

AP-111

AGWMR (6)

2014

WESTERN REFINING - GALLUP REFINERY
Q3-2014

STP-1 to EP-2		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE		(1)	8:23	8.87	21.26	4.883	3.426	2.85	5.3	289
GAUGE TIME		(2)								
DTB (feet)		(3)								
Depth to Bottom										
DEDICATED PUMP										
DTW (feet)		WEATHER CONDITIONS Partly Cloudy, 0-5 mph wind from SW, calm 70°								
Depth to Water										
DTB - DTW		WATER APPEARANCE light grey water ³⁸ color								
Capacity per foot										
1 Well Volume										
3 Well Volumes										
PURGE DATE										
PURGE TIME										
SAMPLE DAY	8-10-14									
SAMPLE TIME	8:23									
PUMP DEPTH										
DTW (feet)										
at end of Purging										

SAMPLE LOG

BW-3B BW-3B BWI-C		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE	9-8-14	(1)	12:15	8.78	15.90	1.148	0.902	0.70	12.8	-161
GAUGE TIME	12:30	(2)	12:36	8.82	15.64	1.156	0.915	0.71	7.0	-161
DTB (feet)		(3)	13:40	8.94	15.42	1.134	0.903	0.70	16.4	-161
Depth to Bottom	141.89	(4)	WEATHER CONDITIONS Partly Cloudy, 75°, wind from West, 5-10 mph							
DEDICATED PUMP	N									
DTW (feet)	12.97	WATER APPEARANCE Start: high turbidity, red color, no odor to clear water, no odor								
Depth to Water										
DTB - DTW	128.92									
Capacity per foot	0.163									
1 Well Volume	21									
3 Well Volumes	63									
PURGE DATE	9-10-14									
PURGE TIME	12:00									
SAMPLE DAY	9-10-14									
SAMPLE TIME	13:45									
PUMP DEPTH	135'									
DTW (feet)										
at end of Purging	NA									

SAMPLE LOG

* Pump lost Suction after 45 gallons purged, let well recharge and collected sample.

INSTRUMENTS USED:

Signature:

WESTERN REFINING - GALLUP REFINERY
3rd QTR - ANNUAL

BW-2B		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE	9/8/14	(1)	1517	7.60	14.50	1.831	1.481	1.18	11.5	-170
GAUGE TIME	1330	(2)	1528	7.60	14.28	1.834	1.482	1.18	6.8	-164
DTB (feet)	92.26	(3)	1547	7.66	14.30	1.835	1.493	1.18	8.2	-167
Depth to Bottom		(4)	1558	7.82	14.40	1.807	1.460	1.16	17.5	-165
DEDICATED PUMP	Yes	WEATHER CONDITIONS Partly Cloudy, 75°, wind from west @ 10 mph								
DTW (feet)	28.15									
Depth to Water	63.85'									
DTB - DTW	0.163									
Capacity per foot	31.2 gal	WATER APPEARANCE Clear, no odor								
3 Well Volumes										
PURGE DATE	9/9/14									
PURGE TIME	1515									
SAMPLE DAY	9/9/14	WATER APPEARANCE Clear, no odor								
SAMPLE TIME	1610									
PUMP DEPTH	NA									
DTW (feet)										
at end of Purging										

SAMPLE LOG * (3) Taken

BW-2A		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE	9/8/14	(1)	1643	7.83	14.26	1.123	0.89	0.69	9.9	-170
GAUGE TIME	1340	(2)	1655	7.90	13.89	1.085	0.86	0.69	9.2	-167
DTB (feet)	67.57	(3)	1704	7.91	14.19	1.081	0.87	0.68	8.4	-165
Depth to Bottom		(4)		7.93	14.16	1.083	0.88	0.69	6.0	-165
DEDICATED PUMP	Yes	WEATHER CONDITIONS Partly Cloudy, 75°, wind from west @ 15 mph.								
DTW (feet)	32.25									
Depth to Water										
DTB - DTW	35.32									
Capacity per foot	0.163	WATER APPEARANCE Clear, No odor								
3 Well Volumes	17.3									
PURGE DATE	9/9/14									
PURGE TIME	1630									
SAMPLE DAY	9/9/14	WATER APPEARANCE Clear, No odor								
SAMPLE TIME	1710									
PUMP DEPTH	NA									
DTW (feet)										
at end of Purging	NA									

SAMPLE LOG

INSTRUMENTS USED:

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

Signature:

WESTERN REFINING - GALLUP REFINERY
3rd QTR - ANNUAL

BW2-C		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE	9-8-14	(1)	1442	8.73	14.19	1.064	0.872	0.68	24.0	-172
GAUGE TIME	1345	(2)	1525	9.07	14.45	1.079	0.878	0.68	28.5	-167
DTB (feet)	152.84	(3)	1537	8.98	16.74	1.135	0.876	0.68	33.8	-161
Depth to Bottom		(4)								
DEDICATED PUMP	N	WEATHER CONDITIONS Partly Cloudy, 75°F, winds - calm 5-10 (W),								
DTW (feet)	20.70									
Depth to Water	132.4									
DTB - DTW	0.163									
Capacity per foot	63	WATER APPEARANCE Clear, No odor								
3 Well Volumes										
PURGE DATE	9-10-14									
PURGE TIME	1420									
SAMPLE DAY	9-10-14	WATER APPEARANCE Clear, No odor								
SAMPLE TIME	1540									
PUMP DEPTH	240'									
DTW (feet)	NA									
at end of Purging										
SAMPLE LOG		Well purged below pump, recharge and took sample								

BW3-13		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE	9/8/14	(1)	1714	8.15	14.19	1.234	1.010	0.79	12.4	-196
GAUGE TIME	1415	(2)	1719	8.17	13.90	1.219	1.005	0.78	12.0	-194
DTB (feet)	69.4	(3)	1725	8.13	14.20	1.218	0.997	0.78	9.3	-185
Depth to Bottom		(4)	1735	8.42	14.08	1.224	1.004	0.78	12.2	-185
DEDICATED PUMP	Yes	WEATHER CONDITIONS Partly Cloudy, 75°F, Wind from West @ 5-10 mph								
DTW (feet)	33.25									
Depth to Water	36.15									
DTB - DTW	17									
Capacity per foot		WATER APPEARANCE light yellowish color, No odor.								
3 Well Volumes										
PURGE DATE	9-10-14									
PURGE TIME	17:05									
SAMPLE DAY	9-10-14	WATER APPEARANCE light yellowish color, No odor.								
SAMPLE TIME	1740									
PUMP DEPTH	240' NA									
DTW (feet)	NA									
at end of Purging										
SAMPLE LOG										

INSTRUMENTS USED:

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

Signature:

WESTERN REFINING - GALLUP REFINERY
3rd QTR - ANNUAL

BW3 - C		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE	9-8-14	(1)	1625	8.55	14.44	1.224	1.024	0.80	16.1	-199
GAUGE TIME	1420	(2)	1645	8.66	14.50	1.314	1.024	0.80	16.7	-206
DTB (feet)	154.55	(3)								
Depth to Bottom		(4)								
DEDICATED PUMP	N	WEATHER CONDITIONS Partly Cloudy, 75°F, Winds - 5-10 from W								
DTW (feet)	7.83									
Depth to Water										
DTB - DTW	146.72									
Capacity per foot	0.163	WATER APPEARANCE Grey, Some turbidity, no odor								
3 Well Volumes	71									
PURGE DATE	9-10-14									
PURGE TIME	1605									
SAMPLE DAY	9-10-14	Grey, Some turbidity, no odor								
SAMPLE TIME	1650									
PUMP DEPTH	140'									
DTW (feet) at end of Purging	NA									
SAMPLE LOG		Well purged below pump, recharge and sampled.								

KA-3		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE	9/8/14	(1)	8:08	19.11	3.897	2.852	2.35	54.0	-166	
GAUGE TIME	01430	(2)								
DTB (feet)	23.20	(3)								
Depth to Bottom		(4)								
DEDICATED PUMP	N	WEATHER CONDITIONS Sunny, 70°, Wind 5mph from West								
DTW (feet)	9.0'									
Depth to Water										
DTB - DTW	14.2									
Capacity per foot	0.163	WATER APPEARANCE No odor, Slightly cloudy								
2 Well Volumes	4.6									
PURGE DATE	9/11/14									
PURGE TIME	0925									
SAMPLE DAY	9/11/14	No odor, Slightly cloudy								
SAMPLE TIME	0950									
PUMP DEPTH	NA									
DTW (feet) at end of Purging	NA									
SAMPLE LOG		* Water found in annulus before gauging well, bailed water and well casing lid seemed to have a tight seal.								

INSTRUMENTS USED:

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

Signature:

WESTERN REFINING - GALLUP REFINERY
3rd QTR - ANNUAL

RW - 1		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE	9/9/14	(1)	None taken due to product in well, Sampled per Cheryl's request						
GAUGE TIME	7:50	(2)							
DTB (feet)	43.04	(3)							
Depth to Bottom		(4)							
DEDICATED PUMP		WEATHER CONDITIONS							
DTW (feet)	N								
Depth to Water	28.05								
DTB - DTW	NA								
Capacity per foot	0.163	WATER APPEARANCE							
3 Well Volumes									
PURGE DATE	9/18/14								
PURGE TIME	1440								
SAMPLE DAY	9/18/14	Heavy product, clear with moderate turbidity in sample portion							
SAMPLE TIME	1500								
PUMP DEPTH	NA								
DTW (feet)	NA								
at end of Purging									

SAMPLE LOG

* State wants RW wells Sampled regardless of product detection

		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE		(1)							
GAUGE TIME		(2)							
DTB (feet)		(3)							
Depth to Bottom		(4)							
DEDICATED PUMP		WEATHER CONDITIONS							
DTW (feet)									
Depth to Water									
DTB - DTW									
Capacity per foot		WATER APPEARANCE							
3 Well Volumes									
PURGE DATE									
PURGE TIME									
SAMPLE DAY									
SAMPLE TIME									
PUMP DEPTH	NA								
DTW (feet)									
at end of Purging	NA								

SAMPLE LOG

INSTRUMENTS USED:

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

Signature:

WESTERN REFINING - GALLUP REFINERY
Q3-2014

MKTFF-2		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE	9-17-14	(1)	1630	7.57	15.39	2.967	2.346	1.93	29.0	-198
GAUGE TIME	1400	(2)	1643	7.51	13.55	3.200	2.661	2.18	29.1	-193
DTB (feet)	49.80.42	(3)								
Depth to Bottom	49.80.42									
DEDICATED PUMP	N									
DTW (feet)	8.41	WEATHER CONDITIONS Cloudy, 70°F, wind from E @ 5-10 mph								
Depth to Water	8.41									
DTB - DTW	12.01									
Capacity per foot	0.74									
2 Well Volume	17									
3 Well Volumes	26	WATER APPEARANCE Clear: no odor; bailed 17 gals before hitting bottom.								
PURGE DATE	9-17-14									
PURGE TIME	1620									
SAMPLE DAY	9/18/14									
SAMPLE TIME	0930									
PUMP DEPTH	NA									
DTW (feet) at end of Purging	NA									
SAMPLE LOG Well purged dry after 17 gallons, & sampled the following day.										

RW-6		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE	9/19/14	(1)	1035	7.72	15.91	1.128	0.884	0.64	24.3	-202
GAUGE TIME	1450	(2)	1040	7.64	15.71	1.111	0.819	0.63	16.5	-197
DTB (feet)	40.9	(3)	1045	7.50	15.76	1.110	0.826	0.68	15.0	-194
Depth to Bottom	40.9	(4)	1050	7.45	15.90	1.118	0.879	0.68	12.2	-194
DEDICATED PUMP	N									
DTW (feet)	28.89	WEATHER CONDITIONS Sunny, 70°, wind 5 mph from E.								
Depth to Water	28.89									
DTB - DTW	12.01									
Capacity per foot	0.74									
2 Well Volume	17.8									
3 Well Volumes	26.6	WATER APPEARANCE Clear, hydrocarbon smell								
PURGE DATE	9/18/14									
PURGE TIME	1000									
SAMPLE DAY	9/18/14									
SAMPLE TIME	1050									
PUMP DEPTH	35									
DTW (feet) at end of Purging	NA									

SAMPLE LOG

INSTRUMENTS USED:

Signature:

		geotech			
Geotech Environmental Equipment, Inc.					
2650 East 40th Avenue					
Denver, CO 80205 (800) 833-7958 Fax (303) 322-7242					
sales@geotechenv.com • www.geotechenv.com					



Name Brandt Schiche
Zac Bitsie

Address _____

Phone _____

Project Western Refinery
9/8/14 - 9/19/14

Rite in the Rain – A patented, environmentally responsible, all-weather writing paper that sheds water and enables you to write anywhere, in any weather. Using a pencil or all-weather pen, *Rite in the Rain* ensures that your notes survive the rigors of the field, regardless of the conditions.

