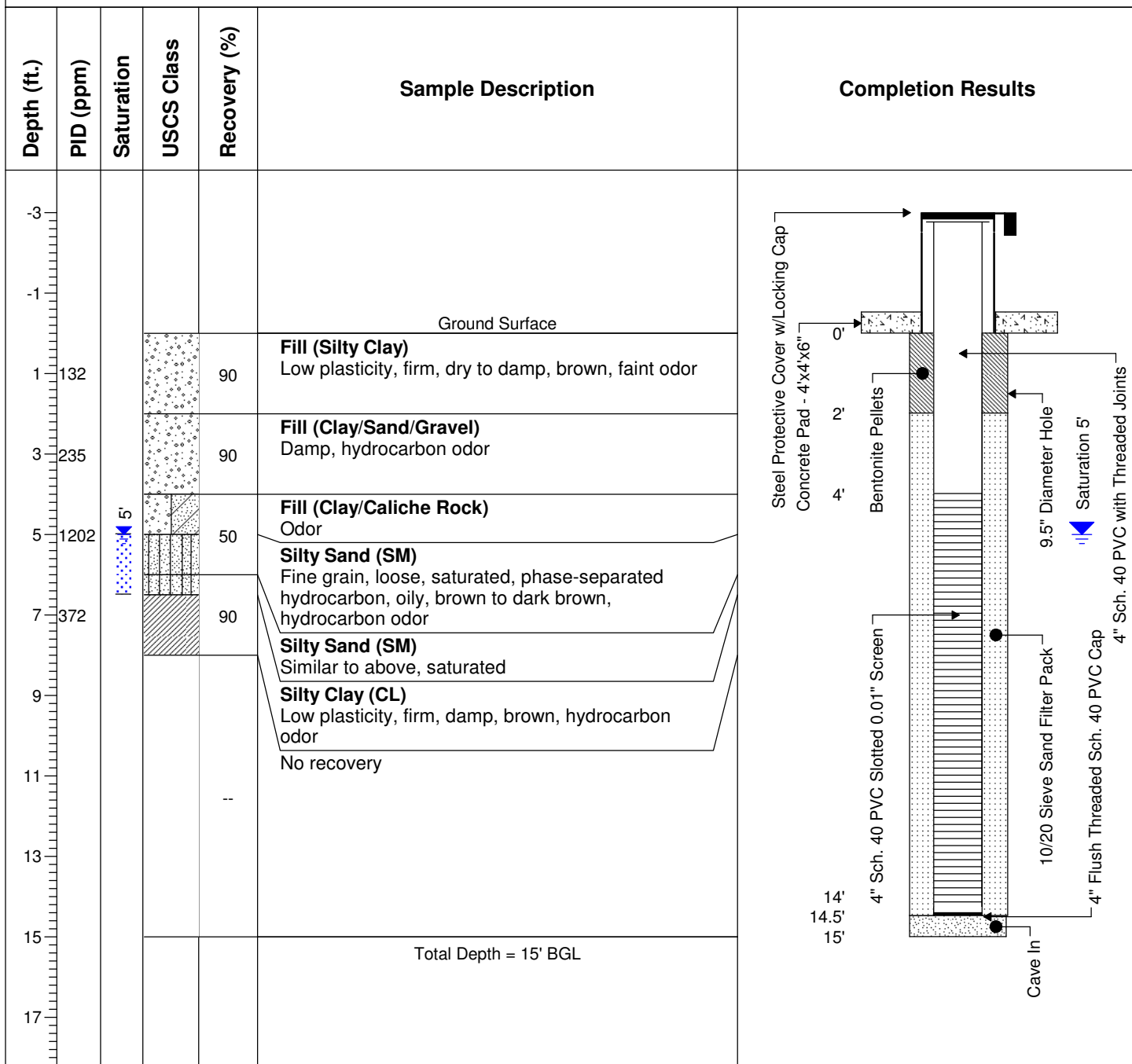
**Well No.:** MKTF-06  
**Start Date:** 11/11/2013  
**Finish Date:** 11/11/2013

Depth (ft.)	PID (ppm)	Saturation	USCS Class	Recovery (%)	Sample Description	Completion Results
1115		17.5'		100	<b>Sandy Silty Clay (CL)</b> Similar to above, moist, oily, hydrocarbon odor	<p>20' 20.5' 21'</p> <p>10/20 Sieve Sand Filter Pack</p> <p>4" Sch. 40 PVC Slotted 0.01" Screen</p> <p>Cave In</p> <p>4" Flush Threaded Sch. 40 PVC Cap</p> <p>Saturation 17.5'</p>
17				100	<b>Gravelly Sandy Clay (CL)</b> Low plasticity, firm, moist, oily, 1" gravel, strong hydrocarbon odor	
19				100	<b>Clayey Gravel Sand (SC)</b> Fine to medium grain, loose, saturated, phase-separated hydrocarbon present, black, hydrocarbon odor	
225				100	<b>Sandy Clay (CL)</b> Low plasticity, firm, moist, black hydrocarbon odor	
21					Total Depth = 21' BGL	
23						
25						
27						
29						
31						
33						

**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Split Spoon  
**Comments:** N 35°29.295' W 108°25.710'; Boring ID - SB10

**Total Depth:** 15' bgl  
**Ground Water:** Saturated @ 5' bgl  
**Elev., TOC (ft. msl):** 6947.18  
**Elev., PAD (ft. msl):** 6944.40  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,555.11 **E** 2,545,885.42

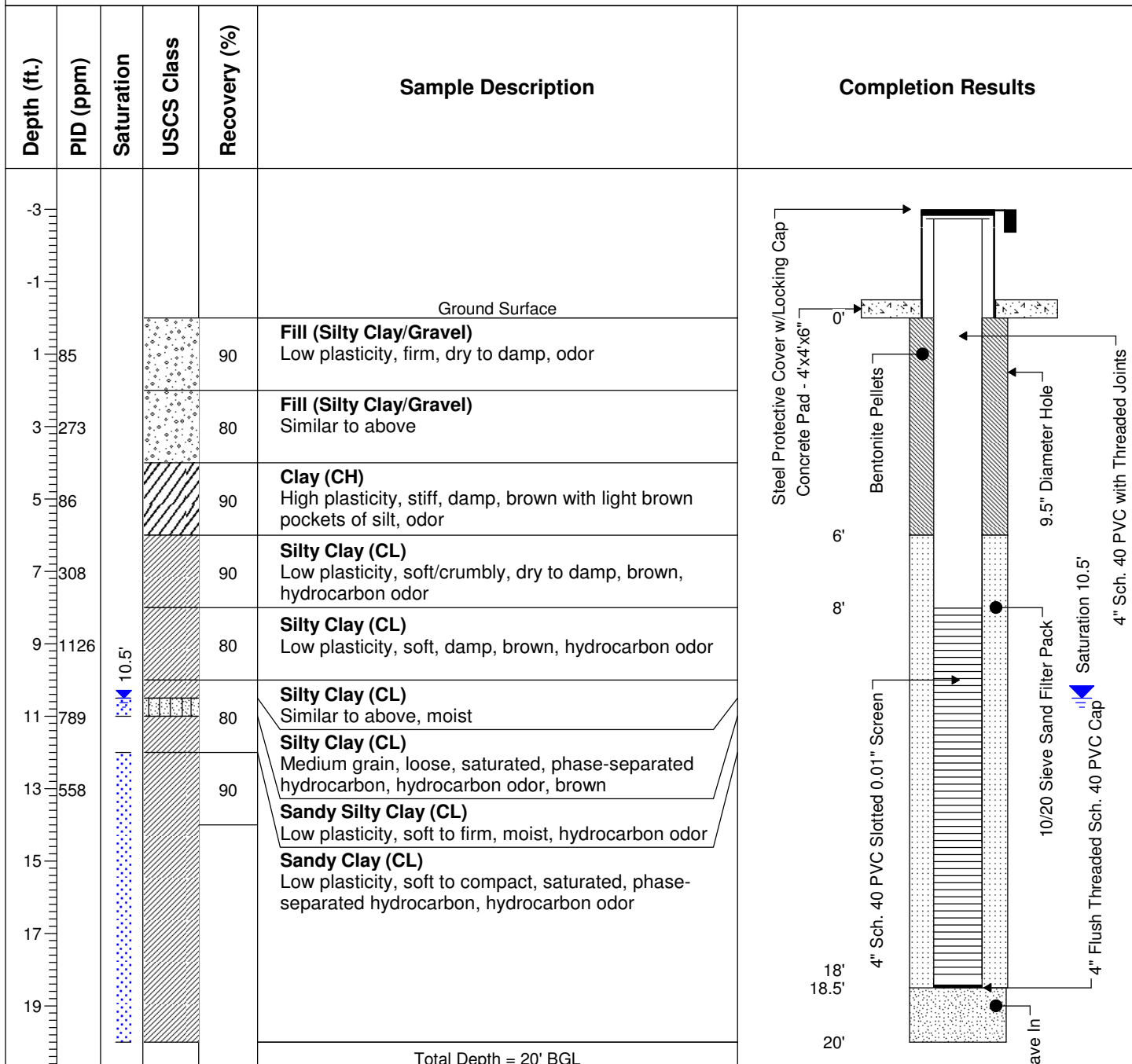
**Well No.:** MKTF-07  
**Start Date:** 11/11/2013  
**Finish Date:** 11/11/2013



**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Split Spoon  
**Comments:** N 35°29.302' W 108°25.716'; Boring ID - SB11

**Total Depth:** 20' bgl  
**Ground Water:** Saturated @ 10.5' bgl  
**Elev., TOC (ft. msl):** 6947.09  
**Elev., PAD (ft. msl):** 6944.02  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,598.94 **E** 2,545,885.02

**Well No.:** MKTF-08  
**Start Date:** 11/11/2013  
**Finish Date:** 11/11/2013



**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Split Spoon  
**Comments:** N 35°29.316' W 108°25.715'; Boring ID - SB13

**Total Depth:** 22' bgl  
**Ground Water:** Saturated @ 12' bgl  
**Elev., TOC (ft. msl):** 6946.50  
**Elev., PAD (ft. msl):** 6943.57  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,681.33 **E** 2,545,895.93

**Well No.:** MKTF-09  
**Start Date:** 11/11/2013  
**Finish Date:** 11/11/2013

Depth (ft.)	PID (ppm)	Saturation	USCS Class	Recovery (%)	Sample Description	Completion Results
-3						
-1						
1	21.9			90	Fill (Silty Clay) Low plasticity, stiff, dry to damp, no odor, brown	<p>Steel Protective Cover w/Locking Cap  Concrete Pad - 4'x4'x6"  Bentonite Pellets  9.5" Diameter Hole  4" Sch. 40 PVC with Threaded Joints  10/20 Sieve Sand Filter Pack  4" Sch. 40 PVC Slotted 0.01" Screen  Saturation 12'</p>
3	32.7			90	Fill (Silty Clay) Similar to above, gravel	
5	36.1			90	Silty Clay (CL) Low plasticity, soft, damp, brown, faint odor	
7	37			90	Silty Clay (CL) Similar to above	
9	533			90	Silty Clay (CL) Similar to above	
11	314			90	Sandy Clay (CL) Similar to above, increase in sand and moisture	
13	651			90	Sandy Clay (CL) Similar to above, moist, hydrocarbon odor, dark brown	
15	587			90	Sandy Clay/Clayey Sand (CL/SC) Fine to medium grain, compact, moist to saturated, hydrocarbon odor	
					Sandy Clay/Clayey Sand (CL/SC) Similar to above, saturated, sheen observed on split spoon, black, hydrocarbon odor	

## WELL INSTALLATION

**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Split Spoon  
**Comments:** N 35°29.316' W 108°25.715'; Boring ID - SB13

**Total Depth:** 22' bgl  
**Ground Water:** Saturated @ 12' bgl  
**Elev., TOC (ft. msl):** 6946.50  
**Elev., PAD (ft. msl):** 6943.57  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,681.33 **E** 2,545,895.93

**Well No.:** MKTF-09  
**Start Date:** 11/11/2013  
**Finish Date:** 11/11/2013

Depth (ft.)	PID (ppm)	Saturation	USCS Class	Recovery (%)	Sample Description	Completion Results
17				90	<b>Sandy Clay/Clayey Sand (CL/SC)</b> Fine to medium grain, compact, saturated, sheen observed on split spoon, black, hydrocarbon odor	<p>10/20 Sieve Sand Filter Pack</p> <p>4" Sch. 40 PVC Slotted 0.01" Screen</p> <p>Cave In</p> <p>4" Flush Threaded Sch. 40 PVC Cap</p>
19					Total Depth = 22' BGL	
21						
23						
25						
27						
29						
31						
33						



**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Split Spoon  
**Comments:** N 35°29.336' W 108°25.724'; Boring ID SB16

**Total Depth:** 18' bgl  
**Ground Water:** Saturated @ 9' bgl  
**Elev., TOC (ft. msl):** 6937.16  
**Elev., PAD (ft. msl):** 6937.51  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,807.47 **E** 2,545,853.54

**Well No.:** MKTF-10  
**Start Date:** 10/31/2013  
**Finish Date:** 10/31/2013

Depth (ft.)	PID (ppm)	Saturation	USCS Class	Recovery (%)	Sample Description	Completion Results
-1					Ground Surface	
1	90			90	<b>Fill (Silt/Gravel)</b> Low plasticity, loose, dry, light brown	
3	14			90	<b>Fill (Silty Clay/Gravel)</b> Similar to above	
5	431			90	<b>Silty Clay (CL)</b> Low plasticity, stiff, dry, reddish brown, odor, calcareous	
7	448			60	<b>Sand (SP)</b> Fine grain, loose, dry, reddish brown, odor	
9	654	9		60	<b>Sand (SP)</b> Similar to above, saturated at 9' bgl, phase-separated hydrocarbon, hydrocarbon odor	
11	1559			90	<b>Clayey Sand (SC)</b> Fine grain, soft, saturated, phase-separated hydrocarbon, brown to black, hydrocarbon odor	
13	713			90	<b>Clayey Sand/Sandy Clay (SC/CL)</b> Low plasticity, firm to stiff, moist to saturated, hydrocarbon odor, dark brown	
15				90		
17						
19					Total Depth = 18' BGL	
21						

**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Split Spoon  
**Comments:** N 35°29.336' W 108°25.739'; Boring ID - SB17

**Total Depth:** 19' bgl  
**Ground Water:** Saturated @ 12' bgl  
**Elev., TOC (ft. msl):** 6931.34  
**Elev., PAD (ft. msl):** 6931.61  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,806.93 **E** 2,545,754.77