RiteintheRain.com

Western Refinery 9/8/14¹

0730 - Arrived on-site, obtained badge/vehicle Pass.

0800 - Met w/ Cheryl, Conducted tailgate safety meeting

0830 - Started prep for guaging wells/GW Sampling

0915 - Calibrated YSI Meter w/ 3-Point Calibration (4, 7, 10)
Continued prep.

1000 - Zac finished w/site training, met at environmental Shed, conducted tailgate meeting, reviewed TSA's for tasks to be completed.

1145 - Begin guaging wells

1700 - Finished guaging wells for the day, cleaned up Env. Shed.

1720 - Trihydro off-site

Rite in the Rain

Wells Gauged 9/8/14:

BW-1A

BW-1B

BW-1C

BW-2A

BW-2B

BW-2C

BW-3A

BW-3B

BW-3C

MW-1

MW-2

MW-4

MW-5

SMW-2

SMW-4

OW-1

OW-13

OW-14

OW-29

OW-30

OW-50

OW-52

RW-1

RW-5

RW-6

Western Refinery, BS, ZB 9/9/14 ³

0645 - On site, conduct tailgate safety meeting. Talk about tasks to be completed today.

0730 - Enter refinery to begin guaging wells.

0900 - Finished guaging all Non-MKTF wells.

* Note - GWM 1 has broken lock
- NAPIS 2, 3 & KA-3 covered by equipment. Cheryl informed equipment will be moved today 9/9.

0920 - Begin guaging Non-Sampled MKTF wells:

MKTF 19 -	MKTF 27 - 8.36
MKTF 20 - 8.25	MKTF 28 - 6.44
MKTF 21 - 8.18/8.21	MKTF 29 - 4.04
MKTF 22 - 26.41	MKTF 30 - 15.66
MKTF 23 - DTP 15.25 DTP 15.27	MKTF 31 - 8.20
MKTF 24 - 22.34	MKTF 32 - 16.54
MKTF 25 - 11.89	MKTF 33 - 23.45
MKTF 26 - 9.21	MKTF 34 - 18.76

Rite in the Rain

9/9/14

1030 - Water was found in the annulus at wells KA-3, NADIS-3. Water was bailed and well lids tightly sealed.

1200 - Finished guaging all wells, prep for sampling.

1245 - Into refinery ~~to~~^{for} free product removal & begin sampling.

1300 - Removed C.O.I gal product from MKTF 21.
- Removed C.O.I gal. product from MKTF 23.

1610 - Finished purging at BW-2B
Sampled @ 1610. All containers filled.

1630 - Started purging well BW-2A. Sampled BW-2A @ 1710. All containers filled

1730 - Return to equipment shed
to put equipment away.

1815 - Trihydro Personnel Off-Site

[Handwritten signature]

⁶ Western Refinery, BS, ZB
9/10/14

0845 - Trihydro on-site, conduct
tailgate safety meeting. Prep
coolers for sampling.

0800 - Met with Cheryl to
sample PW-3. Sampled @ 0805.
* FIS-Group 12 taken @ 0820.

0820 - Sampled STP-1 to EP-2
@ 823. * Field blank FIS-13
@ 830.

0850 - Sampled PW-2 @ 0850.

0900 - Returned to environmental
shed to pack Groups 12, 13
for lab. (48hr. hold time).

0945 - Joey off-site, prep for
next sample group.

9/10/14

1100 - Arrived at BW-1C, began purging well. - Did not have male → Female adapter for Submersible pump. Returned to environmental shed.

1200 - Begin purging BW-1C.
* ~~B~~FB-Group 9-7/10/14 Sampled at 1210.

- Pump lost suction after 45 gal purged, let recharge and took sample @ 1345

1415 - Begin purging at well BW-2C, Sampled BW2-~~C~~
at 1540.

- Pump lost suction after purging ~40 gal, let recharge and Sampled.

1600 - Begin purging at 1605 - BW3-C
Pump lost suction after purging 30 gallons, let well recharge and Sampled at 1650.

9/10/14

1705 - Begin purging well
BW3-B at 1705.

Sampled BW3-B at 1740

1755 - Returned to Environmental
shed to put equipment away

1820 - Trihydro Personnel off-site

[Handwritten signature]

Western Refinery BS, 2B
9/11/14

0700 - Trihydro on-site,
conduct safety meeting, prep
for sampling.

0825 - Begin purging KA-3.
purged 9 gallons at KA-3

0850 - Begin purging NAPIS-3.
* Removed 0.5 gallons of
product out of East LDU
well. Will not collect sample.
* Purged *2 well volumes at NAPIS-3.

0905 - Begin purging NAPIS-1.
* Purged *2 well volumes

0910 - Begin purging NAPIS-2.
* Purged *2 well volumes.

0945 - Collected Sample for
West LDU at 945.

0950 - Collected KA-3 Sample

1015 - Collected Sample for
NAPIS-1 at 1015.

1020 - Collected BD - NAPIS-9/11/14
from NAPIS-1

Rite in the Rain

¹⁰Western

BS, 213 9/11/14

1115 - Oil Sump CDU not
sampled * Dry at 8.70'

1120 - Sampled NAPIS-3
at 1120.

1135 - Sampled NAPIS-2
at ~~1120:55~~ 1135.

1200 - Returned to environmental
shed to drop off samples

1210 * Collected FB-Group 5 - 9/11/14
* Collected FB-Group 6 - 9/11/14

1510 - Sample taken at
SMW-2.

1625 - Collected FB-Group 21 - 9/11/14

1640 - Sample collected at SMW-4.
* ~~P~~ Pump lost suction after 10
gallons, let recharge & sampled at
1640.

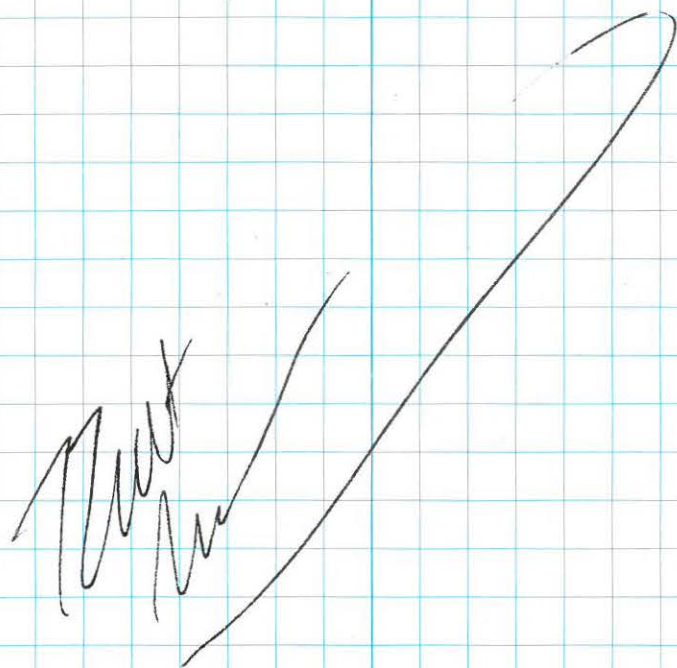
Western

BS, Z13 9/11/14¹¹

1800 - Pump lost suction after
purging 60 gallons. Sampled
OW-P at 1800.

* Collected F13-Group I-9/11/14
at 1815.

1945 - Trihydro off-site



Western Refinery 138,213 9/12/14

0645 - Conducted tailgate safety meeting.

0750 - Collected Sample from GWM-7.

0805 - Collected Sample from OATIS-7.

0815 - Collected F13-Group 4-9/12/14.

0935 - Collected Sample from OW-10.

1100 - Collected Sample from OW-12.

* OW-12 lost suction after purging 30 gallons, let recharge and sampled.

1220 - Sampled well OW-11

1300 - Returned to env. shed

prep for Monday

1400 - Trihydro off site

Western Refinery ISS, CR
9/15/14

0700 - Trihydro on Site,
Conduct tailgate Safety meeting.

0800 - Obtained permit for
MK Tank Farm wells,
need additional drum at
site, tried to contact Maint.

0836 - Product in MKTF-05
from 15.31' to 15.66', bailed
< 0.5 gallons. Did not sample.

0912 - Product in MKTF-03
from 9.06' to 9.16', bailed
1.5 gallons. Did not sample.

0945 - Sampled Well MKTF-04.
* Collected FB-Group 7-9/15/14
@ 10/0

1030 - Collected Sample at
MKTF-22
* Collected ISD-MKTF-9/15/14
from MKTF-22.

Rite in the Rain

Western MKTF Wells

	DTW	TD	X2	X
MKTF01	DTP=6.94	DTW=6.98	No Sa	
MKTF02	8.41	20.42	17	2
MKTF03	DTP=9.06	DTW=9.16	No Sa	
MKTF04	11.09	22.15	16.4	2
MKTF05	DTP=15.3	15.46	No Sample	
MKTF06	DTP=18.15	DTW=18.90	No Sa	
MKTF07	DTP=12.0	DTW=13.60	No Sam	
MKTF08	DTP=14.36	DTW=15.05	No	
MKTF09	14.89	22.73	11	1
MKTF10	8.99	15.88	10	1
MKTF11	9.35	18.40	27 133	2
MKTF12	DTP=19.81	DTW=21.0	No Sa	
MKTF13	DTP=14.61	DTW=15.75	No Sa	
MKTF14	DTP=8.30	DTW=8.75	No Sa	
MKTF15	13.71	19.5	1.9	2
MKTF16	10.6	14.08	1.1	1
MKTF17	11.27	24.05	4.1	6
MKTF18	8.81	25.17	5.3	8

Western BS, 2.13 9/15/14

#1135 - Collected FB-Group 3-9/15/14

1245 - Sampled OW-52.

1335 - Sampled OW-50.

1545 - Sampled OW-29

1645 - Sampled OW-14

1835 - Sampled OW-13.

1930 - Trihydro Off-site.

A handwritten signature, possibly 'J. M. Smith', is written in black ink. To the right of the signature is a large, sweeping checkmark that extends across the bottom right portion of the page.

19
Western Refinery 13S, 213 9/16/14

1330 - Returned to environmental
Shed to pack sample coolers
for shipment to lab via
Kenny.

1615 - Sample collected at
MW-1.

1900 - Sample collected at
MW-2.

1945 - Trihydro off-site

*1700 - FB-Group 10-9/16/14 collected

Western Refinery BS, ZB 9/17/14

0645 - Trihydro on-site

0715 - Begin purging well
~~MW-2B~~ MW-5.

0845 - Moved tote to MKTF
area to begin sampling
MKTF wells.

*See MKTF well page for
Purge volumes.

0940 - Sampled MKTF-15.

0945 - MKTF-10 purged dry
after ~7 gallons, will let
recharge and sample 9/18.

1000 - Re-Sampled BW-2B
for 8270.

1005 - Re-Sampled BW-2A
for 8270.

Western Refinery 135, 213 9/12/14

1100 - Sampled MKTF-16

1115 - gauged MKTF-6, 7, 8, 9.

Product measured in
MKTF-6, 7, 8. No Samples will
be collected from these wells.

1140 - Sampled MW-5

1330 - Bailed product totals:

MKTF-6: 3 gal. MKTF-7: 0.1 gal.

MKTF-7: 2 gal. MKTF-3: 0.5 gal.

MKTF-8: 2 gal. MKTF-5: 0.5 gal.

MKTF-14: 1 gal.

MKTF-13: 3 gal.

MKTF-12: 2 gal.

1515 - Sampled MW-4

1830 - Sampled OW-30.

1915 - Trihydro off-site

Western Refinery BS, 213 9/18/14

0645 - Trihydro on-site

0815 - Sampled MKTF-10.
* check phenol hold time for
13D-MKTF.

0850 - Bailed MKTF-18 dry
after 2.5 gallons. will
check afternoon for sample

0900 - Sampled MKTF-~~10~~^{BS}-9

0930 - Sampled MKTF-2.

1050 - Sampled RW-6.

1140 - Sampled RW-5.

1215 - Sampled RW-2

1235 - Collected FB-Group 8-9/18/14

Western Refinery BS, ZB 9/18/14

1500 - Sampled RW-1.

* Railed 4 gallons of product before taking sample, per Cheryl's request.

1440 - Sampled MKTF-18.

1520 - Sampled MKTF-17.

1545 - Returned to environmental shed to put equipment away and begin clearing area for demob.

1700 Trihydro Off-site

Western Refinery ISS, 9/19/14

0800 - Trihydro on-site
begin packing coolers,
clean equipment skids.

0830 - Collected EIS-#1-9/19/14

0840 - Collected EIS-#2-9/19/14

1000 - Trihydro off-site

WESTERN REFINING - GALLUP REFINERY
Q1-2014

		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (μS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
OW - 1										
GAUGE DATE	11-10-14	(1)	1035	8.13	12.44	1.027	.878	.68	61.6	-97.1
GAUGE TIME	1015	(2)	1043	8.51	12.66	1.036	.881	.68	42.2	-94.0
DTB (feet)	96.40	(3)	1057	8.6	12.86	1.041	.881	.68	33.1	-94.7
Depth to Bottom		(4)	1105	8.81	12.90	1.041	.880	.68	33.6	-94.9
DEDICATED PUMP	Yes	WEATHER CONDITIONS 53°F + Clear Winds are SW 22mph								
DTW (feet)	0									
Depth to Water	96.40									
DTB - DTW	96.40									
Capacity per foot	1.266 .65	WATER APPEARANCE Clear no odor								
1 Well Volume	1.266									
3 Well Volumes	187.98									
PURGE DATE	11-10-14									
PURGE TIME	1020									
SAMPLE DAY	11-10-14									
SAMPLE TIME	1110									
PUMP DEPTH	—									
DTW (feet)										
at end of Purging										

SAMPLE LOG

Pump @ 133 Hz, Purged 30 gallons

Collected @ 1110

		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (μS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
OW - 10										
GAUGE DATE	11-10-14	(1)	1220	7.36	13.05	4.595	3.874	3.26	33.5	-99.1
GAUGE TIME	1153	(2)	1220	7.37	13.06	4.604	3.878	3.26	30.8	-98.1
DTB (feet)	60.7	(3)	1225	7.36	13.06	4.608	3.878	3.26	27.7	-98.7
Depth to Bottom		(4)	1230	7.35	13.09	4.601	3.871	3.25	25.4	-98.5
DEDICATED PUMP	Yes	WEATHER CONDITIONS 53°F + Clear Winds are SW 22mph Heavily high Gust								
DTW (feet)	2.8									
Depth to Water	57.9									
DTB - DTW	57.9									
Capacity per foot	.65	WATER APPEARANCE Clear no odor								
1 Well Volume	37.63									
3 Well Volumes	112.89									
PURGE DATE	11-10-14									
PURGE TIME	1155									
SAMPLE DAY	11-10-14									
SAMPLE TIME	1424									
PUMP DEPTH	—									
DTW (feet)	2.8									
at end of Purging										

SAMPLE LOG

Pump @ 190 Hz, Purged 120 gallons

Collected @ 1424

INSTRUMENTS USED:

YSI 556 mds water quality meter
Solinst 100' water level meter

Signature:

Pak Sanders
SB

WESTERN REFINING - GALLUP REFINERY
Q1-2014

		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (μS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
OW - 13		(1)	1525	8.33	13.25	.961	.809	.63	70.7	-139.0
GAUGE DATE	11-10-14	(2)	1535	8.26	12.92	.955	.807	.62	44.4	-121.6
GAUGE TIME	1502	(3)	1540	8.25	12.72	.958	.813	.63	42.1	-117.9
DTB (feet)	99.21		1546	8.22	12.94	.961	.811	.63	40.1	-117.3
Depth to Bottom		WEATHER CONDITIONS 67°F winds are 33 mph out of WSW								
DEDICATED PUMP	Yes									
DTW (feet)	22.45									
Depth to Water										
DTB - DTW	76.76									
Capacity per foot	.65	WATER APPEARANCE Clear, no odor								
1 Well Volume	49.89									
3 Well Volumes	149.68									
PURGE DATE	11-10-14									
PURGE TIME	1509									
SAMPLE DAY	11-10-14									
SAMPLE TIME	1550									
PUMP DEPTH	—									
DTW (feet)										
at end of Purging	24.50									

SAMPLE LOG

Pump @ 300 Hz
 Purged ~ 150 gallons
 collected @ 1550

		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (μS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
OW - 14		(1)	1620	7.72	13.19	1.771	1.488	1.18	39.4	-187.3
GAUGE DATE	11-10-14	(2)	1624	7.54	13.29	1.775	1.488	1.18	28.4	-186.4
GAUGE TIME	1610	(3)	1626	7.51	13.38	1.481	1.481	1.18	27.6	-184.7
DTB (feet)	46.83	(4)	1630	7.45	13.34	1.775	1.485	1.18	24.1	-174.5
Depth to Bottom		WEATHER CONDITIONS 67°F winds are 33 mph out of WSW								
DEDICATED PUMP	Yes									
DTW (feet)	24.25									
Depth to Water										
DTB - DTW	22.58									
Capacity per foot	.65	WATER APPEARANCE Clear, no odor								
1 Well Volume	14.67									
3 Well Volumes	44.03									
PURGE DATE	11-10-14									
PURGE TIME	1615									
SAMPLE DAY	11-10-14									
SAMPLE TIME	1635									
PUMP DEPTH	—									
DTW (feet)										
at end of Purging	23.63									

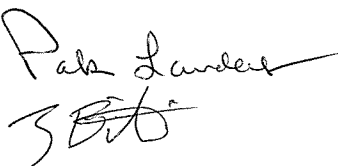
SAMPLE LOG

Pump @ 180 Hz
 Purged ~ 44 gallons
 collect @ 1635

INSTRUMENTS USED:

YSI 556 MPS water quality meter
 Solinst 100' water level meter

Signature:


 3B

WESTERN REFINING - GALLUP REFINERY
Q1-2014

OW - 29		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (μS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE	11-11-14	(1)	827	8.26	12.85	1.433	1.212	.95	45.6	-154.0
GAUGE TIME	811	(2)	830	7.91	12.96	1.429	1.209	.95	18.2	-146.5
DTB (feet) Depth to Bottom	52.75	(3)	833	7.79	12.83	1.421	1.204	.95	16.1	-144.4
DEDICATED PUMP	Yes		837	7.72	13.04	1.429	1.205	.95	12.6	-142.5
DTW (feet) Depth to Water	19.16	WEATHER CONDITIONS 41°F + Clear winds are calm								
DTB - DTW	33.59									
Capacity per foot	.65									
1 Well Volume	21.83									
2 Well Volumes	43.67	WATER APPEARANCE Clear + no odor								
PURGE DATE	11-11-14									
PURGE TIME	815									
SAMPLE DAY	11-11-14									
SAMPLE TIME	845									
PUMP DEPTH	—									
DTW (feet) at end of Purging	33.50									

SAMPLE LOG

Pumped @ 153 Hz
Purged 49 gallons

Collected @ 845

OW - 30		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (μS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE	11-11-14	(1)	930	7.58	12.78	1.488	1.262	1.00	69.2	-125.8
GAUGE TIME	920	(2)	933	7.58	12.18	1.476	1.263	.99	46.4	-128.9
DTB (feet) Depth to Bottom	50.1	(3)	935	7.55	12.07	1.475	1.264	.99	41.7	-125.7
DEDICATED PUMP	Yes	(4)	937	7.48	12.76	1.487	1.262	1.00	33.3	-127.2
DTW (feet) Depth to Water	23.7	WEATHER CONDITIONS 48°F + Clear winds are calm out of SW								
DTB - DTW	26.4									
Capacity per foot	.65									
1 Well Volume	17.16									
2 Well Volumes	34.32	WATER APPEARANCE Clear no odor								
PURGE DATE	11-11-14									
PURGE TIME	927									
SAMPLE DAY	11-11-14									
SAMPLE TIME	940									
PUMP DEPTH	—									
DTW (feet) at end of Purging	24.55									

SAMPLE LOG

Pumped at 200 Hz
Purged 35 gallons

Collected @ 940

INSTRUMENTS USED:

YSI 556 water quality meter
Solinst 100' water level meter

Signature:

Patricia Lambert
[Signature]

WESTERN REFINING - GALLUP REFINERY
Q1-2014

NAPIS-3		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (μS, (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE	11-11-14	(1)	1244	8.11	22.21	4.107	2.830	2.33	23.1	-142.2
GAUGE TIME	1210	(2)	1252	8.03	18.14	3.869	2.887	2.38	53.5	-141.4
DTB (feet)	30.66	(3)								
Depth to Bottom	12.10									
DEDICATED PUMP	NO									
DTW (feet)	19.18	WEATHER CONDITIONS 57°F, Clear winds are 19 mph out of SW								
Depth to Water										
DTB - DTW	21.48									
Capacity per foot	.16									
1 Well Volume	3.44									
2 Well Volumes	6.87	WATER APPEARANCE Clear No odor								
PURGE DATE	11-11-14									
PURGE TIME	1235									
SAMPLE DAY	11-13-14									
SAMPLE TIME	1230									
PUMP DEPTH	—									
DTW (feet) at end of Purging										

SAMPLE LOG Bailed 5 gallons and went dry

KA-3		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (μS, (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE	11-11-14	(1)	1255	7.48	24.81	1.891	1.240	.97	25.8	-140.2
GAUGE TIME	1215	(2)	1304	7.48	23.82	1.858	1.238	.97	26.1	-144.3
DTB (feet)		(3)								
Depth to Bottom	23.4									
DEDICATED PUMP	NO	(4)								
DTW (feet)	8.0	WEATHER CONDITIONS 57°F, Clear winds are 19 mph out of SW								
Depth to Water										
DTB - DTW	15.4									
Capacity per foot	.16									
1 Well Volume	2.46									
2 Well Volumes	4.93	WATER APPEARANCE Clear No odor								
PURGE DATE	11-11-14									
PURGE TIME	1240									
SAMPLE DAY	11-11-14									
SAMPLE TIME	1313									
PUMP DEPTH	—									
DTW (feet) at end of Purging										

SAMPLE LOG Bailed about 1 gallon out of well box before opening well casing

Bailed 5 gallons

Collected @ 1313

INSTRUMENTS USED:

Solinst 100' water level meter
YSC 556 mps water quality meter

Bailed

Signatures:

Pete Sander

3/16

WESTERN REFINING - GALLUP REFINERY
Q1-2014

NARIS - 2		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE	11-11-14	(1)	1340	7.67	24.38	2.330	1.534	1.21	17.5	-182.3
GAUGE TIME	1222	(2)								
DTB (feet)		(3)								
Depth to Bottom	13.81									
DEDICATED PUMP	NO									
DTW (feet)		WEATHER CONDITIONS 63°F + Clear winds 26 mph out of SW								
Depth to Water	8.20									
DTB - DTW	5.61									
Capacity per foot	.16									
1 Well Volume	.89									
2 Well Volumes	1.79	WATER APPEARANCE Clear, no odor								
PURGE DATE	11-11-14									
PURGE TIME										
SAMPLE DAY	11-11-14									
SAMPLE TIME	1350									
PUMP DEPTH										
DTW (feet)										
at end of Purging										

SAMPLE LOG Bailed about 1 gallon out of well box before opening well casing
Purged about 2 gallons

Collected @ 1350

NARIS - 1		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE	11-11-14	(1)	1455	7.62	18.50	1.611	1.238	0.94	28.5	-159.6
GAUGE TIME	1225	(2)	1500	7.63	18.62	1.684	1.247	0.98	15.0	-157.7
DTB (feet)		(3)								
Depth to Bottom	13.77									
DEDICATED PUMP	NO	(4)								
DTW (feet)		WEATHER CONDITIONS 63°F + Clear winds 26 mph out of SW								
Depth to Water	6.96									
DTB - DTW	6.81									
Capacity per foot	.16									
1 Well Volume	1.08									
2 Well Volumes	2.17	WATER APPEARANCE Clear, no odor								
PURGE DATE	11-11-14									
PURGE TIME	1450									
SAMPLE DAY	11-11-14									
SAMPLE TIME	1510									
PUMP DEPTH										
DTW (feet)										
at end of Purging										

SAMPLE LOG

Purged about 2.5 gallons

Collected @ 1510

INSTRUMENTS USED:

YSI 55b mps water quality meter
Solinst 100' water level meter

Bailer

Signature:

Pat Sanders
315

WESTERN REFINING - GALLUP REFINERY
Q1-2014

		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
Oil Sump LDU									
GAUGE DATE	11-11-14	(1)							
GAUGE TIME	1530	(2)							
DTB (feet) Depth to Bottom	6.92	(3)							
DEDICATED PUMP	NO		WEATHER CONDITIONS						
DTW (feet) Depth to Water	0								
DTB - DTW									
Capacity per foot			Clear, winds from West @ 20mph. 62°F						
1 Well Volume									
3 Well Volumes									
PURGE DATE			WATER APPEARANCE						
PURGE TIME									
SAMPLE DAY									
SAMPLE TIME			Dry Well						
PUMP DEPTH									
DTW (feet) at end of Purging									

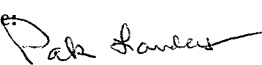
SAMPLE LOG Dry Well.