**Well No.:** MKTF-11  
**Start Date:** 10/31/2013  
**Finish Date:** 10/31/2013

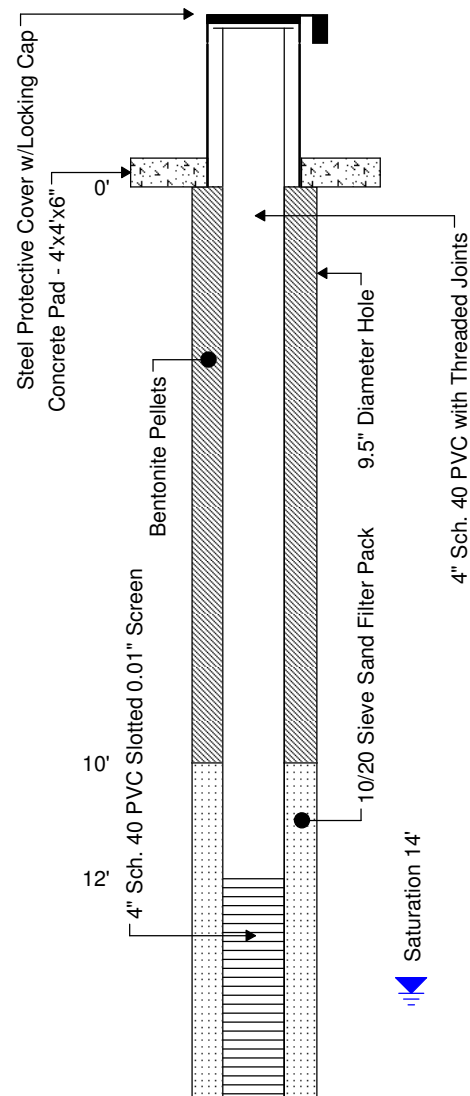
Depth (ft.)	PID (ppm)	Saturation	USCS Class	Recovery (%)	Sample Description	Completion Results
-1					Ground Surface	
1	14			60	<b>Fill (Silty Clay/Gravel)</b> Low plasticity, stiff, dry, light brown	
3	36			70	<b>Fill (Silty Clay)</b> Similar to above	
5	80			90	<b>Silty Clay (CL)</b> Low plasticity, firm, damp, brown, calcareous	
7	125			80	<b>Silty Clay (CL)</b> Similar to above	
9	1259			80	<b>Silty Clay (CL)</b> Low plasticity, firm, damp, oily, hydrocarbon odor, dark brown	
11	860	12		70	<b>Silty Clay (CL)</b> Similar to above, moist, hydrocarbon odor, oily, phase-separated hydrocarbon	
13	1716			60	<b>Sandy Clay (CL)</b> Low plasticity, soft, moist to saturated, hydrocarbon odor, dark brown	
15	1050			70	<b>Silty Sand (SM)</b> Medium grain, loose, saturated, hydrocarbon odor, dark brown to black	
17				70	<b>Sandy/Silty Clay (CL)</b> Low plasticity, firm, saturated, dark brown to black, hydrocarbon odor	
19					Total Depth = 19' BGL	

**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Split Spoon  
**Comments:** N 35°29.294' W 108°25.754'; Boring ID - SB19

**Total Depth:** 23' bgl  
**Ground Water:** Saturated @ 14' bgl  
**Elev., TOC (ft. msl):** 6942.11  
**Elev., PAD (ft. msl):** 6939.70  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,542.07 **E** 2,545,688.29

**Well No.:** MKTF-12  
**Start Date:** 11/7/2013  
**Finish Date:** 11/7/2013

Depth (ft.)	PID (ppm)	Saturation	USCS Class	Recovery (%)	Sample Description	Completion Results
-3						
-1					Ground Surface	
1	8.7			90	<b>Silt/Gravel (ML)</b> Low plasticity, soft, dry/damp, no odor, brown	
3	54			80	<b>Silt/Gravel (ML)</b> Similar to above	
5	7			70	<b>Gravel/Silt (GW)</b> 1/2 to 1" gravel, loose, compact, dry, no odor	
7	7.5			70	<b>Clayey Sandy Silt (ML)</b> Very fine grain, compact, dry to damp, brown, no odor	
9	5.5			60	<b>Sandy Clay (CL)</b> Low plasticity, firm, damp, light brown, no odor	
11	5.8			70	<b>Sandy Clay (CL)</b> Similar to above, brown, no odor	
13	10			70	<b>Sandy Clay (CL)</b> Similar to above	
13		14'			<b>Silty Sand (SM)</b> Fine to medium grain, loose, damp, brown, no odor	
15	225			50	<b>Sandy Clay (CL)</b> Low plasticity, firm, moist to saturated in sand seams, hydrocarbon odor, dark brown	



## WELL INSTALLATION

**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Split Spoon  
**Comments:** N 35°29.294' W 108°25.754'; Boring ID - SB19

**Total Depth:** 23' bgl  
**Ground Water:** Saturated @ 14' bgl  
**Elev., TOC (ft. msl):** 6942.11  
**Elev., PAD (ft. msl):** 6939.70  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,542.07 **E** 2,545,688.29

**Well No.:** MKTF-12  
**Start Date:** 11/7/2013  
**Finish Date:** 11/7/2013

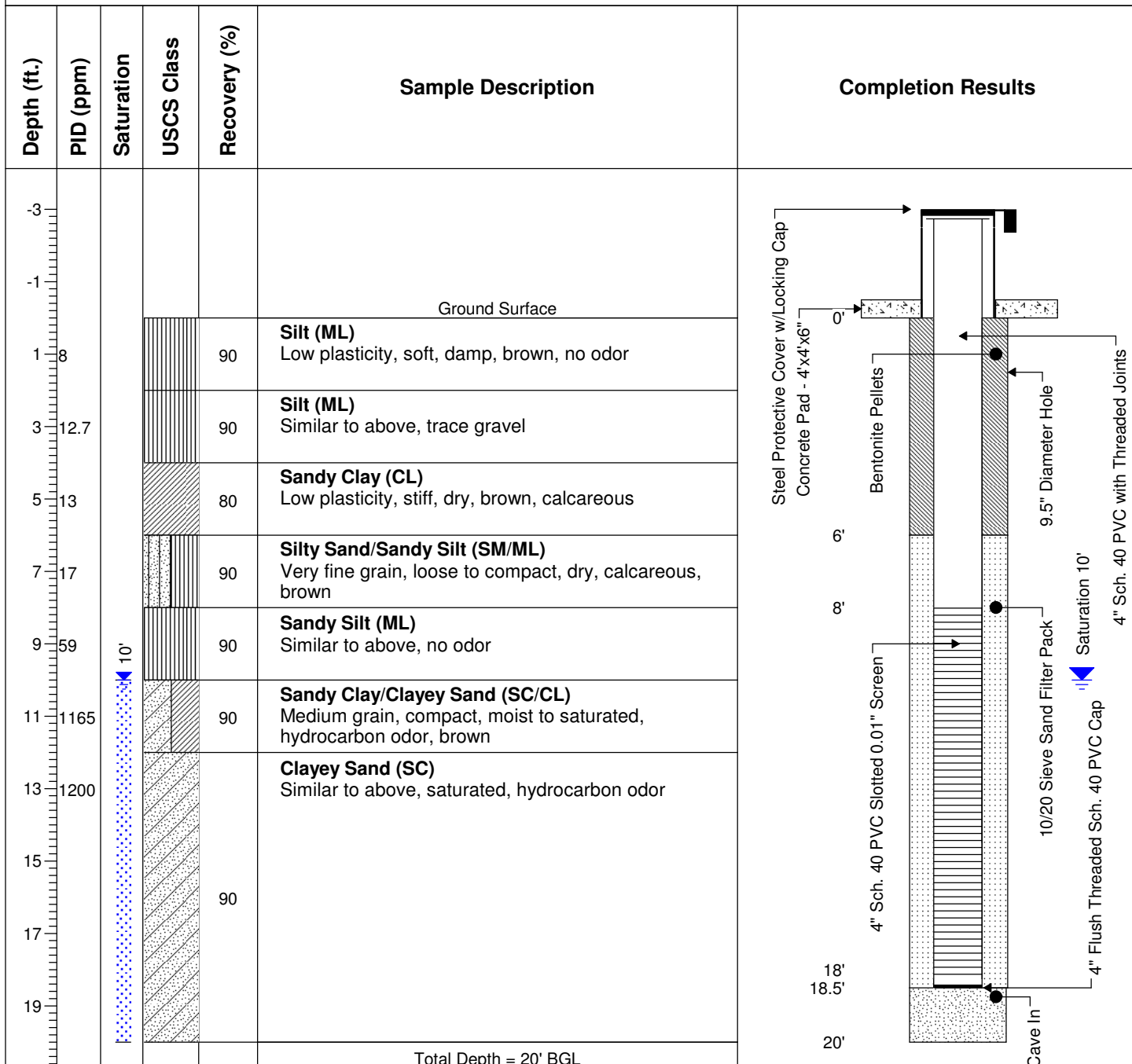
Depth (ft.)	PID (ppm)	Saturation	USCS Class	Recovery (%)	Sample Description	Completion Results
17	319			70	<b>Sandy Clay (CL)</b> Similar to above, moist, hydrocarbon odor	<p>10/20 Sieve Sand Filter Pack  4" Sch. 40 PVC Slotted 0.01" Screen  4" Flush Threaded Sch. 40 PVC Cap  Cave In</p>
19	400			--	<b>Sandy Clay (CL)</b> Similar to above, moist, hydrocarbon odor	
21	532			--	<b>Sandy Clay/Clayey Sand (CL)</b> Very fine grain, compact, moist to saturated, sheen observed in split spoon, hydrocarbon odor	
23					Total Depth = 23' BGL	
25						
27						
29						
31						
33						

## WELL INSTALLATION

**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Split Spoon  
**Comments:** N 35°29.307' W 108°25.755'; Boring ID - SB20

**Total Depth:** 20' bgl  
**Ground Water:** Saturated @ 10' bgl  
**Elev., TOC (ft. msl):** 6935.18  
**Elev., PAD (ft. msl):** 6933.67  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,625.25 **E** 2,545,697.39

**Well No.:** MKTF-13  
**Start Date:** 11/12/2013  
**Finish Date:** 11/12/2013

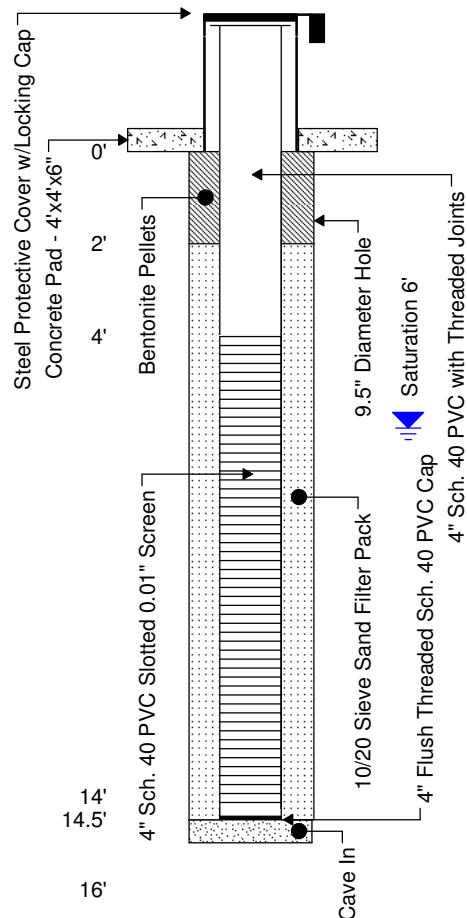


**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Split Spoon  
**Comments:** N 35°29.323' W 108°25.769'; Boring ID SB22

**Total Depth:** 15' bgl  
**Ground Water:** Saturated @ 6' bgl  
**Elev., TOC (ft. msl):** 6928.02  
**Elev., PAD (ft. msl):** 6925.65  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,719.43 **E** 2,545,625.96

**Well No.:** MKTF-14  
**Start Date:** 11/12/2013  
**Finish Date:** 11/12/2013

Depth (ft.)	PID (ppm)	Saturation	USCS Class	Recovery (%)	Sample Description	Completion Results
-3						
-1					Ground Surface	
1	18			20	<b>Silty Clay (CL)</b> Low plasticity, soft, damp, brown	
3	308			90	<b>Silty Clay (CL)</b> Similar to above, odor	
5	793	6'		90	<b>Sandy Clay (CL)</b> Low plasticity, firm, moist, oily, brown, trace gravel	
7	504			90	<b>Clayey Sand (SC)</b> Medium grain, loose to compact, saturated, phase-separated hydrocarbon, hydrocarbon odor, black	
9	760			90	<b>Clayey Sand (SC)</b> Similar to above	
11						
13						
15					Total Depth = 15' BGL	
17						
19						

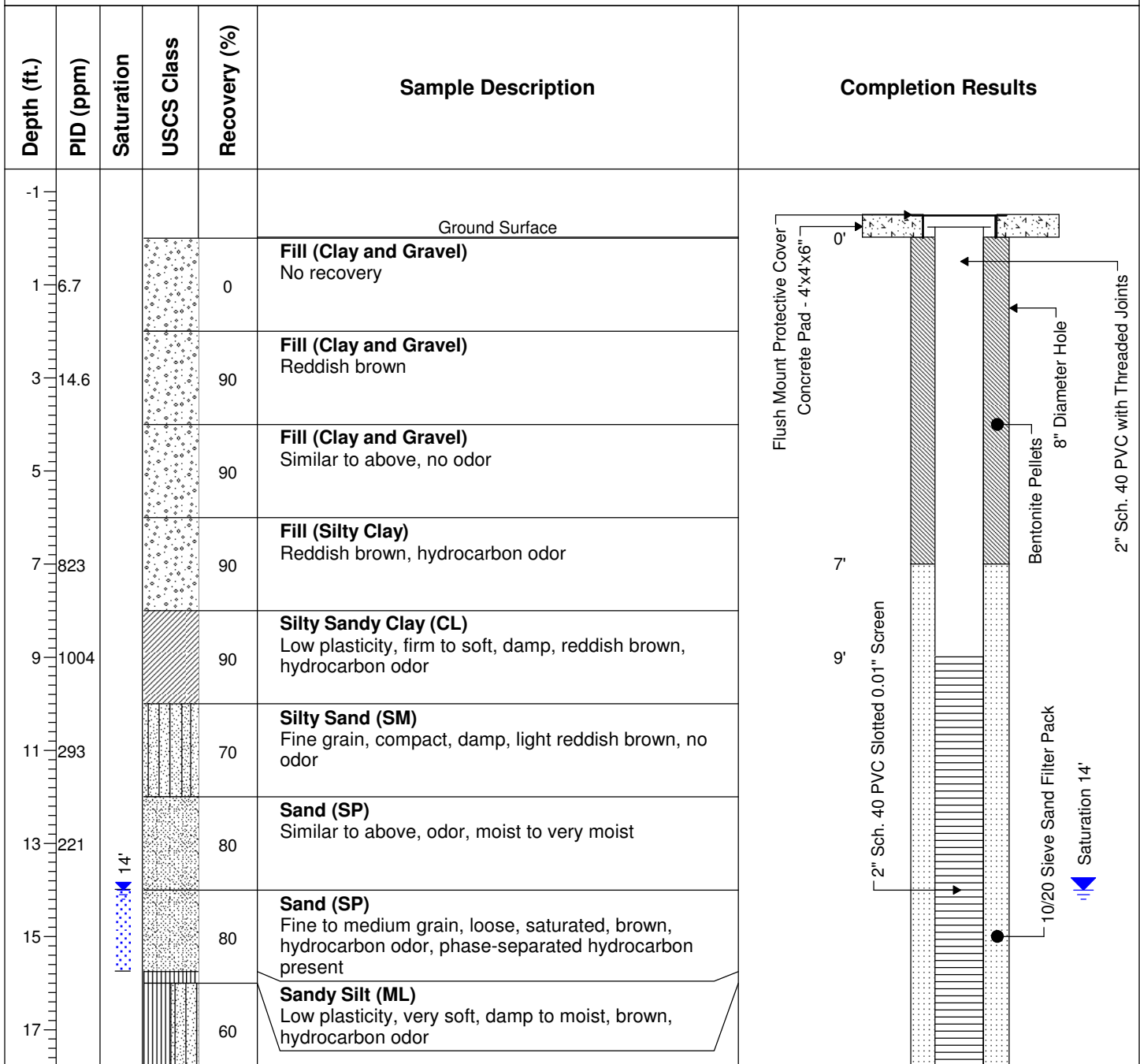


## WELL INSTALLATION

**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Five-Foot Core Barrel  
**Comments:** N 35°29.343' W 108°25.708'; Boring ID - SB31