		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
East LDU									
GAUGE DATE	11-11-14	(1)							
GAUGE TIME	1535	(2)							
DTB (feet) Depth to Bottom	12.51	(3)							
DEDICATED PUMP	NO	(4)	WEATHER CONDITIONS						
DTW (feet) Depth to Water	10.28								
DTB - DTW									
Capacity per foot			62°F + Clear winds 23 mph out of the WSW						
1 Well Volume									
3 Well Volumes									
PURGE DATE			WATER APPEARANCE						
PURGE TIME									
SAMPLE DAY									
SAMPLE TIME	1550		dawn grey, slight odor						
PUMP DEPTH									
DTW (feet) at end of Purging									

SAMPLE LOG Grab Sample

INSTRUMENTS USED:
Solinst 100 water level meter

Bailer

Signature: 


WESTERN REFINING - GALLUP REFINERY
Q1-2014

		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
West LDU									
GAUGE DATE	11-11-14	(1)							
GAUGE TIME	1600	(2)							
DTB (feet)									
Depth to Bottom	12.50	(3)							
DEDICATED PUMP	NO								
DTW (feet)		WEATHER CONDITIONS 62°F + clear 23 mph out of WSW							
Depth to Water									
DTB - DTW									
Capacity per foot									
1 Well Volume									
3 Well Volumes									
PURGE DATE		WATER APPEARANCE							
PURGE TIME									
SAMPLE DAY									
SAMPLE TIME									
PUMP DEPTH									
DTW (feet)									
at end of Purging									

SAMPLE LOG Well is Dry

Grab Sample

		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
OAPIS - 1										
GAUGE DATE	11-11-14	(1)	1640	7.33	17.79	6.087	4.641	3.90	17.8	-168.8
GAUGE TIME	1626	(2)	1644	7.28	17.32	6.053	4.615	3.92	15.9	-166.6
DTB (feet)										
Depth to Bottom	28.54	(3)	1649	7.26	16.85	5.426	4.562	3.88	15.9	-160.4
DEDICATED PUMP	NO	(4)	1653	7.31	16.79	5.418	4.561	3.88	13.6	-160.2
DTW (feet)		WEATHER CONDITIONS 60°F + clear winds 23 mph out of SW								
Depth to Water	17.21									
DTB - DTW	11.33									
Capacity per foot	.16									
1 Well Volume	1.81									
3 Well Volumes	3.62									
PURGE DATE	11-11-14	WATER APPEARANCE								
PURGE TIME	1635									
SAMPLE DAY	11-11-14									
SAMPLE TIME	1700									
PUMP DEPTH										
DTW (feet)		Slick looking, slight odor								
at end of Purging										

SAMPLE LOG
Purged about 4 gallons

Collected @ 1700

INSTRUMENTS USED:

YSE 556 mds water quality meter
Solinst 100' water level meter

Bailer

Signature:

[Signature]
[Signature]

WESTERN REFINING - GALLUP REFINERY
Q1-2014

GWM-3		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE	11-11-14	(1)							
GAUGE TIME	1635	(2)							
DTB (feet)	18.04	(3)							
Depth to Bottom									
DEDICATED PUMP	—		WEATHER CONDITIONS 60°F + clear winds 23 mph out of SW WATER APPEARANCE						
DTW (feet)									
Depth to Water	Dry								
DTB - DTW									
Capacity per foot									
1 Well Volume									
3 Well Volumes									
PURGE DATE									
PURGE TIME									
SAMPLE DAY									
SAMPLE TIME									
PUMP DEPTH									
DTW (feet)									
at end of Purging									

SAMPLE LOG

Well is Dry

GWM-2		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE	11-11-14	(1)							
GAUGE TIME	1640	(2)							
DTB (feet)	19.05	(3)							
Depth to Bottom									
DEDICATED PUMP	—	(4)	WEATHER CONDITIONS 60°F + clear winds 23 mph out of SW WATER APPEARANCE						
DTW (feet)									
Depth to Water	Dry								
DTB - DTW									
Capacity per foot									
1 Well Volume									
3 Well Volumes									
PURGE DATE									
PURGE TIME									
SAMPLE DAY									
SAMPLE TIME									
PUMP DEPTH									
DTW (feet)									
at end of Purging									

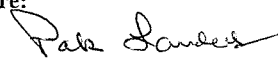
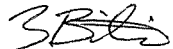
SAMPLE LOG

Well is Dry

INSTRUMENTS USED:

Solinst 100' water level meter

Signature:

WESTERN REFINING - GALLUP REFINERY
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GWM-1		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE	11-11-14	(1)	1316	7.64	14.58	4.657	4.899	4.17	172.4	-180.3
GAUGE TIME	1643	(2)	1318	7.56	14.04	4.833	3.965	3.34	82.6	-181.1
DTB (feet)		(3)	1320	7.49	13.44	4.774	3.922	3.30	57.2	-178.1
Depth to Bottom	26.44		1322	7.50	13.68	4.696	3.854	3.28	56.6	-176.0
DEDICATED PUMP	NO	WEATHER CONDITIONS 60°F + clear winds are 23 mph at of SW								
DTW (feet)	20.08									
Depth to Water										
DTB - DTW	6.36									
Capacity per foot	.16									
1 Well Volume	1.01	WATER APPEARANCE								
2 Well Volumes	2.03									
PURGE DATE	11-13-14									
PURGE TIME	1314									
SAMPLE DAY	11-13-14									
SAMPLE TIME	1325									
PUMP DEPTH										
DTW (feet)										
at end of Purging										

SAMPLE LOG

		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE		(1)							
GAUGE TIME		(2)							
DTB (feet)		(3)							
Depth to Bottom									
DEDICATED PUMP		(4)							
DTW (feet)		WEATHER CONDITIONS							
Depth to Water									
DTB - DTW									
Capacity per foot									
1 Well Volume									
3 Well Volumes		WATER APPEARANCE							
PURGE DATE									
PURGE TIME									
SAMPLE DAY									
SAMPLE TIME									
PUMP DEPTH									
DTW (feet)									
at end of Purging									

SAMPLE LOG

INSTRUMENTS USED:

YSE 556 MPS water quality meter
Solinst 100' water level meter
Bailes

Signature:

Pak Sanders
3/26/15

WESTERN REFINING - GALLUP REFINERY
Q1-2014

EP-1		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE		(1)	8.41	8.51	6.529	6.529	5.35	119.2	-204.3
GAUGE TIME		(2)							
DTB (feet)		(3)							
Depth to Bottom									
DEDICATED PUMP									
DTW (feet)		WEATHER CONDITIONS 51°F + clear							
Depth to Water									
DTB - DTW									
Capacity per foot									
1 Well Volume									
3 Well Volumes		winds 17mph from WSW							
PURGE DATE		WATER APPEARANCE							
PURGE TIME									
SAMPLE DAY	11-12-14								
SAMPLE TIME	950								
PUMP DEPTH									
DTW (feet)		Red							
at end of Purging									

SAMPLE LOG

EP-2 BW to EP-2		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE		(1)	840	7.23	17.93	63.57	47.72	51.02	111.6	-144.4
GAUGE TIME		(2)								
DTB (feet)		(3)								
Depth to Bottom										
DEDICATED PUMP		(4)								
DTW (feet)		WEATHER CONDITIONS winds 17 mph from WSW								
Depth to Water										
DTB - DTW										
Capacity per foot										
1 Well Volume										
3 Well Volumes		51°F + clear								
PURGE DATE		WATER APPEARANCE								
PURGE TIME										
SAMPLE DAY	11-12-14									
SAMPLE TIME	847									
PUMP DEPTH										
DTW (feet)		Gray								
at end of Purging										

SAMPLE LOG

INSTRUMENTS USED:

~~BA 11214~~
YSI 556 mps water quality meter

Dipper
Signature:

Pak Landus 3Bto

WESTERN REFINING - GALLUP REFINERY
Q1-2014

STP-1 to EP-2		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (μ S), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE		(1)	1040	8.50	13.41	3.717	3.103	2.57	43.3	-158.0
GAUGE TIME		(2)								
DTB (feet)		(3)								
Depth to Bottom										
DEDICATED PUMP										
DTW (feet)		WEATHER CONDITIONS 54°F + clear Winds 17 mph from SW								
Depth to Water										
DTB - DTW										
Capacity per foot										
1 Well Volume										
3 Well Volumes		WATER APPEARANCE Clear								
PURGE DATE										
PURGE TIME										
SAMPLE DAY	11-13-14									
SAMPLE TIME	1030									
PUMP DEPTH										
DTW (feet)										
at end of Purging										

SAMPLE LOG

EP-2		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (μ S), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE		(1)	1113	8.20	9.26	6.981	6.489	5.64	40.7	-138.8
GAUGE TIME		(2)								
DTB (feet)		(3)								
Depth to Bottom										
DEDICATED PUMP		(4)								
DTW (feet)		WEATHER CONDITIONS 54°F + clear Winds 17 mph from SW								
Depth to Water										
DTB - DTW										
Capacity per foot										
1 Well Volume										
3 Well Volumes		WATER APPEARANCE Reddish								
PURGE DATE										
PURGE TIME										
SAMPLE DAY	11-13-14									
SAMPLE TIME	1055									
PUMP DEPTH										
DTW (feet)										
at end of Purging										

SAMPLE LOG

INSTRUMENTS USED:
YST 566 mps water quality meter

Dipper

Signature:

Pak Sanders 3/25/14

WESTERN REFINING - GALLUP REFINERY
Q1-2014

EP-3		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (μS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE		(1)	1144	8.38	9.08	9.721	9.085	8.09	30.6	-146.4
GAUGE TIME		(2)								
DTB (feet)		(3)								
Depth to Bottom										
DEDICATED PUMP		WEATHER CONDITIONS 55°F + clear winds 21 mph from SSW								
DTW (feet)										
Depth to Water										
DTB - DTW										
Capacity per foot										
1 Well Volume		WATER APPEARANCE Red tint								
3 Well Volumes										
PURGE DATE										
PURGE TIME										
SAMPLE DAY	11-12-14									
SAMPLE TIME	1130									
PUMP DEPTH										
DTW (feet)										
at end of Purging										

SAMPLE LOG

EP-4		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (μS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE		(1)	1204	8.13	10.17	10.60	9.614	8.61	31.9	-132.6
GAUGE TIME		(2)								
DTB (feet)		(3)								
Depth to Bottom										
DEDICATED PUMP		(4)								
DTW (feet)		WEATHER CONDITIONS 55°F + clear winds 21 mph from SSW								
Depth to Water										
DTB - DTW										
Capacity per foot										
1 Well Volume										
3 Well Volumes		WATER APPEARANCE Red tint								
PURGE DATE										
PURGE TIME										
SAMPLE DAY	11-12-14									
SAMPLE TIME	1200									
PUMP DEPTH										
DTW (feet)										
at end of Purging										

SAMPLE LOG

BD-111214 Pond

INSTRUMENTS USED:

YSE 556 MPS - water quality meter

Dipper

Signature:

Pak Sannes S.B.L.

WESTERN REFINING - GALLUP REFINERY
Q1-2014

2-84-826-N		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE		(1)							
GAUGE TIME		(2)							
DTB (feet)		(3)							
Depth to Bottom									
DEDICATED PUMP		WEATHER CONDITIONS							
DTW (feet)									
Depth to Water									
DTB - DTW		55°F + clear							
Capacity per foot									
1 Well Volume									
3 Well Volumes		winds 21 mph from SSW							
PURGE DATE									
PURGE TIME									
SAMPLE DAY	11-12-14	WATER APPEARANCE							
SAMPLE TIME	1220								
PUMP DEPTH									
DTW (feet)		Slight red tint							
at end of Purging									

SAMPLE LOG

New Evaporators - North

from EP-2

EP-5		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE		(1)	1430	8.39	16.38	26.24	23.65	22.87	56.7	-139.1
GAUGE TIME		(2)								
DTB (feet)		(3)								
Depth to Bottom		(4)								
DEDICATED PUMP		WEATHER CONDITIONS								
DTW (feet)										
Depth to Water										
DTB - DTW		59°F + clear								
Capacity per foot										
1 Well Volume										
3 Well Volumes		winds 23 mph from SW								
PURGE DATE										
PURGE TIME										
SAMPLE DAY	11-12-14	WATER APPEARANCE								
SAMPLE TIME	1420									
PUMP DEPTH										
DTW (feet)		clear to murky								
at end of Purging										

SAMPLE LOG

INSTRUMENTS USED:

YSI 556 mps water quality meter

Dipper

Signature:

Rob Sanders *SBits*

WESTERN REFINING - GALLUP REFINERY
Q1-2014

123		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity μ S/cm (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE		(1)	1520	8.86	9.72	6.473	5.932	5.11	78.3	-130.6
GAUGE TIME		(2)								
DTB (feet)		(3)								
Depth to Bottom										
DEDICATED PUMP		WEATHER CONDITIONS 60°F + clear winds 18 mph from SW WATER APPEARANCE Clear								
DTW (feet)										
Depth to Water										
DTB - DTW										
Capacity per foot										
1 Well Volume										
3 Well Volumes										
PURGE DATE										
PURGE TIME										
SAMPLE DAY	11-12-14									
SAMPLE TIME	1515									
PUMP DEPTH										
DTW (feet)										
at end of Purging										

SAMPLE LOG

12A		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity μ S/cm (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE		(1)	1540	8.78	9.36	8.558	7.933	6.99	94.4	-124.3
GAUGE TIME		(2)								
DTB (feet)		(3)								
Depth to Bottom										
DEDICATED PUMP		(4)								
DTW (feet)		WEATHER CONDITIONS 60°F + clear winds 18 mph from SW WATER APPEARANCE Clear								
Depth to Water										
DTB - DTW										
Capacity per foot										
1 Well Volume										
3 Well Volumes										
PURGE DATE										
PURGE TIME										
SAMPLE DAY	11-12-14									
SAMPLE TIME	1535									
PUMP DEPTH										
DTW (feet)										
at end of Purging										

SAMPLE LOG

INSTRUMENTS USED:
YSI 556 mds water quality meter

Dippers

Signature:

Paul Sanders ZBti

WESTERN REFINING - GALLUP REFINERY
Q1-2014

EP-6		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity uS , (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE		(1) 1450	8.31	11.04	24.44	26.52	26.03	78.2	-134.5
GAUGE TIME		(2)							
DTB (feet)		(3)							
Depth to Bottom									
DEDICATED PUMP									
DTW (feet)		WEATHER CONDITIONS							
Depth to Water									
DTB - DTW									
Capacity per foot									
1 Well Volume		winds 18 mph from SW							
3 Well Volumes		WATER APPEARANCE							
PURGE DATE									
PURGE TIME									
SAMPLE DAY	11-12-14								
SAMPLE TIME	1445								
PUMP DEPTH									
DTW (feet)									
at end of Purging		Clear & Frothy							

SAMPLE LOG

EP-7		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity uS , (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE		(1) 1632	8.20	9.52	85.41	78.83	24.98	88.6	-122.9
GAUGE TIME		(2)							
DTB (feet)		(3)							
Depth to Bottom		(4)							
DEDICATED PUMP									
DTW (feet)		WEATHER CONDITIONS							
Depth to Water									
DTB - DTW									
Capacity per foot									
1 Well Volume		winds 16 mph from WSW							
3 Well Volumes		WATER APPEARANCE							
PURGE DATE									
PURGE TIME									
SAMPLE DAY	11-12-14								
SAMPLE TIME	1624								
PUMP DEPTH									
DTW (feet)									
at end of Purging		Clear w/green tint							

SAMPLE LOG

INSTRUMENTS USED:

YSI 556 MPS water quality meter

Dipper

Signature:

Pat Sanders

WESTERN REFINING - GALLUP REFINERY
Q1-2014

EP-11		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE		(1) 1612	8.49	4.83	89.17	81.61	93.49	87.5	-138.2
GAUGE TIME		(2)							
DTB (feet)		(3)							
Depth to Bottom									
DEDICATED PUMP									
DTW (feet)		WEATHER CONDITIONS 55°F + clear winds 16 mph from WSW							
Depth to Water									
DTB - DTW									
Capacity per foot									
1 Well Volume		WATER APPEARANCE Clear w/ Green Tint							
3 Well Volumes									
PURGE DATE									
PURGE TIME									
SAMPLE DAY	11-12-14								
SAMPLE TIME	1606								
PUMP DEPTH									
DTW (feet)									
at end of Purging									

SAMPLE LOG

EP-8		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE		(1) 1659	8.58	8.79	83.80	78.88	89.83	97.1	-138.0
GAUGE TIME		(2)							
DTB (feet)		(3)							
Depth to Bottom									
DEDICATED PUMP		(4)							
DTW (feet)		WEATHER CONDITIONS 55°F + clear winds 16 mph from WSW							
Depth to Water									
DTB - DTW									
Capacity per foot									
1 Well Volume		WATER APPEARANCE Clear w/ Green Tint							
3 Well Volumes									
PURGE DATE									
PURGE TIME									
SAMPLE DAY	11-12-14								
SAMPLE TIME	1653								
PUMP DEPTH									
DTW (feet)									
at end of Purging									

SAMPLE LOG

INSTRUMENTS USED:

YSI 556 MPS water quality meter

Dipper

Signature:

Pete Sanchez

WESTERN REFINING - GALLUP REFINERY
Q1-2014

EP-9		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE		(1) 835	7.09	8.63	134.9	127.9	146.27	72.3	-131.3
GAUGE TIME		(2)							
DTB (feet)		(3)							
Depth to Bottom									
DEDICATED PUMP									
DTW (feet)		WEATHER CONDITIONS 46°F + clear winds 5 mph from W							
Depth to Water									
DTB - DTW									
Capacity per foot									
1 Well Volume									
3 Well Volumes		WATER APPEARANCE Clear no odor							
PURGE DATE									
PURGE TIME									
SAMPLE DAY	11-13-14								
SAMPLE TIME	830								
PUMP DEPTH									
DTW (feet)									
at end of Purging									

SAMPLE LOG

EP-2 E.coli		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE		(1)							
GAUGE TIME		(2)							
DTB (feet)		(3)							
Depth to Bottom		(4)							
DEDICATED PUMP									
DTW (feet)		WEATHER CONDITIONS 46°F + clear winds 5 mph from W							
Depth to Water									
DTB - DTW									
Capacity per foot									
1 Well Volume									
3 Well Volumes		WATER APPEARANCE Reddish Tint							
PURGE DATE									
PURGE TIME									
SAMPLE DAY	11-13-14								
SAMPLE TIME	858								
PUMP DEPTH									
DTW (feet)									
at end of Purging									

SAMPLE LOG

INSTRUMENTS USED:

Dipper

Signature:

P. Lawrence 3/26

WESTERN REFINING - GALLUP REFINERY
Q1-2014

EP-3 E-col		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE		(1)							
GAUGE TIME		(2)							
DTB (feet)		(3)							
Depth to Bottom									
DEDICATED PUMP		WEATHER CONDITIONS 46°F + clear winds 5 mph from W							
DTW (feet)									
Depth to Water									
DTB - DTW									
Capacity per foot									
1 Well Volume									
3 Well Volumes									
PURGE DATE									
PURGE TIME									
SAMPLE DAY	11-13-14								
SAMPLE TIME	903								
PUMP DEPTH									
DTW (feet) at end of Purging									

SAMPLE LOG

EP-4 E-col		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE		(1)							
GAUGE TIME		(2)							
DTB (feet)		(3)							
Depth to Bottom									
DEDICATED PUMP		(4)	WEATHER CONDITIONS 46°F + clear winds 5 mph from W						
DTW (feet)									
Depth to Water									
DTB - DTW									
Capacity per foot									
1 Well Volume									
3 Well Volumes									
PURGE DATE									
PURGE TIME									
SAMPLE DAY	11-13-14	WATER APPEARANCE							
SAMPLE TIME	905								
PUMP DEPTH									
DTW (feet) at end of Purging									

SAMPLE LOG

INSTRUMENTS USED:

Dipper
Signature: *Pak Sanders* 3B6-

WESTERN REFINING - GALLUP REFINERY
Q1-2014

EP-5 E-coi.		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE		(1)							
GAUGE TIME		(2)							
DTB (feet)		(3)							
Depth to Bottom									
DEDICATED PUMP		WEATHER CONDITIONS 46°F + clear Winds 5 mph from W WATER APPEARANCE							
DTW (feet)									
Depth to Water									
DTB - DTW									
Capacity per foot									
1 Well Volume									
3 Well Volumes									
PURGE DATE									
PURGE TIME									
SAMPLE DAY	11-13-14								
SAMPLE TIME	913								
PUMP DEPTH									
DTW (feet)									
at end of Purging									

SAMPLE LOG

EP-6 E-coi.		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE		(1)							
GAUGE TIME		(2)							
DTB (feet)		(3)							
Depth to Bottom									
DEDICATED PUMP		(4)	WEATHER CONDITIONS 46°F + Clear Winds 5 mph from W WATER APPEARANCE						
DTW (feet)									
Depth to Water									
DTB - DTW									
Capacity per foot									
1 Well Volume									
3 Well Volumes									
PURGE DATE									
PURGE TIME									
SAMPLE DAY	11-13-14								
SAMPLE TIME	916								
PUMP DEPTH									
DTW (feet)									
at end of Purging									

SAMPLE LOG

INSTRUMENTS USED:

Dipper

Signature:

Pat Sanders *JSB*

WESTERN REFINING - GALLUP REFINERY
Q1-2014

		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
EP-8 E-col.									
GAUGE DATE		(1)							
GAUGE TIME		(2)							
DTB (feet)									
Depth to Bottom		(3)							
DEDICATED PUMP			WEATHER CONDITIONS						
DTW (feet)									
Depth to Water									
DTB - DTW									
Capacity per foot			46°F + clear						
1 Well Volume									
3 Well Volumes									
PURGE DATE									
PURGE TIME			Winds 5mph from W						
SAMPLE DAY	11-13-14								
SAMPLE TIME	924								
PUMP DEPTH									
DTW (feet)			WATER APPEARANCE						
at end of Purging									

SAMPLE LOG

		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
EP-7 E-col.									
GAUGE DATE		(1)							
GAUGE TIME		(2)							
DTB (feet)									
Depth to Bottom		(3)							
DEDICATED PUMP		(4)	WEATHER CONDITIONS						
DTW (feet)									
Depth to Water									
DTB - DTW									
Capacity per foot			46°F + clear						
1 Well Volume									
3 Well Volumes									
PURGE DATE									
PURGE TIME			Winds 5mph from W						
SAMPLE DAY	11-13-14								
SAMPLE TIME	931								
PUMP DEPTH									
DTW (feet)			WATER APPEARANCE						
at end of Purging									