**Total Depth:** 22' bgl  
**Ground Water:** Saturated @ 14' bgl  
**Elev., TOC (ft. msl):** 6943.48  
**Elev., PAD (ft. msl):** 6943.74  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,845.57 **E** 2,545,934.58

**Well No.:** MKTF-15  
**Start Date:** 10/29/2013 09:30  
**Finish Date:** 10/29/2013 12:15





**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Five-Foot Core Barrel  
**Comments:** N 35°29.343' W 108°25.708'; Boring ID - SB31

**Total Depth:** 22' bgl  
**Ground Water:** Saturated @ 14' bgl  
**Elev., TOC (ft. msl):** 6943.48  
**Elev., PAD (ft. msl):** 6943.74  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,845.57 **E** 2,545,934.58

**Well No.:** MKTF-15  
**Start Date:** 10/29/2013 09:30  
**Finish Date:** 10/29/2013 12:15

Depth (ft.)	PID (ppm)	Saturation	USCS Class	Recovery (%)	Sample Description	Completion Results
19				90	<b>Sandy Silt/Silty Sand (ML/SM)</b> Fine grain, loose to compact, moist to saturated, hydrocarbon odor, dark brown to black	<p>19' 19.33' 22'</p> <p>2" Sch. 40 PVC Slotted 0.01" Screen 10/20 Sieve Sand Filter Pack</p> <p>Bentonite Pellets</p> <p>2" Flush Threaded Sch. 40 PVC Cap</p>
					<b>Sandy Silt/Silty Sand (ML/SM)</b> Similar to above, saturated in silty sand lenses, hydrocarbon odor	
21				90	<b>Silty Clay (CL)</b> Low plasticity, firm, damp, brown, faint odor	
					<b>Silty Clay (CL)</b> Similar to above, odor	
23					Total Depth = 22' BGL	
25						
27						
29						
31						
33						
35						

**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Split Spoon  
**Comments:** N 35°29.323' W 108°25.680'; Boring ID - SB32

**Total Depth:** 16' bgl  
**Ground Water:** Saturated @ 9' bgl  
**Elev., TOC (ft. msl):** 6950.58  
**Elev., PAD (ft. msl):** 6951.00  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,718.14 **E** 2,546,068.55

**Well No.:** MKTF-16  
**Start Date:** 11/7/2013 08:40  
**Finish Date:** 11/7/2013 11:00

Depth (ft.)	PID (ppm)	Saturation	USCS Class	Recovery (%)	Sample Description	Completion Results
-1					Ground Surface	<p>Flush Mount Protective Cover Concrete Pad - 4'x4'x6" Bentonite Pellets 2" Flush Threaded Sch. 40 PVC Cap 10/20 Sieve Sand Filter Pack 8" Diameter Hole 2" Sch. 40 PVC with Threaded Joints Saturation 9'</p>
1				0	Fill (Clay/Gravel) No recovery	
3	469			10	Fill (Clay/Gravel) Similar to above	
5				0	Fill (Clay/Gravel) Similar to above	
7				0	Fill (Clay/Gravel) Similar to above	
9	1445	9'		90	Fill (Clay/Gravel) Saturated at 9' bgl, black discoloration, hydrocarbon odor	
11	1255			90	Gravelly Sand (SW) High plasticity, firm, damp, dark brown, hydrocarbon odor	
13	1412			40	Clayey Sand (SC) Similar to above, hydrocarbon odor	
15	439			80	Clayey Sand (SC) Moderate plasticity, firm, damp, brown, hydrocarbon odor	
17					Total Depth = 16' BGL	

## WELL INSTALLATION

**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Split Spoon  
**Comments:** N 35°29.248' W 108°25.724'; Boring ID - SB33

**Total Depth:** 25' bgl  
**Ground Water:** Saturated @ 20' bgl  
**Elev., TOC (ft. msl):** 6945.76  
**Elev., PAD (ft. msl):** 6945.79  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,268.93 **E** 2,545,850.73

**Well No.:** MKTF-17  
**Start Date:** 11/14/2013 13:00  
**Finish Date:** 11/14/2013 15:00

Depth (ft.)	PID (ppm)	Saturation	USCS Class	Recovery (%)	Sample Description	Completion Results
-1					Ground Surface	
1				10	<b>Fill (Asphalt/Base/Clay)</b> Low plasticity, soft, damp, brown	
3	150			10	<b>Fill (Clay)</b> Similar to above	
5	157			90	<b>Fill (Sand/Gravel/Clay)</b> Moist to very moist, reddish brown, no odor	
7	92.1			20	<b>Fill (Sand/Gravel/Clay)</b> Similar to above, saturated, odor	
9	65.9			90	<b>Clay (CH)</b> High plasticity, firm, damp, faint odor, brown	
11	17			60	<b>Clay (CH)</b> Similar to above	
13	55			70	<b>Clay (CH)</b> High plasticity, soft, damp, dark brown and black, odor	
15	17.5			60	<b>Clay (CH)</b> Similar to above, faint odor	
17	11.3			10	<b>Clay (CH)</b> Similar to above, trace fine grain sand	

## WELL INSTALLATION

**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Split Spoon  
**Comments:** N 35°29.248' W 108°25.724'; Boring ID - SB33

**Total Depth:** 25' bgl  
**Ground Water:** Saturated @ 20' bgl  
**Elev., TOC (ft. msl):** 6945.76  
**Elev., PAD (ft. msl):** 6945.79  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,268.93 **E** 2,545,850.73

**Well No.:** MKTF-17  
**Start Date:** 11/14/2013 13:00  
**Finish Date:** 11/14/2013 15:00

Depth (ft.)	PID (ppm)	Saturation	USCS Class	Recovery (%)	Sample Description	Completion Results
17.2		20'		10	<b>Clay (CH)</b> High plasticity, soft, damp, brown	<p>24' 24.33' 25'</p> <p>10/20 Sieve Sand Filter Pack</p> <p>2" Sch. 40 PVC Slotted 0.01" Screen</p> <p>2" Flush Threaded Sch. 40 PVC Cap</p> <p>Saturation 20'</p>
20				70	<b>Sandy Clay (CH)</b> Moderate plasticity, soft, very moist to saturated in sand seams	
22				80	<b>Silty Clayey Gravel (GM)</b> Compact to loose, medium grain sand to 1/4" gravel - angular, saturated, brown	
24				90	<b>Clay (CH)</b> Moderate plasticity, firm to stiff, damp, greenish gray	
Total Depth = 25' BGL						

**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Split Spoon  
**Comments:** N 35°29.288' W 108°25.692'; Boring ID - SB34

**Total Depth:** 27' bgl  
**Ground Water:** Saturated @ 23' bgl  
**Elev., TOC (ft. msl):** 6950.65  
**Elev., PAD (ft. msl):** 6950.97  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,497.53 **E** 2,546,006.29

**Well No.:** MKTF-18  
**Start Date:** 11/15/2013 10:00  
**Finish Date:** 11/15/2013 15:00

Depth (ft.)	PID (ppm)	Saturation	USCS Class	Recovery (%)	Sample Description	Completion Results
-1					Ground Surface	
1				--	<b>Fill (Gravel and Silty Clay)</b>	
3	1009			20	<b>Fill (Gravel and Silty Clay)</b> Similar to above, strong hydrocarbon odor, damp	
5	693			60	<b>Fill (Gravel and Silty Clay)</b> Similar to above	
7	1108			70	<b>Fill (Silty Clay)</b> Low plasticity, firm, damp, brown, gravel present, strong hydrocarbon odor	
9	901			90	<b>Fill (Clay/Sand/Gravel)</b> Similar to above, saturated, odor, sheen observed	
11	803			60	<b>Clay (CH)</b> High plasticity, stiff, damp, brown, hydrocarbon odor	
13	254			70	<b>Clay (CH)</b> Similar to above, very fine grain, sand in partings	
15	200			30	<b>Clay (CH)</b> Similar to above	
17				--	No recovery	

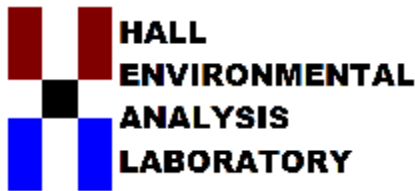
## WELL INSTALLATION

**Client:** Western Refining Southwest, Inc.  
**Site:** Gallup Refinery - Seep West of Tank 102  
**Job No.:** UEC01809  
**Geologist:** Tracy Payne  
**Driller:** Enviro-Drill, Inc.  
**Drilling Rig:** CME 75  
**Drilling Method:** Hollow Stem Augers  
**Sampling Method:** Split Spoon  
**Comments:** N 35°29.288' W 108°25.692'; Boring ID - SB34

**Total Depth:** 27' bgl  
**Ground Water:** Saturated @ 23' bgl  
**Elev., TOC (ft. msl):** 6950.65  
**Elev., PAD (ft. msl):** 6950.97  
**Elev., GL (ft. msl):** --  
**Site Coordinates:**  
**N** 1,633,497.53 **E** 2,546,006.29

**Well No.:** MKTF-18  
**Start Date:** 11/15/2013 10:00  
**Finish Date:** 11/15/2013 15:00

Depth (ft.)	PID (ppm)	Saturation	USCS Class	Recovery (%)	Sample Description	Completion Results
112				30	<b>Clay (CH)</b> High plasticity, firm, damp, brown, faint odor	<p>2" Sch. 40 PVC Slotted 0.01" Screen</p> <p>27'</p> <p>27.5'</p> <p>10/20 Sieve Sand Filter Pack</p> <p>Saturation 23'</p> <p>2" Flush Threaded Sch. 40 PVC Cap</p>
20				20	<b>Clay (CH)</b> Similar to above	
55						
22						
323				80	<b>Clay (CH)</b> Similar to above	
24					<b>Sandy Clay/Clayey Sand (SC/CL)</b> Fine grain, compact, very moist to saturated, brown, hydrocarbon present	
					<b>Clayey Sand (SC)</b> Similar to above, saturated	
26				90	<b>Sandy Clay (CL)</b> Low plasticity, firm, damp, hydrocarbon odor, greenish gray	
28					Total Depth = 27' BGL	
30						
32						
34						
36						



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

August 01, 2013

Cheryl Johnson

Western Refining Southwest, Gallup

Rt. 3 Box 7

Gallup, NM 87301

TEL: (505) 722-0231

FAX (505) 722-0210

RE: Seep West of Tank 102

OrderNo.: 1307C30

Dear Cheryl Johnson:

Hall Environmental Analysis Laboratory received 2 sample(s) on 7/26/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109



# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1307C30

Date Reported: 8/1/2013

**CLIENT:** Western Refining Southwest, Gallup

**Client Sample ID:** SB18

**Project:** Seep West of Tank 102

**Collection Date:** 7/25/2013 1:30:00 PM

**Lab ID:** 1307C30-001

**Matrix:** AQUEOUS

**Received Date:** 7/26/2013 9:07:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	73	1.0		mg/L	1	7/29/2013 4:35:51 PM	8599
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	7/29/2013 4:35:51 PM	8599
Surr: DNOP	119	70.1-140		%REC	1	7/29/2013 4:35:51 PM	8599
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	73	10	P	mg/L	200	7/30/2013 4:17:20 AM	R12268
Surr: BFB	98.5	51.5-151	P	%REC	200	7/30/2013 4:17:20 AM	R12268

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

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# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1307C30

Date Reported: 8/1/2013

**CLIENT:** Western Refining Southwest, Gallup

**Client Sample ID:** SB19

**Project:** Seep West of Tank 102

**Collection Date:** 7/25/2013 1:45:00 PM

**Lab ID:** 1307C30-002

**Matrix:** AQUEOUS

**Received Date:** 7/26/2013 9:07:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	30	1.0		mg/L	1	7/29/2013 4:57:45 PM	8599
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	7/29/2013 4:57:45 PM	8599
Surr: DNOP	127	70.1-140		%REC	1	7/29/2013 4:57:45 PM	8599
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	19	10		mg/L	200	7/30/2013 4:47:38 AM	R12268
Surr: BFB	93.8	51.5-151		%REC	200	7/30/2013 4:47:38 AM	R12268

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1307C30

01-Aug-13

Client: Western Refining Southwest, Gallup

Project: Seep West of Tank 102

Sample ID	MB-8599		SampType: MBLK		TestCode: EPA Method 8015D: Diesel Range					
Client ID:	PBW		Batch ID: 8599		RunNo: 12239					
Prep Date:	7/29/2013		Analysis Date: 7/29/2013		SeqNo: 348455		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.1		1.000		113	70.1	140			

Sample ID	LCS-8599		SampType: LCS		TestCode: EPA Method 8015D: Diesel Range					
Client ID:	LCSW		Batch ID: 8599		RunNo: 12239					
Prep Date:	7/29/2013		Analysis Date: 7/29/2013		SeqNo: 348473		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.2	1.0	5.000	0	105	89.1	151			
Surr: DNOP	0.42		0.5000		84.7	70.1	140			