SAMPLE LOG

INSTRUMENTS USED:

Dipper

Signature:

Pat Lawley *3B75*

WESTERN REFINING - GALLUP REFINERY
Q1-2014

EP-11 E-coi.		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE		(1)							
GAUGE TIME		(2)							
DTB (feet)		(3)							
Depth to Bottom									
DEDICATED PUMP		WEATHER CONDITIONS 46°F & clear Winds 5 mph from West WATER APPEARANCE							
DTW (feet)									
Depth to Water									
DTB - DTW									
Capacity per foot									
1 Well Volume									
3 Well Volumes									
PURGE DATE									
PURGE TIME									
SAMPLE DAY	11-13-14								
SAMPLE TIME	934								
PUMP DEPTH									
DTW (feet) at end of Purging									

SAMPLE LOG

EP-12A E-coi.		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE		(1)							
GAUGE TIME		(2)							
DTB (feet)		(3)							
Depth to Bottom									
DEDICATED PUMP		(4)	WEATHER CONDITIONS 48°F & clear Winds 17 mph from SW WATER APPEARANCE						
DTW (feet)									
Depth to Water									
DTB - DTW									
Capacity per foot									
1 Well Volume									
3 Well Volumes									
PURGE DATE									
PURGE TIME									
SAMPLE DAY	11-13-14								
SAMPLE TIME	942								
PUMP DEPTH									
DTW (feet) at end of Purging									

SAMPLE LOG

INSTRUMENTS USED:

Dipper

Signature:

Pak Sanders *[Signature]*

WESTERN REFINING - GALLUP REFINERY
Q1-2014

		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE		(1)							
GAUGE TIME		(2)							
DTB (feet)		(3)							
Depth to Bottom									
DEDICATED PUMP		WEATHER CONDITIONS 48°f + clear winds 17 mph from SW WATER APPEARANCE							
DTW (feet)									
Depth to Water									
DTB - DTW									
Capacity per foot									
1 Well Volume									
3 Well Volumes									
PURGE DATE									
PURGE TIME									
SAMPLE DAY	11-13-14								
SAMPLE TIME	944								
PUMP DEPTH									
DTW (feet) at end of Purging									

SAMPLE LOG

		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE		(1)							
GAUGE TIME		(2)							
DTB (feet)		(3)							
Depth to Bottom									
DEDICATED PUMP		(4)	WEATHER CONDITIONS WATER APPEARANCE						
DTW (feet)									
Depth to Water									
DTB - DTW									
Capacity per foot									
1 Well Volume									
3 Well Volumes									
PURGE DATE									
PURGE TIME									
SAMPLE DAY									
SAMPLE TIME									
PUMP DEPTH									
DTW (feet) at end of Purging									

SAMPLE LOG

INSTRUMENTS USED:

Dipper

Signature: Pak Linder JBL

WESTERN REFINING - GALLUP REFINERY
Q1-2014

MKT F - 04		TEST PARAMETERS								
			Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE	11-13-14	(1)	1525	7.97	15.57	1.963	1.557	1.24	70.9	-194.1
GAUGE TIME	1441	(2)	1531	7.60	15.14	1.939	1.553	1.24	81.8	-171.6
DTB (feet)		(3)	1535	7.69	14.91	1.885	1.518	1.21	34.3	-173.7
Depth to Bottom	20.15									
DEDICATED PUMP	NO									
DTW (feet)		WEATHER CONDITIONS 59°F + Clear Winds 15 mph from W								
Depth to Water	11.35									
DTB - DTW	8.8									
Capacity per foot	.65									
1 Well Volume	5.72									
2 Well Volumes	11.44	WATER APPEARANCE Clear to Red murky								
PURGE DATE	11-13-14									
PURGE TIME	1520									
SAMPLE DAY	11-13-14									
SAMPLE TIME	1545									
PUMP DEPTH	15									
DTW (feet) at end of Purging	15.20									

SAMPLE LOG

MKT F - 05		TEST PARAMETERS								
			Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE	11-13-14	(1)								
GAUGE TIME	1449	(2)								
DTB (feet)		(3)								
Depth to Bottom	17.73	(4)								
DEDICATED PUMP	NO									
DTW (feet)		WEATHER CONDITIONS 59°F + Clear Winds 15 mph from W								
Depth to Water	16.17									
DTB - DTW	1.56									
Capacity per foot	.65									
1 Well Volume	1.01									
2 Well Volumes	2.02	WATER APPEARANCE 15.74 to Product								
PURGE DATE	11-13-14									
PURGE TIME	1516									
SAMPLE DAY	NA									
SAMPLE TIME	NA									
PUMP DEPTH	NA									
DTW (feet) at end of Purging	17.93									

SAMPLE LOG

Disged 2.0 gallons
Did not Sample

INSTRUMENTS USED:

Solinst 100' water level meter
YSI 556 mps water quality meter

Signature:

Pat Sanders 3B16

WESTERN REFINING - GALLUP REFINERY
Q1-2014

MKT - 03		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE	11-13-14	(1)							
GAUGE TIME	1500	(2)							
DTB (feet)									
Depth to Bottom	18.48	(3)							
DEDICATED PUMP	NO		WEATHER CONDITIONS						
DTW (feet)	9.31								
DTB - DTW	9.17								
Capacity per foot	.65								
1 Well Volume	5.96		winds 16 mph from WSW						
2 Well Volumes	11.92								
PURGE DATE	11-13-14								
PURGE TIME	1537								
SAMPLE DAY	N/A		WATER APPEARANCE						
SAMPLE TIME	N/A								
PUMP DEPTH									
DTW (feet) at end of Purging	7.45								

SAMPLE LOG

Did not sample; 1/8 gallon of product.

MKT - 11		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE	11-13-14	(1)	1614	7.69	16.54	2.648	2.089	1.69	33.1	-172.2
GAUGE TIME	1505	(2)	1618	7.63	16.80	2.992	2.387	1.88	32.6	-178.2
DTB (feet)										
Depth to Bottom	18.38	(3)	1620	7.63	16.65	3.227	2.496	2.04	33.7	-184.3
DEDICATED PUMP	NO	(4)	1624	7.61	16.69	3.298	2.547	2.08	38.4	-192.8
DTW (feet)	9.55		WEATHER CONDITIONS							
DTB - DTW	8.83									
Capacity per foot	.65									
1 Well Volume	5.73									
2 Well Volumes	11.48		winds 16 mph from WSW							
PURGE DATE	11-13-14									
PURGE TIME	1642									
SAMPLE DAY	11-13-14									
SAMPLE TIME	1642		WATER APPEARANCE							
PUMP DEPTH	N/A									
DTW (feet)										
DTW (feet) at end of Purging	11.60									

SAMPLE LOG

INSTRUMENTS USED:
YSE 556 mps water quality meter
Solinst 100' water level meter

Signature:

Pat Sanders 3B10

WESTERN REFINING - GALLUP REFINERY
Q1-2014

		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
MKT - 15									
GAUGE DATE	11-14-14	(1)							
GAUGE TIME	843	(2)							
DTB (feet)	19.48	(3)							
Depth to Bottom									
DEDICATED PUMP	NO								
DTW (feet)	14.55	WEATHER CONDITIONS 45°F + clear cloudy winds 8 mph from WSW							
Depth to Water									
DTB - DTW	4.93								
Capacity per foot	.116								
1 Well Volume	.78								
2 Well Volumes	1.57	WATER APPEARANCE							
PURGE DATE	11-14-14								
PURGE TIME	850								
SAMPLE DAY									
SAMPLE TIME									
PUMP DEPTH		13.5' to Product							
DTW (feet)									
at end of Purging									

SAMPLE LOG

Bailed 3 gallons

		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
MKT - 10									
GAUGE DATE	11-14-14	(1)	957	7.26	16.46	4.85	3.77	3.17	38.3
GAUGE TIME	900	(2)	1007	6.99	16.21	4.682	3.657	3.06	26.7
DTB (feet)		(3)							
Depth to Bottom	15.87								
DEDICATED PUMP	NO	(4)							
DTW (feet)	10.05	WEATHER CONDITIONS 46°F + cloudy winds 15 mph from SW							
Depth to Water									
DTB - DTW	5.82								
Capacity per foot	.65								
1 Well Volume	3.78								
2 Well Volumes	7.56	WATER APPEARANCE							
PURGE DATE	11-14-14								
PURGE TIME	945								
SAMPLE DAY	11-14-14								
SAMPLE TIME	1010								
PUMP DEPTH		Clear to chocolate Brown							
DTW (feet)									
at end of Purging									

SAMPLE LOG

Well was bailing dry at 4 gallons so I grabbed Sample

INSTRUMENTS USED:
 YSI 556 mps water quality meter
 Solinst 100' water level meter
 Bailer

Signature: *[Signature]*

Pak Jander

WESTERN REFINING - GALLUP REFINERY
Q1-2014

MKT-09		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE	11-14-14	(1)	947	7.41	13.91	1.459	1.199	0.94	65.0	-600.0
GAUGE TIME	911	(2)	953	7.46	14.22	1.487	1.214	0.96	50.7	-180.0
DTB (feet)		(3)	957	7.61	14.01	1.500	1.234	0.97	42.1	-182.1
Depth to Bottom	22.48		10.02	7.52	14.30	1.517	1.240	0.98	47.9	-185.6
DEDICATED PUMP	NO	WEATHER CONDITIONS 46°F + Cloudy Winds 15 mph from SW								
DTW (feet)	15.21									
Depth to Water	7.27									
DTB - DTW	6.5									
Capacity per foot	4.72									
1 Well Volume	9.45	WATER APPEARANCE Clear @ the beginning; midpoint Dark greyish color; Shcen, odor of product.								
2 Well Volumes	11-14-14									
PURGE DATE	942									
PURGE TIME	11-14-14									
SAMPLE DAY	1013									
SAMPLE TIME										
PUMP DEPTH										
DTW (feet)										
at end of Purging										

SAMPLE LOG

MKT-08		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE	11-14-14	(1)							
GAUGE TIME	914	(2)							
DTB (feet)		(3)							
Depth to Bottom	21.97								
DEDICATED PUMP	NO	(4)							
DTW (feet)	14.88	WEATHER CONDITIONS							
Depth to Water									
DTB - DTW									
Capacity per foot									
1 Well Volume									
3 Well Volumes		WATER APPEARANCE							
PURGE DATE									
PURGE TIME									
SAMPLE DAY									
SAMPLE TIME									
PUMP DEPTH									
DTW (feet)									
at end of Purging									

SAMPLE LOG

Depth to product 14.88

INSTRUMENTS USED:

YSI 556 MPS water quality meter
Solinst 100' water level meter
Bailer

Signature:

[Signature]
Pak Lawless

WESTERN REFINING - GALLUP REFINERY
Q1-2014

MKTF-07		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE	11-14-14	(1)							
GAUGE TIME	922	(2)							
DTB (feet)	17.64	(3)							
Depth to Bottom									
DEDICATED PUMP	NO								
DTW (feet)	13.32	WEATHER CONDITIONS							
Depth to Water									
DTB - DTW									
Capacity per foot									
1 Well Volume									
3 Well Volumes		WATER APPEARANCE							
PURGE DATE									
PURGE TIME									
SAMPLE DAY									
SAMPLE TIME									
PUMP DEPTH		13.32' to Product							
DTW (feet)									
at end of Purging									

SAMPLE LOG

MKTF-06		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
GAUGE DATE	11-14-14	(1)							
GAUGE TIME	925	(2)							
DTB (feet)	23.75	(3)							
Depth to Bottom									
DEDICATED PUMP	NO	(4)							
DTW (feet)	18.58	WEATHER CONDITIONS							
Depth to Water									
DTB - DTW									
Capacity per foot									
1 Well Volume									
3 Well Volumes		WATER APPEARANCE							
PURGE DATE									
PURGE TIME									
SAMPLE DAY									
SAMPLE TIME									
PUMP DEPTH		18.58 to Product							
DTW (feet)									
at end of Purging									

SAMPLE LOG

INSTRUMENTS USED:
Solinst 100' water level meter

Signature:

Paul J. Arvey

WESTERN REFINING - GALLUP REFINERY
Q1-2014

		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
MKT - 01									
GAUGE DATE	11-14-14	(1)							
GAUGE TIME	1100	(2)							
DTB (feet)	16.42	(3)							
Depth to Bottom									
DEDICATED PUMP	NO								
DTW (feet)	7.32	WEATHER CONDITIONS							
Depth to Water									
DTB - DTW	1.10								
Capacity per foot	9.65								
1 Well Volume									
3 Well Volumes		WATER APPEARANCE							
PURGE DATE									
PURGE TIME									
SAMPLE DAY									
SAMPLE TIME									
PUMP DEPTH		7.30' to product							
DTW (feet)									
at end of Purging									

SAMPLE LOG

		TEST PARAMETERS							
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)
MKT - 02									
GAUGE DATE	11-14-14	(1)	1123	8.00	13.30	2.437	2.040	1.65	77.4
GAUGE TIME	1105	(2)	1126	7.87	13.65	2.536	2.104	1.70	56.8
DTB (feet)	20.42	(3)	1137	7.93	13.18	2.758	2.318	1.89	44.9
Depth to Bottom		(4)	1140	7.74	13.25	3.007	2.520	2.06	44.2
DEDICATED PUMP	NO								
DTW (feet)	8.21	51°F + WEATHER CONDITIONS cloudy							
Depth to Water									
DTB - DTW	12.21								
Capacity per foot	6.5								
1 Well Volume	7.93								
2 Well Volumes	15.87	winds 11 mph from SW							
PURGE DATE	11-14-14								
PURGE TIME	1116								
SAMPLE DAY	11-14-14								
SAMPLE TIME	1145								
PUMP DEPTH		WATER APPEARANCE Clear to murky							
DTW (feet)									
at end of Purging									

SAMPLE LOG

Purged 15 gallons and well was indicating that it was going dry

Collected BD-111414

INSTRUMENTS USED:

YSI 556 MPS water quality meter
Solinst 100' water level meter
Baird

Signature:

[Signature]
Tah Lander

WESTERN REFINING - GALLUP REFINERY
Q1-2014

		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (μS); (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
MKTf-26										
GAUGE DATE	11-14-14	(1)	1233	7.51	13.92	3.553	2.929	2.42	45.5	-145.7
GAUGE TIME	1123	(2)	1240	7.64	13.76	3.285	2.720	2.24	41.5	-147.0
DTB (feet)	17.16	(3)								
Depth to Bottom										
DEDICATED PUMP	NO									
DTW (feet)		WEATHER CONDITIONS								
Depth to Water	8.72									
DTB - DTW	8.45									
Capacity per foot										
1 Well Volume	1.35	WATER APPEARANCE								
2 Well Volumes	2.70									
PURGE DATE	11-14-14									
PURGE TIME	1230									
SAMPLE DAY	11-14-14	Clear No odor								
SAMPLE TIME	1248									
PUMP DEPTH										
DTW (feet) at end of Purging										

SAMPLE LOG

Purged 2.75 gallons

		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (μS); (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
MKTf-27										
GAUGE DATE	11-14-14	(1)	1205	7.67	15.33	7.333	5.848	5.06	79.1	-139.5
GAUGE TIME	1115	(2)	1212	7.59	15.41	7.349	5.894	5.10	58.6	-137.7
DTB (feet)	14.71	(3)								
Depth to Bottom										
DEDICATED PUMP	NO	(4)								
DTW (feet)		WEATHER CONDITIONS								
Depth to Water	8.15									
DTB - DTW	6.56									
Capacity per foot										
1 Well Volume	1.05	Winds 18 mph from SW								
2 Well Volumes	2.09									
PURGE DATE	11-14-14									
PURGE TIME	1200									
SAMPLE DAY	11-14-14	WATER APPEARANCE								
SAMPLE TIME	1221									
PUMP DEPTH										
DTW (feet) at end of Purging										

SAMPLE LOG

Purged 2 gallons

BD-111414-2

INSTRUMENTS USED:

YSI mds 556 water quality meter
Solinst 100' water level meter

Bailer

Signature: *[Signature]*

[Signature]

WESTERN REFINING - GALLUP REFINERY
Q1-2014

		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
MKTf - 28		(1)	1342	8.65	18.97	2.532	1.861	1.49	110.2	-164.6
GAUGE DATE	11-14-14	(2)	1345	8.8	19.41	2.614	1.902	1.53	77.8	-162.0
GAUGE TIME	1321	(3)	1349	8.07	19.76	2.708	1.957	1.57	64.1	-159.3
DTB (feet)	16.13									
Depth to Bottom										
DEDICATED PUMP	NO									
DTW (feet)	6.00	WEATHER CONDITIONS 53°F + cloudy winds 11 mph from WSW								
Depth to Water										
DTB - DTW	10.13	WATER APPEARANCE Clear								
Capacity per foot	.16									
1 Well Volume	1.65									
2 Well Volumes	3.30									
PURGE DATE	11-14-14									
PURGE TIME	1337									
SAMPLE DAY	11-14-14									
SAMPLE TIME	1355									
PUMP DEPTH										
DTW (feet)										
at end of Purging										

SAMPLE LOG

Purged 3.5 gallons

		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
MKTf - 29		(1)								
GAUGE DATE	11-14-14	(2)								
GAUGE TIME	1330	(3)								
DTB (feet)	22.80	(4)								
Depth to Bottom										
DEDICATED PUMP	NO									
DTW (feet)	3.05	WEATHER CONDITIONS								
Depth to Water										
DTB - DTW	19.75	WATER APPEARANCE								
Capacity per foot	.16									
1 Well Volume	3.16									
2 Well Volumes	6.32									
PURGE DATE										
PURGE TIME										
SAMPLE DAY										
SAMPLE TIME										
PUMP DEPTH										
DTW (feet)										
at end of Purging										

SAMPLE LOG

INSTRUMENTS USED:

YSI 556 mps water quality
Solinst 100' water level meter
Bailer

Signature:

[Handwritten Signature]

WESTERN REFINING - GALLUP REFINERY
Q1-2014

MKT - 24		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE	11-14-14	(1)	1531	7.61	12.46	2.437	2.083	1.69	46.3	-147.9
GAUGE TIME	1431	(2)	1534	7.57	12.49	2.509	2.143	1.74	46.6	-147.1
DTB (feet)	30.47	(3)								
Depth to Bottom										
DEDICATED PUMP	NO									
DTW (feet)	22.21	WEATHER CONDITIONS 52°F + cloudy Winds 18 mph from SW								
Depth to Water										
DTB - DTW	8.26									
Capacity per foot	.16									
1 Well Volume	1.32	WATER APPEARANCE Red tint + murky								
2 Well Volumes	2.64									
PURGE DATE	11-14-14									
PURGE TIME	1525									
SAMPLE DAY	11-14-14									
SAMPLE TIME	1540									
PUMP DEPTH										
DTW (feet)										
at end of Purging										

SAMPLE LOG

Purged 2.75 gallons

MKT - 25		TEST PARAMETERS								
		Time (hrs)	pH	Temperature Deg C	Conductivity (uS), (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mV)	
GAUGE DATE	11-14-14	(1)	1520	7.41	13.31	2.966	2.500	2.05	76.4	-150.4
GAUGE TIME	1443	(2)	1525	7.65	13.55	2.999	2.442	2.04	47.7	-151.0
DTB (feet)	19.58	(3)								
Depth to Bottom										
DEDICATED PUMP	NO	(4)								
DTW (feet)	11.46	WEATHER CONDITIONS 52°F + cloudy Winds 18 mph from SW								
Depth to Water										
DTB - DTW	8.12									
Capacity per foot	.16									
1 Well Volume	1.29	WATER APPEARANCE Cloudy, reddish/brown color Purged 2.5 gallons								
2 Well Volumes	2.59									
PURGE DATE	11-14-14									
PURGE TIME	1515									
SAMPLE DAY	11-14-14									
SAMPLE TIME	1533									
PUMP DEPTH										
DTW (feet)										
at end of Purging										

SAMPLE LOG

INSTRUMENTS USED:

VSE 556 mps water ~~test~~ quality meter
Solinst 100' water level meter
Bailler

Signature: *[Signature]*

APPENDIX D

SUMMARY OF WASTE WATER MONTHLY FLOW RATE

(The monthly waste water flow data is submitted on a monthly basis to NMED and OCD.)



APPENDIX E

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APPENDIX F

NEW WELLS – MKTF-19 THRU MKTF-45



DePauli Engineering
& Surveying, LLC.

Civil Engineers and Land Surveyors

Phone: 505-863-5440 • Fax: 505-863-1919 • www.depauliengineering.com

307 South 4th Street • Gallup, NM 87301

PO BOX 876 • Gallup, NM 87305

May 12, 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 16 monitoring wells at Western Refining-Gallup Refinery on April 30, 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. The survey was conducted by an 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 positioning 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.

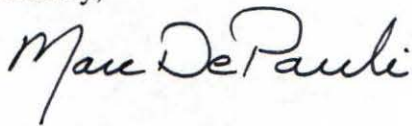
The horizontal positions of the top of the PVC casing or top of the lid (unless otherwise noted) and the vertical positions for the PVC casing, lid, ground elevation inside the steel casing, and the surrounding ground elevation is shown on the attached sheet labeled "Coordinate and Elevation Summary, Western Refining Monitoring Wells" 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 completed on April 30, 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".

Marc DePauli, PE/PS



Coordinate and Elevation Summary, Western Refining Monitoring Wells

<u>Well #</u>	<u>Northing</u>	<u>Easting</u>	<u>Elevation</u>	<u>Description</u>
MKTF-21	1633570.30	2546110.00	6952.57	North edge PVC casing.
			6952.77	Center Steel Lid
			6952.00	North side ground elevation inside steel sleeve
			6952.68	Average elevation of concrete collar.
MKTF-20	1633698.28	2546111.23	6951.78	North edge PVC casing.
			6952.05	Center Steel Lid
			6951.17	North side ground elevation inside steel sleeve
			6951.89	Average elevation of concrete collar.
MKTF-24	1633853.19	2545468.48	6928.72	North edge PVC casing.
			6929.21	Center Steel Lid
			6924.62	North side ground elevation inside steel sleeve
			6926.07	Average elevation of concrete collar.
MKTF-23	1633750.93	2545503.70	6929.98	North edge PVC casing.
			6930.55	Center Steel Lid
			6925.79	North side ground elevation inside steel sleeve
			6927.23	Average elevation of concrete collar.
MKTF-22	1633501.64	2545478.20	6942.31	**North edge PVC casing.
			6942.94	Center Steel Lid
			6938.57	North side ground elevation inside steel sleeve
			6939.76	Average elevation of concrete collar.
** PVC casing not typical.				
MKTF-31	1633898.83	2544938.99	6906.87	North edge PVC casing.
			6907.58	Center Steel Lid
			6903.11	North side ground elevation inside steel sleeve
			6904.26	Average elevation of concrete collar.
MKTF-25	1634015.86	2545275.68	6916.19	North edge PVC casing.
			6916.66	Center Steel Lid
			6911.79	North side ground elevation inside steel sleeve
			6913.35	Average elevation of concrete collar.
MKTF-30	1634225.67	2544937.91	6900.80	North edge PVC casing.
			6901.34	Center Steel Lid
			6896.68	North side ground elevation inside steel sleeve
			6898.10	Average elevation of concrete collar.

Coordinate and Elevation Summary, Western Refining Monitoring Wells

Well #	Northing	Easting	Elevation	Description
MKTF-29	1634249.76	2545258.34	6901.62	North edge PVC casing.
			6901.98	Center Steel Lid
			6897.67	North side ground elevation inside steel sleeve
			6898.83	Average elevation of concrete collar.
MKTF-28	1634263.44	2545650.04	6921.52	North edge PVC casing.
			6922.11	Center Steel Lid
			6917.51	North side ground elevation inside steel sleeve
			6918.67	Average elevation of concrete collar.
MKTF-27	1634115.56	2545620.98	6917.90	North edge PVC casing. (ex. mark)
			6918.49	Center Steel Lid
			6914.18	North side ground elevation inside steel sleeve
			6915.36	Average elevation of concrete collar.
MKTF-26	1634033.63	2545492.39	6915.31	North edge PVC casing.
			6915.86	Center Steel Lid
			6911.35	North side ground elevation inside steel sleeve
			6912.55	Average elevation of concrete collar.
MKTF-19	1633381.19	2545842.82	6944.67	North edge PVC casing.
			6945.00	Center Steel Lid
			6944.34	North side ground elevation inside steel sleeve
			6944.89	Average elevation of concrete collar.
MKTF-34	1633118.42	2545681.30	6945.35	North edge PVC casing.
			6945.71	Center Steel Lid
			6943.52	North side ground elevation inside steel sleeve
			6942.42	Average elevation of concrete collar.
MKTF-32	1633443.56	2544840.32	6911.11	North edge PVC casing.
			6911.68	Center Steel Lid
			6907.16	North side ground elevation inside steel sleeve
			6908.44	Average elevation of concrete collar.
MKTF-33	1633261.99	2545318.27	6939.75	North edge PVC casing.
			N/A	Center Steel Lid
			N/A	North side ground elevation inside steel sleeve
			6936.59	Elevation of surrounding ground.