Sample ID	LCSD-8599		SampType: LCSD		TestCode: EPA Method 8015D: Diesel Range					
Client ID:	LCSS02		Batch ID: 8599		RunNo: 12239					
Prep Date:	7/29/2013		Analysis Date: 7/29/2013		SeqNo: 348474		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.3	1.0	5.000	0	106	89.1	151	1.59	20	
Surr: DNOP	0.44		0.5000		88.4	70.1	140	0	0	

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
J Analyte detected below quantitation limits  
O RSD is greater than RSDlimit  
R RPD outside accepted recovery limits

B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
P Sample pH greater than 2 for VOA and TOC only.  
RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1307C30

01-Aug-13

Client: Western Refining Southwest, Gallup

Project: Seep West of Tank 102

Sample ID	5ML RB		SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	PBW		Batch ID: R12268		RunNo: 12268					
Prep Date:			Analysis Date: 7/29/2013		SeqNo: 348886		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	18		20.00		92.3	51.5	151			

Sample ID	2.5UG GRO LCS		SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	LCSW		Batch ID: R12268		RunNo: 12268					
Prep Date:			Analysis Date: 7/29/2013		SeqNo: 348887		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.51	0.050	0.5000	0	103	80	120			
Surr: BFB	20		20.00		99.1	51.5	151			

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
J Analyte detected below quantitation limits  
O RSD is greater than RSDlimit  
R RPD outside accepted recovery limits

B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
P Sample pH greater than 2 for VOA and TOC only.  
RL Reporting Detection Limit

## Sample Log-In Check List

Client Name: Western Refining Gallup

Work Order Number: 1307C30

RptNo: 1

Received by/date:

MG 07/26/13

Logged By: Anne Thorne

7/26/2013 9:07:00 AM

Anne Thorne

Completed By: Anne Thorne

7/26/2013

Anne Thorne

Reviewed By:

[Signature]

07/29/13

### Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☒
2. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
3. How was the sample delivered? FedEx

### Log In

4. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0° C Yes ☒ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☒ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
9. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
10. VOA vials have zero headspace? Yes ☒ No ☐ No VOA Vials ☐
11. Were any sample containers received broken? Yes ☐ No ☒
12. Does paperwork match bottle labels?  
(Note discrepancies on chain of custody) Yes ☒ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
14. Is it clear what analyses were requested? Yes ☒ No ☐
15. Were all holding times able to be met?  
(If no, notify customer for authorization.) Yes ☒ No ☐

# of preserved  
bottles checked  
for pH:

(<2 or >12 unless noted)

Adjusted? \_\_\_\_\_

Checked by: \_\_\_\_\_

### Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified: \_\_\_\_\_

Date: \_\_\_\_\_

By Whom: \_\_\_\_\_

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: \_\_\_\_\_

Client Instructions: \_\_\_\_\_

17. Additional remarks:

### 18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			





Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

November 06, 2013

Cheryl Johnson

Western Refining Southwest, Gallup  
92 Giant Crossing Road  
Gallup, NM 87301  
TEL: (505) 722-0231  
FAX (505) 722-0210

RE: Seep West of Tank 102

OrderNo.: 1311044

Dear Cheryl Johnson:

Hall Environmental Analysis Laboratory received 5 sample(s) on 11/2/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE  
Albuquerque, NM 87109



# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1311044

Date Reported: 11/6/2013

**CLIENT:** Western Refining Southwest, Gallup

**Client Sample ID:** SB26

**Project:** Seep West of Tank 102

**Collection Date:** 11/1/2013 1:45:00 PM

**Lab ID:** 1311044-001

**Matrix:** AQUEOUS

**Received Date:** 11/2/2013 8:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	1.5	1.0		mg/L	1	11/5/2013 12:04:38 PM	10156
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	11/5/2013 12:04:38 PM	10156
Surr: DNOP	135	70.1-140		%REC	1	11/5/2013 12:04:38 PM	10156
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	8.4	1.0		mg/L	20	11/4/2013 3:16:02 PM	R14541
Surr: BFB	116	80.4-118		%REC	20	11/4/2013 3:16:02 PM	R14541
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	1200	20		µg/L	20	11/4/2013 3:16:02 PM	R14541
Toluene	ND	20		µg/L	20	11/4/2013 3:16:02 PM	R14541
Ethylbenzene	230	20		µg/L	20	11/4/2013 3:16:02 PM	R14541
Xylenes, Total	ND	40		µg/L	20	11/4/2013 3:16:02 PM	R14541
Surr: 4-Bromofluorobenzene	113	85-136		%REC	20	11/4/2013 3:16:02 PM	R14541

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

Page 1 of 8

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1311044

Date Reported: 11/6/2013

**CLIENT:** Western Refining Southwest, Gallup

**Client Sample ID:** SB27

**Project:** Seep West of Tank 102

**Collection Date:** 11/1/2013 1:55:00 PM

**Lab ID:** 1311044-002

**Matrix:** AQUEOUS

**Received Date:** 11/2/2013 8:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	5.8	1.0		mg/L	1	11/5/2013 12:35:50 PM	10156
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	11/5/2013 12:35:50 PM	10156
Surr: DNOP	139	70.1-140		%REC	1	11/5/2013 12:35:50 PM	10156
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	37	2.5		mg/L	50	11/4/2013 12:14:33 PM	R14541
Surr: BFB	105	80.4-118		%REC	50	11/4/2013 12:14:33 PM	R14541
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	1800	50		µg/L	50	11/4/2013 12:14:33 PM	R14541
Toluene	200	50		µg/L	50	11/4/2013 12:14:33 PM	R14541
Ethylbenzene	1500	50		µg/L	50	11/4/2013 12:14:33 PM	R14541
Xylenes, Total	6400	100		µg/L	50	11/4/2013 12:14:33 PM	R14541
Surr: 4-Bromofluorobenzene	110	85-136		%REC	50	11/4/2013 12:14:33 PM	R14541

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

Page 2 of 8

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1311044

Date Reported: 11/6/2013

**CLIENT:** Western Refining Southwest, Gallup

**Client Sample ID:** SB28

**Project:** Seep West of Tank 102

**Collection Date:** 11/1/2013 2:10:00 PM

**Lab ID:** 1311044-003

**Matrix:** AQUEOUS

**Received Date:** 11/2/2013 8:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	1.4	1.0		mg/L	1	11/5/2013 1:07:02 PM	10156
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	11/5/2013 1:07:02 PM	10156
Surr: DNOP	121	70.1-140		%REC	1	11/5/2013 1:07:02 PM	10156
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	8.4	1.0		mg/L	20	11/4/2013 3:46:06 PM	R14541
Surr: BFB	116	80.4-118		%REC	20	11/4/2013 3:46:06 PM	R14541
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	1400	20		µg/L	20	11/4/2013 3:46:06 PM	R14541
Toluene	ND	20		µg/L	20	11/4/2013 3:46:06 PM	R14541
Ethylbenzene	160	20		µg/L	20	11/4/2013 3:46:06 PM	R14541
Xylenes, Total	ND	40		µg/L	20	11/4/2013 3:46:06 PM	R14541
Surr: 4-Bromofluorobenzene	115	85-136		%REC	20	11/4/2013 3:46:06 PM	R14541

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

Page 3 of 8

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1311044

Date Reported: 11/6/2013

**CLIENT:** Western Refining Southwest, Gallup

**Client Sample ID:** SB29

**Project:** Seep West of Tank 102

**Collection Date:** 11/1/2013 2:20:00 PM

**Lab ID:** 1311044-004

**Matrix:** AQUEOUS

**Received Date:** 11/2/2013 8:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	11/5/2013 1:37:45 PM	10156
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	11/5/2013 1:37:45 PM	10156
Surr: DNOP	135	70.1-140		%REC	1	11/5/2013 1:37:45 PM	10156
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	1.7	0.050		mg/L	1	11/4/2013 1:15:02 PM	R14541
Surr: BFB	192	80.4-118	S	%REC	1	11/4/2013 1:15:02 PM	R14541
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	570	10		µg/L	10	11/4/2013 4:16:22 PM	R14541
Toluene	8.0	1.0		µg/L	1	11/4/2013 1:15:02 PM	R14541
Ethylbenzene	150	10		µg/L	10	11/4/2013 4:16:22 PM	R14541
Xylenes, Total	2.0	2.0		µg/L	1	11/4/2013 1:15:02 PM	R14541
Surr: 4-Bromofluorobenzene	153	85-136	S	%REC	1	11/4/2013 1:15:02 PM	R14541

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

Page 4 of 8

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1311044

Date Reported: 11/6/2013

**CLIENT:** Western Refining Southwest, Gallup

**Client Sample ID:** SB31

**Project:** Seep West of Tank 102

**Collection Date:** 11/1/2013 2:35:00 PM

**Lab ID:** 1311044-005

**Matrix:** AQUEOUS

**Received Date:** 11/2/2013 8:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	2.4	1.0		mg/L	1	11/5/2013 2:08:31 PM	10156
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	11/5/2013 2:08:31 PM	10156
Surr: DNOP	120	70.1-140		%REC	1	11/5/2013 2:08:31 PM	10156
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	65	2.5		mg/L	50	11/4/2013 1:45:17 PM	R14541
Surr: BFB	106	80.4-118		%REC	50	11/4/2013 1:45:17 PM	R14541
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	12000	200		µg/L	200	11/4/2013 11:49:30 PM	R14541
Toluene	12000	200		µg/L	200	11/4/2013 11:49:30 PM	R14541
Ethylbenzene	1500	50		µg/L	50	11/4/2013 1:45:17 PM	R14541
Xylenes, Total	4800	100		µg/L	50	11/4/2013 1:45:17 PM	R14541
Surr: 4-Bromofluorobenzene	113	85-136		%REC	50	11/4/2013 1:45:17 PM	R14541

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1311044

06-Nov-13

Client: Western Refining Southwest, Gallup

Project: Seep West of Tank 102

Sample ID	MB-10156		SampType: MBLK		TestCode: EPA Method 8015D: Diesel Range					
Client ID:	PBW		Batch ID: 10156		RunNo: 14573					
Prep Date:	11/4/2013		Analysis Date: 11/5/2013		SeqNo: 418892		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.2		1.000		117	70.1	140			

Sample ID	LCS-10156		SampType: LCS		TestCode: EPA Method 8015D: Diesel Range					
Client ID:	LCSW		Batch ID: 10156		RunNo: 14573					
Prep Date:	11/4/2013		Analysis Date: 11/5/2013		SeqNo: 418893		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	7.0	1.0	5.000	0	140	73.3	145			
Surr: DNOP	0.61		0.5000		121	70.1	140			

Sample ID	LCSD-10156		SampType: LCSD		TestCode: EPA Method 8015D: Diesel Range					
Client ID:	LCSS02		Batch ID: 10156		RunNo: 14573					
Prep Date:	11/4/2013		Analysis Date: 11/5/2013		SeqNo: 418894		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	6.0	1.0	5.000	0	119	73.3	145	15.6	20	
Surr: DNOP	0.52		0.5000		103	70.1	140	0	0	

### Qualifiers:

- |   |  |
|---|--|
| * Value exceeds Maximum Contaminant Level.        | B Analyte detected in the associated Method Blank    |
| E Value above quantitation range                  | H Holding times for preparation or analysis exceeded |
| J Analyte detected below quantitation limits      | ND Not Detected at the Reporting Limit               |
| O RSD is greater than RSDlimit                    | P Sample pH greater than 2 for VOA and TOC only.     |
| R RPD outside accepted recovery limits            | RL Reporting Detection Limit                         |
| S Spike Recovery outside accepted recovery limits |  |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1311044

06-Nov-13

Client: Western Refining Southwest, Gallup

Project: Seep West of Tank 102

Sample ID <b>B7</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>PBW</b>	Batch ID: <b>R14541</b>		RunNo: <b>14541</b>							
Prep Date:	Analysis Date: <b>11/4/2013</b>		SeqNo: <b>418164</b>		Units: <b>mg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	19		20.00		93.8	80.4	118			

Sample ID <b>2.5UG GRO LCS</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>LCSW</b>	Batch ID: <b>R14541</b>		RunNo: <b>14541</b>							
Prep Date:	Analysis Date: <b>11/4/2013</b>		SeqNo: <b>418165</b>		Units: <b>mg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.49	0.050	0.5000	0	97.7	80	120			
Surr: BFB	21		20.00		104	80.4	118			

Sample ID <b>1311044-001AMS</b>	SampType: <b>MS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>SB26</b>	Batch ID: <b>R14541</b>		RunNo: <b>14541</b>							
Prep Date:	Analysis Date: <b>11/4/2013</b>		SeqNo: <b>418172</b>		Units: <b>mg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	18	1.0	10.00	8.436	91.4	67.7	128			
Surr: BFB	490		400.0		122	80.4	118			S

Sample ID <b>1311044-001AMSD</b>	SampType: <b>MSD</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>SB26</b>	Batch ID: <b>R14541</b>		RunNo: <b>14541</b>							
Prep Date:	Analysis Date: <b>11/4/2013</b>		SeqNo: <b>418173</b>		Units: <b>mg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	17	1.0	10.00	8.436	88.0	67.7	128	2.00	20	
Surr: BFB	470		400.0		118	80.4	118	0	0	S

### Qualifiers:

- |   |  |
|---|--|
| * Value exceeds Maximum Contaminant Level.        | B Analyte detected in the associated Method Blank    |
| E Value above quantitation range                  | H Holding times for preparation or analysis exceeded |
| J Analyte detected below quantitation limits      | ND Not Detected at the Reporting Limit               |
| O RSD is greater than RSDlimit                    | P Sample pH greater than 2 for VOA and TOC only.     |
| R RPD outside accepted recovery limits            | RL Reporting Detection Limit                         |
| S Spike Recovery outside accepted recovery limits |  |

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1311044

06-Nov-13

Client: Western Refining Southwest, Gallup

Project: Seep West of Tank 102

Sample ID <b>B7</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8021B: Volatiles</b>							
Client ID: <b>PBW</b>	Batch ID: <b>R14541</b>		RunNo: <b>14541</b>							
Prep Date:	Analysis Date: <b>11/4/2013</b>		SeqNo: <b>418215</b>		Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	20		20.00		102	85	136			

Sample ID <b>100NG BTEX LCS</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8021B: Volatiles</b>							
Client ID: <b>LCSW</b>	Batch ID: <b>R14541</b>		RunNo: <b>14541</b>							
Prep Date:	Analysis Date: <b>11/4/2013</b>		SeqNo: <b>418216</b>		Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	99.8	80	120			
Toluene	20	1.0	20.00	0	100	80	120			
Ethylbenzene	20	1.0	20.00	0	101	80	120			
Xylenes, Total	62	2.0	60.00	0	103	80	120			
Surr: 4-Bromofluorobenzene	22		20.00		108	85	136			

Sample ID <b>1311044-002AMS</b>	SampType: <b>MS</b>		TestCode: <b>EPA Method 8021B: Volatiles</b>							
Client ID: <b>SB27</b>	Batch ID: <b>R14541</b>		RunNo: <b>14541</b>							
Prep Date:	Analysis Date: <b>11/4/2013</b>		SeqNo: <b>418223</b>		Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	2900	50	1000	1764	109	73.4	119			
Toluene	1200	50	1000	201.5	100	80	120			
Ethylbenzene	2600	50	1000	1526	107	80	120			
Xylenes, Total	9500	100	3000	6401	105	80	120			
Surr: 4-Bromofluorobenzene	1100		1000		114	85	136			

Sample ID <b>1311044-002AMSD</b>	SampType: <b>MSD</b>		TestCode: <b>EPA Method 8021B: Volatiles</b>							
Client ID: <b>SB27</b>	Batch ID: <b>R14541</b>		RunNo: <b>14541</b>							
Prep Date:	Analysis Date: <b>11/4/2013</b>		SeqNo: <b>418224</b>		Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	2800	50	1000	1764	108	73.4	119	0.260	20	
Toluene	1200	50	1000	201.5	101	80	120	0.497	20	
Ethylbenzene	2600	50	1000	1526	107	80	120	0.262	20	
Xylenes, Total	9600	100	3000	6401	105	80	120	0.0701	20	
Surr: 4-Bromofluorobenzene	1100		1000		114	85	136	0	0	

### Qualifiers:

- |   |  |
|---|--|
| * Value exceeds Maximum Contaminant Level.        | B Analyte detected in the associated Method Blank    |
| E Value above quantitation range                  | H Holding times for preparation or analysis exceeded |
| J Analyte detected below quantitation limits      | NB Not Detected at the Reporting Limit               |
| O RSD is greater than RSDlimit                    | P Sample pH greater than 2 for VOA and TOC only.     |
| R RPD outside accepted recovery limits            | RL Reporting Detection Limit                         |
| S Spike Recovery outside accepted recovery limits |  |

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## Sample Log-In Check List

Client Name: Western Refining Gallup

Work Order Number: 1311044

RcptNo: 1

Received by/date:

*AF* 11/02/13

Logged By: Michelle Garcia

11/2/2013 8:55:00 AM

*Michelle Garcia*

Completed By: Michelle Garcia

11/4/2013 8:34:11 AM

*Michelle Garcia*

Reviewed By:

*[Signature]* 11/04/13

### Chain of Custody

1. Custody seals intact on sample bottles? Yes ☒ No ☐ Not Present ☐
2. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
3. How was the sample delivered? Client

### Log In

4. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☒ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☒ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
9. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
10. VOA vials have zero headspace? Yes ☒ No ☐ No VOA Vials ☐
11. Were any sample containers received broken? Yes ☐ No ☒
12. Does paperwork match bottle labels?  
(Note discrepancies on chain of custody) Yes ☒ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
14. Is it clear what analyses were requested? Yes ☒ No ☐
15. Were all holding times able to be met?  
(If no, notify customer for authorization.) Yes ☒ No ☐

# of preserved  
bottles checked  
for pH:

(<2 or >12 unless noted)

Adjusted? \_\_\_\_\_

Checked by: \_\_\_\_\_

### Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:

Date:

By Whom:

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

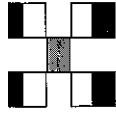
Regarding:

Client Instructions:

17. Additional remarks:

### 18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.2	Good	Yes			



# HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: **WESTERN REFINING SW**  
**GALLUP REFINERY**  
 Mailing Address: **ROUTE 3 Box 7**

**JAMESTOWN NM 87130**  
 Phone #: **505-722-3833**  
 Email or Fax#: **505.863.0930**

QA/QC Package:  
☐ Standard ☐ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other

☐ EDD (Type)

Project Manager:

**CHERYL JOHNSON**

Sampler:

**TRACY PAYNE**

On Ice: ☒ Yes ☐ No

Sample Temperature: **12°C**

Date Time Matrix Sample Request ID

1/13/1345 GW SB26  
 1355 SB27  
 1410 SB28  
 1420 SB29  
 1435 SB31

Container Type and #

440ML VOA HCL LINEAT  
 1311044  
 -001  
 -002  
 -003  
 -004  
 -005

Preservative Type

HEAL No.

BTEX + MTBE + TMB's (8021)

BTEX + MTBE + TPH (Gas only)

TPH 8015B (GRO / DRO / MRO)

TPH (Method 418.1)

EDB (Method 504.1)

PAH's (8310 or 8270 SIMS)

RCRA 8 Metals

Anions (F, Cl, NO<sub>3</sub>, NO<sub>2</sub>, PO<sub>4</sub>, SO<sub>4</sub>)

8081 Pesticides / 8082 PCB's

8260B (VOA)

8270 (Semi-VOA)

Air Bubbles (Y or N)

Remarks:

Received by: **[Signature]** Date Time **11/2/13 0855**

Date Time Relinquished by: **[Signature]**

Date Time Relinquished by:



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

November 27, 2013

Cheryl Johnson

Western Refining Southwest, Gallup  
92 Giant Crossing Road  
Gallup, NM 87301  
TEL: (505) 722-0231  
FAX (505) 722-0210

RE: Seep West of Tank 102

OrderNo.: 1311905

Dear Cheryl Johnson:

Hall Environmental Analysis Laboratory received 5 sample(s) on 11/20/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a horizontal line.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1311905

Date Reported: 11/27/2013

**CLIENT:** Western Refining Southwest, Gallup

**Client Sample ID:** SB32

**Project:** Seep West of Tank 102

**Collection Date:** 11/19/2013 9:30:00 AM

**Lab ID:** 1311905-001

**Matrix:** AQUEOUS

**Received Date:** 11/20/2013 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	4.2	1.0		mg/L	1	11/25/2013 4:45:18 PM	10460
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	11/25/2013 4:45:18 PM	10460
Surr: DNOP	113	70.1-140		%REC	1	11/25/2013 4:45:18 PM	10460
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	68	2.5		mg/L	50	11/22/2013 6:09:44 PM	R15041
Surr: BFB	106	80.4-118		%REC	50	11/22/2013 6:09:44 PM	R15041
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>RAA</b>
Benzene	9900	500		µg/L	500	11/25/2013 4:03:31 PM	R15067
Toluene	8200	500		µg/L	500	11/25/2013 4:03:31 PM	R15067
Ethylbenzene	1900	50		µg/L	50	11/22/2013 6:09:44 PM	R15041
Xylenes, Total	9800	100		µg/L	50	11/22/2013 6:09:44 PM	R15041
Surr: 4-Bromofluorobenzene	117	85-136		%REC	50	11/22/2013 6:09:44 PM	R15041

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1311905

Date Reported: 11/27/2013

**CLIENT:** Western Refining Southwest, Gallup

**Client Sample ID:** SB33

**Project:** Seep West of Tank 102

**Collection Date:** 11/19/2013 10:15:00 AM

**Lab ID:** 1311905-002

**Matrix:** AQUEOUS

**Received Date:** 11/20/2013 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	5.8	1.0		mg/L	1	11/25/2013 5:07:17 PM	10460
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	11/25/2013 5:07:17 PM	10460
Surr: DNOP	116	70.1-140		%REC	1	11/25/2013 5:07:17 PM	10460
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	17	2.5		mg/L	50	11/22/2013 6:39:50 PM	R15041
Surr: BFB	104	80.4-118		%REC	50	11/22/2013 6:39:50 PM	R15041
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>RAA</b>
Benzene	1800	50		µg/L	50	11/22/2013 6:39:50 PM	R15041
Toluene	1600	50		µg/L	50	11/22/2013 6:39:50 PM	R15041
Ethylbenzene	710	50		µg/L	50	11/22/2013 6:39:50 PM	R15041
Xylenes, Total	2700	100		µg/L	50	11/22/2013 6:39:50 PM	R15041
Surr: 4-Bromofluorobenzene	116	85-136		%REC	50	11/22/2013 6:39:50 PM	R15041

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1311905

Date Reported: 11/27/2013

**CLIENT:** Western Refining Southwest, Gallup

**Client Sample ID:** SB23

**Project:** Seep West of Tank 102

**Collection Date:** 11/19/2013 10:50:00 AM

**Lab ID:** 1311905-003

**Matrix:** AQUEOUS

**Received Date:** 11/20/2013 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	2.1	1.0		mg/L	1	11/25/2013 5:29:07 PM	10460
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	11/25/2013 5:29:07 PM	10460
Surr: DNOP	109	70.1-140		%REC	1	11/25/2013 5:29:07 PM	10460
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	6.5	0.25		mg/L	5	11/25/2013 4:33:48 PM	R15067
Surr: BFB	107	80.4-118		%REC	5	11/25/2013 4:33:48 PM	R15067
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>RAA</b>
Benzene	1300	50		µg/L	50	11/22/2013 7:09:53 PM	R15041
Toluene	7.5	5.0		µg/L	5	11/25/2013 4:33:48 PM	R15067
Ethylbenzene	72	5.0		µg/L	5	11/25/2013 4:33:48 PM	R15067
Xylenes, Total	16	10		µg/L	5	11/25/2013 4:33:48 PM	R15067
Surr: 4-Bromofluorobenzene	113	85-136		%REC	5	11/25/2013 4:33:48 PM	R15067

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

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# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1311905

Date Reported: 11/27/2013

**CLIENT:** Western Refining Southwest, Gallup

**Client Sample ID:** SB30

**Project:** Seep West of Tank 102

**Collection Date:** 11/19/2013 12:15:00 PM

**Lab ID:** 1311905-004

**Matrix:** AQUEOUS

**Received Date:** 11/20/2013 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	11/25/2013 5:51:04 PM	10460
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	11/25/2013 5:51:04 PM	10460
Surr: DNOP	114	70.1-140		%REC	1	11/25/2013 5:51:04 PM	10460
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	11/25/2013 5:34:09 PM	R15067
Surr: BFB	100	80.4-118		%REC	1	11/25/2013 5:34:09 PM	R15067
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>RAA</b>
Benzene	ND	1.0		µg/L	1	11/25/2013 5:34:09 PM	R15067
Toluene	ND	1.0		µg/L	1	11/25/2013 5:34:09 PM	R15067
Ethylbenzene	ND	1.0		µg/L	1	11/25/2013 5:34:09 PM	R15067
Xylenes, Total	ND	2.0		µg/L	1	11/25/2013 5:34:09 PM	R15067
Surr: 4-Bromofluorobenzene	108	85-136		%REC	1	11/25/2013 5:34:09 PM	R15067

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

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# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1311905

Date Reported: 11/27/2013

**CLIENT:** Western Refining Southwest, Gallup

**Client Sample ID:** SB34

**Project:** Seep West of Tank 102

**Collection Date:** 11/19/2013 1:15:00 PM

**Lab ID:** 1311905-005

**Matrix:** AQUEOUS

**Received Date:** 11/20/2013 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	11	1.0		mg/L	1	11/25/2013 6:12:56 PM	10460
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	11/25/2013 6:12:56 PM	10460
Surr: DNOP	120	70.1-140		%REC	1	11/25/2013 6:12:56 PM	10460
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	4.0	2.5		mg/L	50	11/22/2013 8:10:07 PM	R15041
Surr: BFB	102	80.4-118		%REC	50	11/22/2013 8:10:07 PM	R15041
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>RAA</b>
Benzene	330	50		µg/L	50	11/22/2013 8:10:07 PM	R15041
Toluene	370	50		µg/L	50	11/22/2013 8:10:07 PM	R15041
Ethylbenzene	130	50		µg/L	50	11/22/2013 8:10:07 PM	R15041
Xylenes, Total	470	100		µg/L	50	11/22/2013 8:10:07 PM	R15041
Surr: 4-Bromofluorobenzene	108	85-136		%REC	50	11/22/2013 8:10:07 PM	R15041

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1311905

27-Nov-13

Client: Western Refining Southwest, Gallup

Project: Seep West of Tank 102

Sample ID	MB-10460		SampType: MBLK		TestCode: EPA Method 8015D: Diesel Range					
Client ID:	PBW		Batch ID: 10460		RunNo: 15015					
Prep Date:	11/21/2013		Analysis Date: 11/25/2013		SeqNo: 434392		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.1		1.000		107	70.1	140			

Sample ID	LCS-10460		SampType: LCS		TestCode: EPA Method 8015D: Diesel Range					
Client ID:	LCSW		Batch ID: 10460		RunNo: 15015					
Prep Date:	11/21/2013		Analysis Date: 11/25/2013		SeqNo: 434404		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.3	1.0	5.000	0	106	73.3	145			
Surr: DNOP	0.52		0.5000		104	70.1	140			

Sample ID	LCSD-10460		SampType: LCSD		TestCode: EPA Method 8015D: Diesel Range					
Client ID:	LCSS02		Batch ID: 10460		RunNo: 15015					
Prep Date:	11/21/2013		Analysis Date: 11/25/2013		SeqNo: 434671		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	6.1	1.0	5.000	0	122	73.3	145	13.9	20	
Surr: DNOP	0.59		0.5000		118	70.1	140	0	0	

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
J Analyte detected below quantitation limits  
O RSD is greater than RSDlimit  
R RPD outside accepted recovery limits  
S Spike Recovery outside accepted recovery limits

B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
P Sample pH greater than 2 for VOA and TOC only.  
RL Reporting Detection Limit

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1311905

27-Nov-13

Client: Western Refining Southwest, Gallup

Project: Seep West of Tank 102

Sample ID	5ML-RB		SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	PBW		Batch ID: R15041		RunNo: 15041					
Prep Date:			Analysis Date: 11/22/2013		SeqNo: 434271		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	20		20.00		97.6	80.4	118			

Sample ID	2.5UG GRO LCS		SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	LCSW		Batch ID: R15041		RunNo: 15041					
Prep Date:			Analysis Date: 11/22/2013		SeqNo: 434272		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.51	0.050	0.5000	0	101	80	120			
Surr: BFB	21		20.00		107	80.4	118			

Sample ID	5ML-RB		SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	PBW		Batch ID: R15067		RunNo: 15067					
Prep Date:			Analysis Date: 11/25/2013		SeqNo: 434884		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	21		20.00		106	80.4	118			

Sample ID	2.5UG GRO LCS		SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	LCSW		Batch ID: R15067		RunNo: 15067					
Prep Date:			Analysis Date: 11/25/2013		SeqNo: 434885		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.44	0.050	0.5000	0	87.1	80	120			
Surr: BFB	21		20.00		106	80.4	118			

### Qualifiers:

- |   |  |
|---|--|
| * Value exceeds Maximum Contaminant Level.        | B Analyte detected in the associated Method Blank    |
| E Value above quantitation range                  | H Holding times for preparation or analysis exceeded |
| J Analyte detected below quantitation limits      | ND Not Detected at the Reporting Limit               |
| O RSD is greater than RSDlimit                    | P Sample pH greater than 2 for VOA and TOC only.     |
| R RPD outside accepted recovery limits            | RL Reporting Detection Limit                         |
| S Spike Recovery outside accepted recovery limits |  |

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1311905

27-Nov-13

Client: Western Refining Southwest, Gallup

Project: Seep West of Tank 102

Sample ID	<b>5ML-RB</b>		SampType:	<b>MBLK</b>		TestCode:	<b>EPA Method 8021B: Volatiles</b>			
Client ID:	<b>PBW</b>		Batch ID:	<b>R15041</b>		RunNo:	<b>15041</b>			
Prep Date:			Analysis Date:	<b>11/22/2013</b>		SeqNo:	<b>434285</b>	Units:	<b>µg/L</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	22		20.00		108	85	136			

Sample ID	<b>100NG BTEX LCS</b>		SampType:	<b>LCS</b>		TestCode:	<b>EPA Method 8021B: Volatiles</b>			
Client ID:	<b>LCSW</b>		Batch ID:	<b>R15041</b>		RunNo:	<b>15041</b>			
Prep Date:			Analysis Date:	<b>11/22/2013</b>		SeqNo:	<b>434286</b>	Units:	<b>µg/L</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	93.8	80	120			
Toluene	19	1.0	20.00	0	94.6	80	120			
Ethylbenzene	19	1.0	20.00	0	95.1	80	120			
Xylenes, Total	58	2.0	60.00	0	96.0	80	120			
Surr: 4-Bromofluorobenzene	22		20.00		112	85	136			

Sample ID	<b>5ML-RB</b>		SampType:	<b>MBLK</b>		TestCode:	<b>EPA Method 8021B: Volatiles</b>			
Client ID:	<b>PBW</b>		Batch ID:	<b>R15067</b>		RunNo:	<b>15067</b>			
Prep Date:			Analysis Date:	<b>11/25/2013</b>		SeqNo:	<b>434905</b>	Units:	<b>µg/L</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	24		20.00		118	85	136			

Sample ID	<b>100NG BTEX LCS</b>		SampType:	<b>LCS</b>		TestCode:	<b>EPA Method 8021B: Volatiles</b>			
Client ID:	<b>LCSW</b>		Batch ID:	<b>R15067</b>		RunNo:	<b>15067</b>			
Prep Date:			Analysis Date:	<b>11/25/2013</b>		SeqNo:	<b>434906</b>	Units:	<b>µg/L</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	95.1	80	120			
Toluene	19	1.0	20.00	0	95.2	80	120			
Ethylbenzene	19	1.0	20.00	0	94.0	80	120			
Xylenes, Total	58	2.0	60.00	0	96.5	80	120			
Surr: 4-Bromofluorobenzene	22		20.00		110	85	136			

### Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

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## Sample Log-In Check List

Client Name: Western Refining Gallup

Work Order Number: 1311905

RcptNo: 1

Received by/date: LM 11/20/13

Logged By: Anne Thorne 11/20/2013 9:40:00 AM

*Anne Thorne*

Completed By: Anne Thorne 11/20/2013

*Anne Thorne*

Reviewed By: IO 11/21/2013

### Chain of Custody

1. Custody seals intact on sample bottles? Yes ☒ No ☐ Not Present ☐
2. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
3. How was the sample delivered? Client

### Log In

4. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☒ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☒ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
9. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
10. VOA vials have zero headspace? Yes ☒ No ☐ No VOA Vials ☐
11. Were any sample containers received broken? Yes ☐ No ☒
12. Does paperwork match bottle labels?  
(Note discrepancies on chain of custody) Yes ☒ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
14. Is it clear what analyses were requested? Yes ☒ No ☐
15. Were all holding times able to be met?  
(If no, notify customer for authorization.) Yes ☒ No ☐

# of preserved  
bottles checked  
for pH: \_\_\_\_\_  
(<2 or >12 unless noted)  
Adjusted? \_\_\_\_\_  
Checked by: \_\_\_\_\_

### Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:	_____	Date:	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

17. Additional remarks:

### 18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			





Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

July 16, 2013

Cheryl Johnson

Western Refining Southwest, Gallup

Rt. 3 Box 7

Gallup, NM 87301

TEL: (505) 722-0231

FAX: (505) 722-0210

RE: Seep West of 102

OrderNo.: 1307269

Dear Cheryl Johnson:

Hall Environmental Analysis Laboratory received 1 sample(s) on 7/8/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1307269

Date Reported: 7/16/2013

**CLIENT:** Western Refining Southwest, Gallup

**Client Sample ID:** Seep Hole #6

**Project:** Seep West of 102

**Collection Date:** 7/8/2013 9:45:00 AM

**Lab ID:** 1307269-001

**Matrix:** PRODUCT

**Received Date:** 7/8/2013 1:20:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>DRO BY 8015D</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	55	2.0		wt%	20	7/9/2013 4:30:52 PM	8285
Motor Oil Range Organics (MRO)	ND	10		wt%	20	7/9/2013 4:30:52 PM	8285
Surr: DNOP	0	76.7-135	S	%REC	20	7/9/2013 4:30:52 PM	8285
<b>GRO BY 8015D</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	49	2.5		wt%	1	7/10/2013 11:07:52 AM	8284
Surr: BFB	127	65.4-138		%REC	1	7/10/2013 11:07:52 AM	8284
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>JRR</b>
Fluoride	ND	2.0		mg/L	20	7/9/2013 3:15:53 AM	R11809
Chloride	ND	10		mg/L	20	7/9/2013 3:15:53 AM	R11809
Nitrogen, Nitrite (As N)	ND	2.0		mg/L	20	7/9/2013 3:15:53 AM	R11809
Bromide	ND	2.0		mg/L	20	7/9/2013 3:15:53 AM	R11809
Nitrogen, Nitrate (As N)	ND	2.0		mg/L	20	7/9/2013 3:15:53 AM	R11809
Phosphorus, Orthophosphate (As P)	ND	10		mg/L	20	7/9/2013 3:15:53 AM	R11809
Sulfate	ND	10		mg/L	20	7/9/2013 3:15:53 AM	R11809
<b>EPA METHOD 200.7: METALS</b>							Analyst: <b>JLF</b>
Calcium	ND	50		mg/L	1	7/11/2013 1:47:54 PM	8317
Magnesium	ND	50		mg/L	1	7/11/2013 1:47:54 PM	8317
Potassium	65	50		mg/L	1	7/11/2013 1:47:54 PM	8317
Sodium	100	50		mg/L	1	7/11/2013 1:47:54 PM	8317
<b>SM4500-H+B: PH</b>							Analyst: <b>JML</b>
pH	7.04	1.68	H	pH units	1	7/12/2013 4:29:00 PM	R11906

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit



# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1307269

16-Jul-13

Client: Western Refining Southwest, Gallup

Project: Seep West of 102

Sample ID: <b>MB-8317</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 200.7: Metals</b>								
Client ID: <b>PBW</b>	Batch ID: <b>8317</b>	RunNo: <b>11877</b>								
Prep Date: <b>7/11/2013</b>	Analysis Date: <b>7/11/2013</b>	SeqNo: <b>337575</b>	Units: <b>mg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID: <b>LCS-8317</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 200.7: Metals</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>8317</b>	RunNo: <b>11877</b>								
Prep Date: <b>7/11/2013</b>	Analysis Date: <b>7/11/2013</b>	SeqNo: <b>337576</b>	Units: <b>mg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	50	1.0	50.00	0	99.4	85	115			
Magnesium	50	1.0	50.00	0	99.6	85	115			
Potassium	49	1.0	50.00	0	97.6	85	115			
Sodium	49	1.0	50.00	0	98.8	85	115			

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
J Analyte detected below quantitation limits  
O RSD is greater than RSDlimit  
R RPD outside accepted recovery limits

B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
P Sample pH greater than 2 for VOA and TOC only.  
RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1307269

16-Jul-13

Client: Western Refining Southwest, Gallup

Project: Seep West of 102

Sample ID: <b>MB</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBW</b>	Batch ID: <b>R11809</b>	RunNo: <b>11809</b>								
Prep Date:	Analysis Date: <b>7/9/2013</b>	SeqNo: <b>335617</b> Units: <b>mg/L</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P)	ND	0.50								
Sulfate	ND	0.50								

Sample ID: <b>LCS</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>R11809</b>	RunNo: <b>11809</b>								
Prep Date:	Analysis Date: <b>7/9/2013</b>	SeqNo: <b>335618</b> Units: <b>mg/L</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.53	0.10	0.5000	0	107	90	110			
Chloride	4.8	0.50	5.000	0	95.5	90	110			
Nitrogen, Nitrite (As N)	0.96	0.10	1.000	0	95.5	90	110			
Bromide	2.5	0.10	2.500	0	99.0	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	100	90	110			
Phosphorus, Orthophosphate (As P)	4.8	0.50	5.000	0	95.3	90	110			
Sulfate	9.7	0.50	10.00	0	96.6	90	110			

Sample ID: <b>1307280-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>BatchQC</b>	Batch ID: <b>R11809</b>	RunNo: <b>11809</b>								
Prep Date:	Analysis Date: <b>7/9/2013</b>	SeqNo: <b>335622</b> Units: <b>mg/L</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1.1	0.10	0.5000	0.6427	96.1	76.9	114			
Chloride	11	0.50	5.000	5.375	105	89.9	119			
Nitrogen, Nitrite (As N)	0.97	0.10	1.000	0	96.6	84.3	102			
Bromide	2.6	0.10	2.500	0.08490	101	92	104			
Nitrogen, Nitrate (As N)	3.4	0.10	2.500	0.8637	103	93	113			
Phosphorus, Orthophosphate (As P)	4.9	0.50	5.000	0	98.6	73.9	120			
Sulfate	31	0.50	10.00	19.89	109	90.1	116			

Sample ID: <b>1307280-001AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>BatchQC</b>	Batch ID: <b>R11809</b>	RunNo: <b>11809</b>								
Prep Date:	Analysis Date: <b>7/9/2013</b>	SeqNo: <b>335623</b> Units: <b>mg/L</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1.1	0.10	0.5000	0.6427	95.4	76.9	114	0.339	20	
Chloride	11	0.50	5.000	5.375	104	89.9	119	0.603	20	

### Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
E Value above quantitation range	H Holding times for preparation or analysis exceeded
J Analyte detected below quantitation limits	ND Not Detected at the Reporting Limit
O RSD is greater than RSDlimit	P Sample pH greater than 2 for VOA and TOC only.
R RPD outside accepted recovery limits	RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1307269

16-Jul-13

Client: Western Refining Southwest, Gallup

Project: Seep West of 102

Sample ID: <b>1307280-001AMSD</b>		SampType: <b>MSD</b>		TestCode: <b>EPA Method 300.0: Anions</b>						
Client ID: <b>BatchQC</b>		Batch ID: <b>R11809</b>		RunNo: <b>11809</b>						
Prep Date:		Analysis Date: <b>7/9/2013</b>		SeqNo: <b>335623</b>		Units: <b>mg/L</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	0.96	0.10	1.000	0	95.8	84.3	102	0.884	20	
Bromide	2.6	0.10	2.500	0.08490	101	92	104	0.398	20	
Nitrogen, Nitrate (As N)	3.4	0.10	2.500	0.8637	102	93	113	0.600	20	
Phosphorus, Orthophosphate (As P)	4.8	0.50	5.000	0	96.4	73.9	120	2.29	20	
Sulfate	31	0.50	10.00	19.89	106	90.1	116	0.814	20	

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
J Analyte detected below quantitation limits  
O RSD is greater than RSDlimit  
R RPD outside accepted recovery limits

B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
P Sample pH greater than 2 for VOA and TOC only.  
RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1307269

16-Jul-13

Client: Western Refining Southwest, Gallup

Project: Seep West of 102

Sample ID: <b>LCS-8285</b>	SampType: <b>LCS</b>			TestCode: <b>DRO by 8015D</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>8285</b>			RunNo: <b>11794</b>						
Prep Date: <b>7/9/2013</b>	Analysis Date: <b>7/9/2013</b>			SeqNo: <b>335851</b>		Units: <b>wt%</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.40	0.10	0.5000	0	80.5	80	120			
Surr: DNOP	0.040		0.05000		79.3	76.7	135			

Sample ID: <b>LCSD-8285</b>	SampType: <b>LCSD</b>			TestCode: <b>DRO by 8015D</b>						
Client ID: <b>LCSS02</b>	Batch ID: <b>8285</b>			RunNo: <b>11794</b>						
Prep Date: <b>7/9/2013</b>	Analysis Date: <b>7/9/2013</b>			SeqNo: <b>335852</b>		Units: <b>wt%</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.43	0.10	0.5000	0	85.7	80	120	6.34	20	
Surr: DNOP	0.043		0.05000		85.8	76.7	135	0	0	

Sample ID: <b>MB-8285</b>	SampType: <b>MBLK</b>			TestCode: <b>DRO by 8015D</b>						
Client ID: <b>PBW</b>	Batch ID: <b>8285</b>			RunNo: <b>11794</b>						
Prep Date: <b>7/9/2013</b>	Analysis Date: <b>7/9/2013</b>			SeqNo: <b>335853</b>		Units: <b>wt%</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.10								
Motor Oil Range Organics (MRO)	ND	0.50								
Surr: DNOP	0.082		0.1000		82.1	76.7	135			

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
J Analyte detected below quantitation limits  
O RSD is greater than RSDlimit  
R RPD outside accepted recovery limits

B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
P Sample pH greater than 2 for VOA and TOC only.  
RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1307269

16-Jul-13

Client: Western Refining Southwest, Gallup

Project: Seep West of 102

Sample ID: <b>MB-8284</b>	SampType: <b>MBLK</b>		TestCode: <b>GRO by 8015D</b>							
Client ID: <b>PBW</b>	Batch ID: <b>8284</b>		RunNo: <b>11829</b>							
Prep Date: <b>7/9/2013</b>	Analysis Date: <b>7/10/2013</b>		SeqNo: <b>336360</b>		Units: <b>wt%</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	2.5								
Surr: BFB	940		1000		94.1	65.4	138			

Sample ID: <b>LCS-8284</b>	SampType: <b>LCS</b>		TestCode: <b>GRO by 8015D</b>							
Client ID: <b>LCSW</b>	Batch ID: <b>8284</b>		RunNo: <b>11829</b>							
Prep Date: <b>7/9/2013</b>	Analysis Date: <b>7/10/2013</b>		SeqNo: <b>336361</b>		Units: <b>wt%</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	27	2.5	25.00	0	106	67.5	133			
Surr: BFB	1000		1000		99.7	65.4	138			

Sample ID: <b>LCSD-8284</b>	SampType: <b>LCSD</b>		TestCode: <b>GRO by 8015D</b>							
Client ID: <b>LCSS02</b>	Batch ID: <b>8284</b>		RunNo: <b>11829</b>							
Prep Date: <b>7/9/2013</b>	Analysis Date: <b>7/10/2013</b>		SeqNo: <b>336362</b>		Units: <b>wt%</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	2.5	25.00	0	103	67.5	133	3.10	8.39	
Surr: BFB	1000		1000		101	65.4	138	0	0	

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
J Analyte detected below quantitation limits  
O RSD is greater than RSDlimit  
R RPD outside accepted recovery limits

B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
P Sample pH greater than 2 for VOA and TOC only.  
RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1307269

16-Jul-13

Client: Western Refining Southwest, Gallup

Project: Seep West of 102

Sample ID: 1307269-001ADUP		SampType: DUP		TestCode: SM4500-H+B: pH						
Client ID:	Seep Hole #6	Batch ID: R11906		RunNo: 11906						
Prep Date:		Analysis Date: 7/12/2013		SeqNo: 338410		Units: pH units				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.03	1.68						0.142		H

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
J Analyte detected below quantitation limits  
O RSD is greater than RSDlimit  
R RPD outside accepted recovery limits

B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
P Sample pH greater than 2 for VOA and TOC only.  
RL Reporting Detection Limit

## Sample Log-In Check List

Client Name: **Western Refining Gallup**

Work Order Number: **1307269**

RcptNo: **1**

Received by/date:

*lm*

*07/08/13*

Logged By:

**Ashley Gallegos**

**7/8/2013 1:20:00 PM**

*Ag*

Completed By:

**Ashley Gallegos**

**7/8/2013 1:49:57 PM**

*Ag*

Reviewed By:

*IO*

*07/08/13*

### Chain of Custody

- |  |   |                             |                                      |
|--|---|-----------------------------|--------------------------------------|
| 1. Custody seals intact on sample bottles? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Present <input type="checkbox"/> |
| 2. Is Chain of Custody complete?           | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Present <input type="checkbox"/> |
| 3. How was the sample delivered?           | Client <input type="checkbox"/>         |                             |                                      |

### Log In

- |   |   |  |   |
|---|---|--|---|
| 4. Was an attempt made to cool the samples?   | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            | NA <input type="checkbox"/>                                     |
| 5. Were all samples received at a temperature of >0° C to 6.0°C                           | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            | NA <input type="checkbox"/>                                     |
| 6. Sample(s) in proper container(s)?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |   |
| 7. Sufficient sample volume for indicated test(s)?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |   |
| 8. Are samples (except VOA and ONG) properly preserved?                                   | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |   |
| 9. Was preservative added to bottles?   | Yes <input type="checkbox"/>            | No <input checked="" type="checkbox"/> | NA <input type="checkbox"/>                                     |
| 10. VOA vials have zero headspace?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            | No VOA Vials <input type="checkbox"/>                           |
| 11. Were any sample containers received broken?   | Yes <input type="checkbox"/>            | No <input checked="" type="checkbox"/> |   |
| 12. Does paperwork match bottle labels?<br>(Note discrepancies on chain of custody)       | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            | # of preserved bottles checked for pH: <input type="checkbox"/> |
| 13. Are matrices correctly identified on Chain of Custody?                                | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            | Adjusted <input type="checkbox"/>                               |
| 14. Is it clear what analyses were requested?   | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |   |
| 15. Were all holding times able to be met?<br>(If no, notify customer for authorization.) | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |   |

*-001A, -001B*  
*UNABLE TO BRING TO ACCEPTABLE PH - AK*

### Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:

Date:

By Whom:

Via:

eMail

Phone

Fax

In Person

Regarding:

Client Instructions:

17. Additional remarks:

### 18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.5	Good	Not Present			







Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

November 05, 2013

Cheryl Johnson

Western Refining Southwest, Gallup  
92 Giant Crossing Road  
Gallup, NM 87301  
TEL: (505) 722-0231  
FAX (505) 722-0210

RE: Seep West Of Tank 102

OrderNo.: 1310D69

Dear Cheryl Johnson:

Hall Environmental Analysis Laboratory received 5 sample(s) on 10/29/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a horizontal line.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1310D69

Date Reported: 11/5/2013

**CLIENT:** Western Refining Southwest, Gallup

**Client Sample ID:** SB14

**Project:** Seep West Of Tank 102

**Collection Date:** 10/28/2013 9:15:00 AM

**Lab ID:** 1310D69-001

**Matrix:** AQUEOUS

**Received Date:** 10/29/2013 12:29:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: JME
Diesel Range Organics (DRO)	87	10		mg/L	10	10/30/2013 3:43:44 PM	10098
Motor Oil Range Organics (MRO)	ND	50		mg/L	10	10/30/2013 3:43:44 PM	10098
Surr: DNOP	0	70.1-140	S	%REC	10	10/30/2013 3:43:44 PM	10098
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: NSB
Gasoline Range Organics (GRO)	71	5.0		mg/L	100	11/1/2013 12:42:12 AM	R14497
Surr: BFB	102	51.5-151		%REC	100	11/1/2013 12:42:12 AM	R14497
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Methyl tert-butyl ether (MTBE)	460	250		µg/L	100	11/1/2013 12:42:12 AM	R14497
Benzene	12000	500		µg/L	500	11/4/2013 2:45:47 PM	R14541
Toluene	14000	500		µg/L	500	11/4/2013 2:45:47 PM	R14541
Ethylbenzene	960	100		µg/L	100	11/1/2013 12:42:12 AM	R14497
Xylenes, Total	4700	200		µg/L	100	11/1/2013 12:42:12 AM	R14497
1,2,4-Trimethylbenzene	590	100		µg/L	100	11/1/2013 12:42:12 AM	R14497
1,3,5-Trimethylbenzene	150	100		µg/L	100	11/1/2013 12:42:12 AM	R14497
Surr: 4-Bromofluorobenzene	110	85-136		%REC	100	11/1/2013 12:42:12 AM	R14497

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

Page 1 of 8

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1310D69

Date Reported: 11/5/2013

**CLIENT:** Western Refining Southwest, Gallup

**Client Sample ID:** SB15

**Project:** Seep West Of Tank 102

**Collection Date:** 10/28/2013 9:35:00 AM

**Lab ID:** 1310D69-002

**Matrix:** AQUEOUS

**Received Date:** 10/29/2013 12:29:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	4.8	1.0		mg/L	1	10/30/2013 2:37:42 PM	10098
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	10/30/2013 2:37:42 PM	10098
Surr: DNOP	117	70.1-140		%REC	1	10/30/2013 2:37:42 PM	10098
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	46	5.0		mg/L	100	11/1/2013 1:12:29 AM	R14497
Surr: BFB	100	51.5-151		%REC	100	11/1/2013 1:12:29 AM	R14497
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Methyl tert-butyl ether (MTBE)	890	250		µg/L	100	11/1/2013 1:12:29 AM	R14497
Benzene	7300	100		µg/L	100	11/1/2013 1:12:29 AM	R14497
Toluene	7600	100		µg/L	100	11/1/2013 1:12:29 AM	R14497
Ethylbenzene	920	100		µg/L	100	11/1/2013 1:12:29 AM	R14497
Xylenes, Total	4600	200		µg/L	100	11/1/2013 1:12:29 AM	R14497
1,2,4-Trimethylbenzene	790	100		µg/L	100	11/1/2013 1:12:29 AM	R14497
1,3,5-Trimethylbenzene	220	100		µg/L	100	11/1/2013 1:12:29 AM	R14497
Surr: 4-Bromofluorobenzene	109	85-136		%REC	100	11/1/2013 1:12:29 AM	R14497

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1310D69

Date Reported: 11/5/2013

**CLIENT:** Western Refining Southwest, Gallup

**Client Sample ID:** SB12

**Project:** Seep West Of Tank 102

**Collection Date:** 10/28/2013 10:00:00 AM

**Lab ID:** 1310D69-003

**Matrix:** AQUEOUS

**Received Date:** 10/29/2013 12:29:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	110	10		mg/L	10	10/30/2013 4:05:46 PM	10098
Motor Oil Range Organics (MRO)	ND	50		mg/L	10	10/30/2013 4:05:46 PM	10098
Surr: DNOP	0	70.1-140	S	%REC	10	10/30/2013 4:05:46 PM	10098
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	22	5.0		mg/L	100	11/1/2013 1:42:43 AM	R14497
Surr: BFB	99.7	51.5-151		%REC	100	11/1/2013 1:42:43 AM	R14497
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Methyl tert-butyl ether (MTBE)	3500	250		µg/L	100	11/1/2013 1:42:43 AM	R14497
Benzene	2600	100		µg/L	100	11/1/2013 1:42:43 AM	R14497
Toluene	130	100		µg/L	100	11/1/2013 1:42:43 AM	R14497
Ethylbenzene	820	100		µg/L	100	11/1/2013 1:42:43 AM	R14497
Xylenes, Total	3000	200		µg/L	100	11/1/2013 1:42:43 AM	R14497
1,2,4-Trimethylbenzene	870	100		µg/L	100	11/1/2013 1:42:43 AM	R14497
1,3,5-Trimethylbenzene	260	100		µg/L	100	11/1/2013 1:42:43 AM	R14497
Surr: 4-Bromofluorobenzene	108	85-136		%REC	100	11/1/2013 1:42:43 AM	R14497

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1310D69

Date Reported: 11/5/2013

**CLIENT:** Western Refining Southwest, Gallup

**Client Sample ID:** SB07

**Project:** Seep West Of Tank 102

**Collection Date:** 10/28/2013 10:20:00 AM

**Lab ID:** 1310D69-004

**Matrix:** AQUEOUS

**Received Date:** 10/29/2013 12:29:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	24	1.0		mg/L	1	10/30/2013 4:27:56 PM	10098
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	10/30/2013 4:27:56 PM	10098
Surr: DNOP	124	70.1-140		%REC	1	10/30/2013 4:27:56 PM	10098
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	21	5.0		mg/L	100	11/1/2013 2:13:02 AM	R14497
Surr: BFB	100	51.5-151		%REC	100	11/1/2013 2:13:02 AM	R14497
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Methyl tert-butyl ether (MTBE)	4500	250		µg/L	100	11/1/2013 2:13:02 AM	R14497
Benzene	3200	100		µg/L	100	11/1/2013 2:13:02 AM	R14497
Toluene	ND	100		µg/L	100	11/1/2013 2:13:02 AM	R14497
Ethylbenzene	1200	100		µg/L	100	11/1/2013 2:13:02 AM	R14497
Xylenes, Total	1600	200		µg/L	100	11/1/2013 2:13:02 AM	R14497
1,2,4-Trimethylbenzene	1000	100		µg/L	100	11/1/2013 2:13:02 AM	R14497
1,3,5-Trimethylbenzene	160	100		µg/L	100	11/1/2013 2:13:02 AM	R14497
Surr: 4-Bromofluorobenzene	109	85-136		%REC	100	11/1/2013 2:13:02 AM	R14497

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1310D69

Date Reported: 11/5/2013

**CLIENT:** Western Refining Southwest, Gallup

**Client Sample ID:** HA3

**Project:** Seep West Of Tank 102

**Collection Date:** 10/28/2013 10:40:00 AM

**Lab ID:** 1310D69-005

**Matrix:** AQUEOUS

**Received Date:** 10/29/2013 12:29:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	10/30/2013 4:49:51 PM	10098
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	10/30/2013 4:49:51 PM	10098
Surr: DNOP	118	70.1-140		%REC	1	10/30/2013 4:49:51 PM	10098
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	3.8	1.0		mg/L	20	11/1/2013 2:43:15 AM	R14497
Surr: BFB	98.6	51.5-151		%REC	20	11/1/2013 2:43:15 AM	R14497
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Methyl tert-butyl ether (MTBE)	ND	50		µg/L	20	11/1/2013 2:43:15 AM	R14497
Benzene	690	20		µg/L	20	11/1/2013 2:43:15 AM	R14497
Toluene	ND	20		µg/L	20	11/1/2013 2:43:15 AM	R14497
Ethylbenzene	55	20		µg/L	20	11/1/2013 2:43:15 AM	R14497
Xylenes, Total	160	40		µg/L	20	11/1/2013 2:43:15 AM	R14497
1,2,4-Trimethylbenzene	190	20		µg/L	20	11/1/2013 2:43:15 AM	R14497
1,3,5-Trimethylbenzene	26	20		µg/L	20	11/1/2013 2:43:15 AM	R14497
Surr: 4-Bromofluorobenzene	107	85-136		%REC	20	11/1/2013 2:43:15 AM	R14497

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1310D69

05-Nov-13

Client: Western Refining Southwest, Gallup

Project: Seep West Of Tank 102

Sample ID	MB-10098		SampType: MBLK		TestCode: EPA Method 8015D: Diesel Range					
Client ID:	PBW		Batch ID: 10098		RunNo: 14432					
Prep Date:	10/30/2013		Analysis Date: 10/30/2013		SeqNo: 415120		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.2		1.000		115	70.1	140			

Sample ID	LCS-10098		SampType: LCS		TestCode: EPA Method 8015D: Diesel Range					
Client ID:	LCSW		Batch ID: 10098		RunNo: 14432					
Prep Date:	10/30/2013		Analysis Date: 10/30/2013		SeqNo: 415196		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.7	1.0	5.000	0	113	73.3	145			
Surr: DNOP	0.55		0.5000		111	70.1	140			

Sample ID	LCSD-10098		SampType: LCSD		TestCode: EPA Method 8015D: Diesel Range					
Client ID:	LCSS02		Batch ID: 10098		RunNo: 14432					
Prep Date:	10/30/2013		Analysis Date: 10/30/2013		SeqNo: 415197		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	6.0	1.0	5.000	0	120	73.3	145	5.65	20	
Surr: DNOP	0.57		0.5000		113	70.1	140	0	0	

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
J Analyte detected below quantitation limits  
O RSD is greater than RSDlimit  
R RPD outside accepted recovery limits  
S Spike Recovery outside accepted recovery limits

B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
P Sample pH greater than 2 for VOA and TOC only.  
RL Reporting Detection Limit

Page 6 of 8

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1310D69

05-Nov-13

Client: Western Refining Southwest, Gallup

Project: Seep West Of Tank 102

Sample ID	5ML RB	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBW	Batch ID:	R14497	RunNo:	14497					
Prep Date:		Analysis Date:	10/31/2013	SeqNo:	416401	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	19		20.00		92.8	51.5	151			

Sample ID	2.5UG GRO LCS	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSW	Batch ID:	R14497	RunNo:	14497					
Prep Date:		Analysis Date:	10/31/2013	SeqNo:	416402	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.50	0.050	0.5000	0	100	80	120			
Surr: BFB	20		20.00		101	51.5	151			

Sample ID	B7	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBW	Batch ID:	R14541	RunNo:	14541					
Prep Date:		Analysis Date:	11/4/2013	SeqNo:	418164	Units:	%REC			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	19		20.00		93.8	80.4	118			

Sample ID	2.5UG GRO LCS	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSW	Batch ID:	R14541	RunNo:	14541					
Prep Date:		Analysis Date:	11/4/2013	SeqNo:	418165	Units:	%REC			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	21		20.00		104	80.4	118			

### Qualifiers:

- |   |  |
|---|--|
| * Value exceeds Maximum Contaminant Level.        | B Analyte detected in the associated Method Blank    |
| E Value above quantitation range                  | H Holding times for preparation or analysis exceeded |
| J Analyte detected below quantitation limits      | ND Not Detected at the Reporting Limit               |
| O RSD is greater than RSDlimit                    | P Sample pH greater than 2 for VOA and TOC only.     |
| R RPD outside accepted recovery limits            | RL Reporting Detection Limit                         |
| S Spike Recovery outside accepted recovery limits |  |



# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1310D69

05-Nov-13

Client: Western Refining Southwest, Gallup

Project: Seep West Of Tank 102

Sample ID	<b>5ML RB</b>		SampType:	<b>MBLK</b>		TestCode:	<b>EPA Method 8021B: Volatiles</b>			
Client ID:	<b>PBW</b>		Batch ID:	<b>R14497</b>		RunNo:	<b>14497</b>			
Prep Date:			Analysis Date:	<b>10/31/2013</b>		SeqNo:	<b>416431</b>	Units:	<b>µg/L</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	2.5								
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
Surr: 4-Bromofluorobenzene	20		20.00		102	85	136			

Sample ID	<b>100NG BTEX LCS</b>		SampType:	<b>LCS</b>		TestCode:	<b>EPA Method 8021B: Volatiles</b>			
Client ID:	<b>LCSW</b>		Batch ID:	<b>R14497</b>		RunNo:	<b>14497</b>			
Prep Date:			Analysis Date:	<b>10/31/2013</b>		SeqNo:	<b>416432</b>	Units:	<b>µg/L</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	19	2.5	20.00	0	94.0	76.8	124			
Benzene	18	1.0	20.00	0	91.2	80	120			
Toluene	18	1.0	20.00	0	92.0	80	120			
Ethylbenzene	19	1.0	20.00	0	94.2	80	120			
Xylenes, Total	58	2.0	60.00	0	96.0	80	120			
1,2,4-Trimethylbenzene	19	1.0	20.00	0	96.0	80	120			
1,3,5-Trimethylbenzene	20	1.0	20.00	0	98.4	80	120			
Surr: 4-Bromofluorobenzene	21		20.00		103	85	136			

Sample ID	<b>B7</b>		SampType:	<b>MBLK</b>		TestCode:	<b>EPA Method 8021B: Volatiles</b>			
Client ID:	<b>PBW</b>		Batch ID:	<b>R14541</b>		RunNo:	<b>14541</b>			
Prep Date:			Analysis Date:	<b>11/4/2013</b>		SeqNo:	<b>418215</b>	Units:	<b>µg/L</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Surr: 4-Bromofluorobenzene	20		20.00		102	85	136			

Sample ID	<b>100NG BTEX LCS</b>		SampType:	<b>LCS</b>		TestCode:	<b>EPA Method 8021B: Volatiles</b>			
Client ID:	<b>LCSW</b>		Batch ID:	<b>R14541</b>		RunNo:	<b>14541</b>			
Prep Date:			Analysis Date:	<b>11/4/2013</b>		SeqNo:	<b>418216</b>	Units:	<b>µg/L</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	99.8	80	120			
Toluene	20	1.0	20.00	0	100	80	120			
Surr: 4-Bromofluorobenzene	22		20.00		108	85	136			

### Qualifiers:

- |   |  |
|---|--|
| * Value exceeds Maximum Contaminant Level.        | B Analyte detected in the associated Method Blank    |
| E Value above quantitation range                  | H Holding times for preparation or analysis exceeded |
| J Analyte detected below quantitation limits      | ND Not Detected at the Reporting Limit               |
| O RSD is greater than RSDlimit                    | P Sample pH greater than 2 for VOA and TOC only.     |
| R RPD outside accepted recovery limits            | RL Reporting Detection Limit                         |
| S Spike Recovery outside accepted recovery limits |  |

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# Sample Log-In Check List

Client Name: Western Refining Gallup

Work Order Number: 1310D69

RcptNo: 1

Received by/date:	AG	10/29/13
Logged By:	Lindsay Mangin	10/29/2013 12:29:00 PM
Completed By:	Lindsay Mangin	10/29/2013 1:17:35 PM
Reviewed By:	AT	10/30/13

## Chain of Custody

- Custody seals intact on sample bottles? Yes ☒ No ☐ Not Present ☐
- Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
- How was the sample delivered? Client

## Log In

- Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
- Were all samples received at a temperature of  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$ ? Yes ☒ No ☐ NA ☐
- Sample(s) in proper container(s)? Yes ☒ No ☐
- Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
- Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
- Was preservative added to bottles? Yes ☐ No ☒ NA ☐
- VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒
- Were any sample containers received broken? Yes ☐ No ☒
- Does paperwork match bottle labels?  
(Note discrepancies on chain of custody) Yes ☒ No ☐
- Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
- Is it clear what analyses were requested? Yes ☒ No ☐
- Were all holding times able to be met?  
(If no, notify customer for authorization.) Yes ☒ No ☐

# of preserved  
bottles checked  
for pH: \_\_\_\_\_  
( $<2$  or  $>12$  unless noted)  
Adjusted? \_\_\_\_\_  
Checked by: \_\_\_\_\_

## Special Handling (if applicable)

- Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:	_____	Date:	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

- Additional remarks:

## 18. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.9	Good	Yes			

# Chain-of-Custody Record

Client: WESTERN REFINING  
GALLUP REFINERY  
 Mailing Address: ROUTE 3 BOX 7  
TAMBOURNE, NM 87301  
 Phone #: 505-722-3833  
 Email or Fax#: 505-863-0930

QA/QC Package:  
☐ Standard ☐ Level 4 (Full Validation)  
☐ NELAP ☐ Other  
☐ EDD (Type)

Turn-Around Time:  
☒ Standard ☐ Rush  
 Project Name:  
SEEP WEST OF TANK 102  
 Project #:  
  
 Project Manager:  
CHERYL JOHNSON  
 Sampler: TRACY PAYNE  
 On Ice: ☒ Yes ☐ No  
 Sample Temperature: 2.9

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
2-28-13	0915	GW	SB14	440ML	HCL/NEAT	-001
↓	0935	↓	SB15	↓	↓	-002
↓	1000	↓	SB12	↓	↓	-003
↓	1020	↓	SB07	↓	↓	-004
↓	1040	↓	HA3	↓	↓	-005

Date: 02/28/13 Time: 7:10  
 Relinquished by: [Signature]  
 Date: 02/28/13 Time: 12:29  
 Received by: [Signature]



**HALL ENVIRONMENTAL  
ANALYSIS LABORATORY**

www.hallenvironmental.com  
 4901 Hawkins NE - Albuquerque, NM 87109  
 Tel. 505-345-3975 Fax 505-345-4107

## Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	BTEX & TPH (GRO)	DRO	MRO	Air Bubbles (Y or N)
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February 11, 2014

Mr. Ed Riege, Environmental Manager  
Western Refining-Gallup Refinery  
Route 3 Box 7  
Gallup, NM 87301

Re: Western Refining Monitoring Wells

Dear Mr. Riege:

DePauli Engineering & Surveying, LLC completed the field survey of the 18 monitoring wells at Western Refining-Gallup Refinery on January 21, 2014. The wells were surveyed for the following parameter: ground level elevation, ground level elevation inside steel sleeve, center top steel lid elevation, well casing rim elevation and corresponding measuring point description associated with each elevation. Survey conducted enlisted NM Surveyor in Training and a Technician (under my direct supervision), from DePauli Engineering Surveying, LLC and one Gallup Refinery representative to assist with the location of the wells.

The instruments used to complete the survey consisted of a Leica VIVA GS10 GPS (global positing system) and System 1200 GPS. The method used to survey the wells was Real-time Kinematic GPS Surveying (RTK). RTK surveying requires that two or more receivers are operated simultaneously. The aspect of the procedure involves a radio transmitting a signal from the base station. The base station's coordinates are utilized to make the appropriate corrections to the error involved with the GPS signals. The rover receives the corrections thence giving the rover observation corrected values. The horizontal and vertical positions are determined by differential GPS involving the base line surveyed from local base station to survey position. The base line measurements are surveyed for one minute (60 observations). This is verified by surveying known local control points and bench marks.

The horizontal and vertical positions of the top of the PVC casing (unless otherwise noted) and the vertical positions for the lid, ground elevation inside the steel casing, and the surrounding ground elevation is shown on the attached sheet labeled "Western Refining Monitoring Wells January 21, 2014." The horizontal position is NAD 83 datum and the vertical positions are NGVD 1929. Elevations were taken using the concrete pad surrounding each well and locations

noted on the report. Ground elevation was taken using the concrete pad surrounding each well and locations shown on the report.

The requested field survey was complete on January 21, 2014 in accordance with sections 500.1 through 500.12 of the Regulations and Rules of the Board of Registration for Professional Engineers and Surveyors Minimum Standards for Surveying in New Mexico; which horizontal positions were measured to the nearest 0.1-ft and vertical elevations were measured to an accuracy of 0.01-ft.

If you have any questions concerning this survey please do not hesitate to contact our office.

Sincerely,

A handwritten signature in cursive script that reads "Marc DePauli". The signature is written in black ink and is positioned below the word "Sincerely,".

Marc DePauli, PE/PS

## Western Refining Monitoring Wells January 21, 2014

Well #	Northing	Easting	Elevation	Description
MKTf-10	1,633,807.47	2,545,853.54	6937.16	North edge PVC casing
			6937.51	Center steel lid
			6936.63	North side ground elev. inside steel sleeve
			6937.51	Average corner elevation of concrete collar
MKTf-15	1,633,845.57	2,545,934.58	6943.48	North edge PVC casing
			6943.73	Center steel lid
			6943.19	North side ground elev. inside steel sleeve
			6943.74	**Average elevation of concrete collar
			** Concrete collar is in general circular shape	
MKTf-16	1,633,718.14	2,546,068.55	6950.58	North edge PVC casing
			6950.97	Center steel lid
			6950.58	North side ground elev. inside steel sleeve
			6951.00	Average corner elevation of concrete collar
MKTf-11	1,633,806.93	2,545,754.77	6931.34	South edge PVC casing
			6931.61	Center steel lid
			6930.86	North side ground elev. inside steel sleeve
			6931.61	Average corner elevation of concrete collar
MKTf-03	1,633,746.53	2,545,756.87	6931.31	North edge PVC casing
			6931.69	Center steel lid
			6930.85	North side ground elev. inside steel sleeve
			6931.73	Average corner elevation of concrete collar
MKTf-04	1,633,649.46	2,545,752.83	6933.57	North edge PVC casing
			6933.91	Center steel lid
			6933.24	North side ground elev. inside steel sleeve
			6933.90	Average corner elevation of concrete collar
MKTf-05	1,633,472.30	2,545,769.95	6942.22	North edge PVC casing
			6942.80	Center steel lid
			6941.95	South side ground elev. inside steel sleeve
			6939.49	Average corner elevation of concrete collar
MKTf-09	1,633,681.33	2,545,895.93	6946.50	North edge PVC casing
			6947.21	Center steel lid
			6945.90	South side ground elev. inside steel sleeve
			6943.57	Average corner elevation of concrete collar

<b>Well #</b>	<b>Northing</b>	<b>Easting</b>	<b>Elevation</b>	<b>Description</b>
MKTF-08	1,633,598.94	2,545,885.02	6947.09	North edge PVC casing
			6947.48	Center steel lid
			6942.67	South side ground elev. inside steel sleeve
			6944.02	Average corner elevation of concrete collar
MKTF-07	1,633,555.11	2,545,885.42	6947.18	North edge PVC casing
			6947.84	Center steel lid
			6947.06	South side ground elev. inside steel sleeve
			6944.40	Average corner elevation of concrete collar
MKTF-06	1,633,556.28	2,545,811.85	6946.81	North edge PVC casing
			6947.29	Center steel lid
			6946.63	South side ground elev. inside steel sleeve
			6944.24	Average corner elevation of concrete collar
MKTF-18	1,633,497.53	2,546,006.29	6950.65	**North edge PVC casing
			6950.96	Center steel lid
			6950.17	North side ground elev. inside steel sleeve
			6950.97	Average corner elevation of concrete collar ** Mark was existing on PVC casing
MKTF-12	1,633,542.07	2,545,688.29	6942.11	North edge PVC casing
			6942.84	Center steel lid
			6941.88	South side ground elev. inside steel sleeve
			6939.70	Average corner elevation of concrete collar
MKTF-13	1,633,625.25	2,545,697.39	6935.18	**North edge PVC casing
			6936.89	Center steel lid
			6934.83	South side ground elev. inside steel sleeve
			6933.67	Average corner elevation of concrete collar ** PVC casing not typical
MKTF-14	1,633,719.43	2,545,625.96	6928.02	North edge PVC casing
			6928.75	Center steel lid
			6927.80	South side ground elev. inside steel sleeve
			6925.65	Average corner elevation of concrete collar
MKTF-01	1,633,864.41	2,545,561.73	6920.67	**North edge PVC casing
			6921.68	Center steel lid
			6920.67	South side ground elev. inside steel sleeve
			6918.28	**Average corner elevation of concrete collar ** Inside ground elev. is flush with PVC casing

Well #	Northing	Easting	Elevation	Description
MKTf-02	1,633,946.93	2,545,530.46	6917.45	** North edge PVC casing
			6918.31	Center steel lid
			6917.18	South side ground elev. inside steel sleeve
			6915.00	Average corner elevation of concrete collar
				** PVC casing not typical
MKTf-17	1,633,268.93	2,545,850.73	6945.76	North edge PVC casing
			6946.00	Center steel lid
			6945.64	North side ground elev. inside steel sleeve
			6945.79	** Average corner elevation of concrete collar
				** Concrete collar is in general circular shape

*Marc DePauli*

Marc DePauli PS13606

2-11-2014

Date





## **APPENDIX G**

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### **Summary of EPA/NMED/RCRA Activity**

### **2013 Major Refinery Activities and Events**

April	The NMED Surface Water Quality Bureau conducted a compliance inspection of the SWPPP (stormwater pollution prevention program).
June	Hydrocarbon release discovery was made in field west of T-101/102 and reported to OCD/NMED HWB.
June	SPCC Plan update was completed.
September	The annual groundwater sampling was conducted.
September	The EPA and NMED AQB conducted a LDAR (leak detection and repair) compliance evaluation inspection.
Sept/Oct	SWPPP plan update was completed.