Monitoring well has no concrete collar and steel casing.



Marc DePauli
 Marc DePauli PS13606

5-12-2014
 Date

Client WESTERN REFINING SW, INC.			Project Number WEST 14003		Boring No. \ Well No. MKTF-35
Project Name GALLUP REFINERY - HYDROCARBON SEEP			Sheet 1 of 1		
Saturation Depth 10'	Total Depth 18'	GPS Coordinates N35°29.240'N W108°25.692'		Logged By TRACY PAYNE	
Drilling Methods \ Auger Size \ Bit Size HOLLOW STEM AUGER 7.5"			Drilling Rig CME 75	Driller C. ORTIZ	Drilling Company ENVIRO-DRILL, INC.
Sampling Method \ Size of Sampler SPLIT SPOON 2"DIA, 2' LONG			Start Date 11.19.14		Finish Date 11.19.14
Comments			Start Time 0815		Finish Time 1045

Field Screening			Lithologic Interval (feet bgl)	Symbol	% Recovery	Description of Lithology
Depth (feet bgl)	PID (ppm)	Air Temp. (°F)				
			0-6"	-	100	ASPHALT / BASE
6"-2'	4.5	28	6"-2'	CL	100	SILTY CLAY - LOW, V. STIFF, DAMP, BROWN
2-4'	46.6	28	2-4'	CL	20	SILTY CLAY - STA, ODOR, GRAVEL PRESENT
4-6'	95	28	4-6'	CL	90	SILTY CLAY / SAND / GRAVEL - LOW, DAMP, BROWN
						ODOR - V. COARSE GRAIN SAND - 1/4" → 1"
						GRAVEL, ODOR
6-8'	64	28	6-8'	CL	80	SILTY CLAY - LOW, FIRM, DAMP, REDDISH BROWN
						ODOR, OCCASIONAL GRAVEL
8-10	78	28	8-10	CL	90	SILTY CLAY / SAND / GRAVEL - ST 4-6'
						DAMP → MOIST, ODOR
10-12	1790	28	10-11.5	CL	80	SILTY CLAY / SAND / GRAVEL - STA, SAT., HC
						ODOR
			11.5-12	CL	90	SILTY CLAY - LOW, STIFF, DAMP, REDDISH
						BROWN, LT GRAY CLAY AT BASE, HC ODOR
12-14	2400	28	12-14	CL	90	SILTY CLAY / SANDY CLAY - LOW, FIRM TO
						STIFF, DAMP, GRAY HC
						ODOR SAND / SILT VARIES ACROSS
						INTERVAL GRAVELLY
14-16	745	28	14-16	CL	90	SANDY CLAY - STA, DAMP, GRAY,
						BROWN AT BASE, HC ODOR
16-18	37	28	16-18	CL	90	CLAY - MOD, V. STIFF, DAMP, BROWN AND
						GRAY, FAINT ODOR

WELL CONSTRUCTION DATA

Well Number:

MKTF-35

Prepared by:

TRACY PAYNE

Start Date:

11.19.14

Finish Date:

11.19.14

WELL LOCATION:

Client Name:

WESTERN REFINING SW, INC.

Project No.

WEST14003

Project Name:

GALLUP REFINERY - HYDROCARBON SEEP

Address of Site:

92 GIANT CROSSING RD GALLUP, NM 87301

Drilling Contractor:

ENVIRO-DRILL, INC.

Driller:

C. ORTIZ

GPS Coordinates:

N35°29.240'N W108°25.692'

WELL TYPE:

☒ MONITOR☐ RECOVERY☐ OBSERVATION☐ TEMPORARY☐ PERMANENT☐ REPLACEMENT☐ SINGLE CASSED☐ SHALLOW☐ INTERMEDIATE☐ DEEP☐ DOUBLE CASSED☐ OTHER

INSTALLATION DATA

DECONTAMINATION:

☐ STEAM CLEAN☐ SOAP WASH☐ HIGH PRESSURE WASH

CASING TYPE:

☐ PVC☐ STAINLESS☐ TEFLON☐ OTHER

JOINTS:

☐ THREADED☐ WELDED☐ COUPLED☐ SCREWED

SURFACE CASING:

☐ NO☐ YES☐ DESCRIBE

WELL SCREEN:

☐ PVC☐ STAINLESS☐ TEFLON☐ OTHER

DIAMETER:

☐ 2"☐ 4"☐ 6"☐ OTHER _____ IN

SLOT SIZE:

☐ 0.010☐ 0.020☐ OTHER _____ IN

SAND:

SIZE 10-20

LBS/SACK _____

5

BENTONITE:

SIZE 3/8"

LBS/SACK _____

LBS/BUCKET _____

1

DRILLING METHOD:

☒ HOLLOW STEM☐ SOLID STEM☐ MUD ROTARY☐ HAND AUGER

BIT SIZE:

☐ 6" ☐ 8" ☐ 10" ☐ 12" ☐ 14"☒ OTHER 7.5 IN

DRILLING MUD:

☒ NONE☐ BENTONITE☐ WATER☐ OTHER

CENTRALIZER:

☒ NO☐ YES☐ INTERVAL

COMPLETION:

☒ FLUSH MOUNT☐ STICKUP☐ VAULT

PAD:

☐ 4' X 4'☐ 5' X 5'☐ OTHER

CUTTINGS:

☒ DRUMMED

NUMBER OF DRUMS 1

☐ ROLLOFF BOX

ID NUMBER OF BOX _____

☐ SPREAD☐ OTHER

COMMENTS:

WELL DEVELOPMENT DATA

DATE:

TIME:

PRE-DEVELOPMENT MEASUREMENTS/OBSERVATIONS:

DEPTH TO HC:

☐ BTOC☐ BGL

DEPTH TO GW:

☐ BTOC☐ BGL

TOTAL DEPTH:

☐ BTOC☐ BGL

APPEARANCE:

☐ PSH☐ SILTY☐ TURBID☐ OPAQUE☐ CLEAR

ODOR:

☐ YES☐ NO

TYPE

DEVELOPMENT METHOD:

☐ NONE☐ BAILING☐ PUMPING☐ AIR LIFT

TIME:

☐ SURGE & BLOCK☐ OTHER

AMOUNT:

☐ 10 MIN☐ 20 MIN☐ OTHER☐ 5 GAL☐ 10 GAL☐ OTHER

GAL

POST-DEVELOPMENT MEASUREMENTS/OBSERVATIONS:

DEPTH TO HC:

☐ BTOC☐ BGL

DEPTH TO GW:

☐ BTOC☐ BGL

TOTAL DEPTH:

☐ BTOC☐ BGL

APPEARANCE:

☐ PSH☐ SILTY☐ TURBID☐ OPAQUE☐ CLEAR

ODOR:

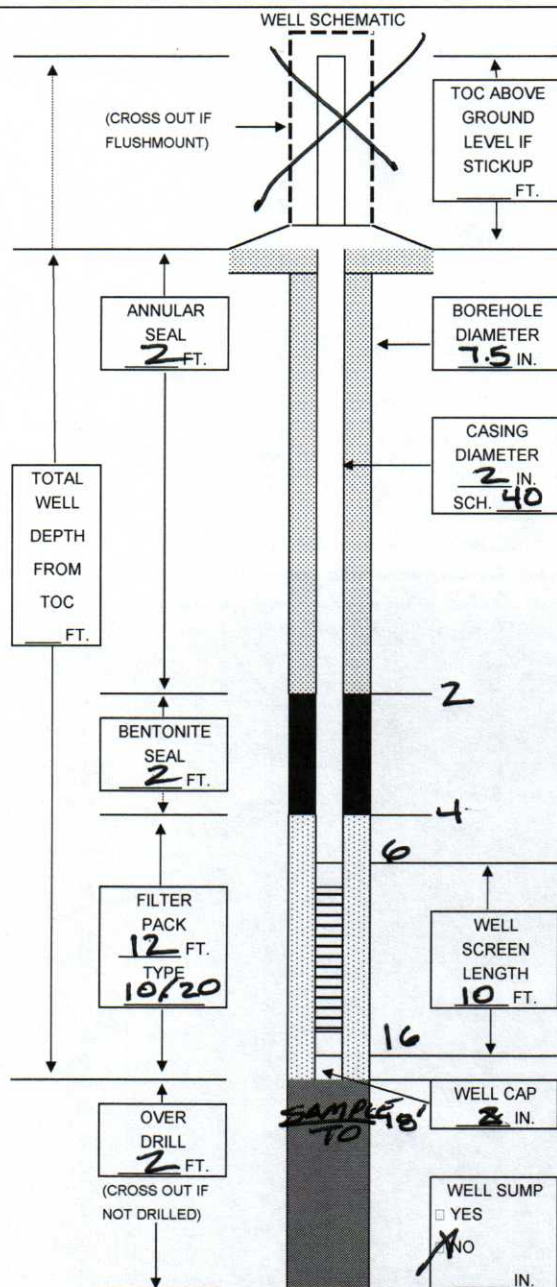
☐ YES☐ NO

TYPE

DISPOSITION OF FLUIDS

☐ DRUMMED☐ WWTS☐ TREATED☐ POTW☐ OTHER

COMMENTS:



Field Screening			Lithologic Interval (feet bgl)	Symbol	% Recovery	Description of Lithology
Depth (feet bgl)	PID (ppm)	Air Temp. (°F)				
			0-6" -	100	ASPHALT / BASE	
6"-2'	812	54	6"-2	CL 90	SANDY CLAY - LOW, STIFF, DRY, TAN, NO ODOR GRAVEL THROUGHOUT	
2-4'	276	54	2-4	CL 60	SILTY CLAY - LOW, V. STIFF, DRY, BROWN, HC ODOR	
4-6'	1700	54	4-6	CL 60	SILTY CLAY - STA, TRACE SAND / GRAVEL, HC ODOR	
6-8'	2411	54	6-8	CL 90	SILTY CLAY / SAND / GRAVEL - LOW, FIRM, DAMP TAN, COARSE V. COARSE SAND, 1/4" → 1" GRAVEL, HC ODOR, MOIST → V. MOIST IN SEAMS	
8-10'	2278	54	8-10	CL 90 SP GP	SILTY CLAY / SAND / GRAVEL - STA, MOIST, FLUID IN TOP OF SAMPLING THE SPOON STRONG HC ODOR TRACE PSH	
10-12'	1879	54	10-12	CL 90 SP GP	SILTY CLAY / SAND / GRAVEL - STA, SAT., PSH	
12-14'	405	54	12-13	CL 90 SP GP	SILTY CLAY / SAND / GRAVEL - STA, SAT., PSH	
			13-14	CL 90	SILTY CLAY - LOW, STIFF, DAMP, BROWN, HC ODOR	
14-16'	450	54	14-16	CL 90	SILTY CLAY - STA, DAMP, HC ODOR	

WELL CONSTRUCTION DATA

Well Number:

MKTF-36

Prepared by:

TRACY PAYNE

Start Date:

11.19.14

Finish Date:

11.19.14

WELL LOCATION:

Client Name:

WESTERN REFINING SW IN WEST 14003

Project No.

Project Name:

GALLUP REFINERY- HYDROCARBON SEEP

Address of Site:

92 GIANT CROSSING RD GALLUP NM 87301

Drilling Contractor:

ENVIRO-DRILL, INC

Driller:

C. ORTIZ

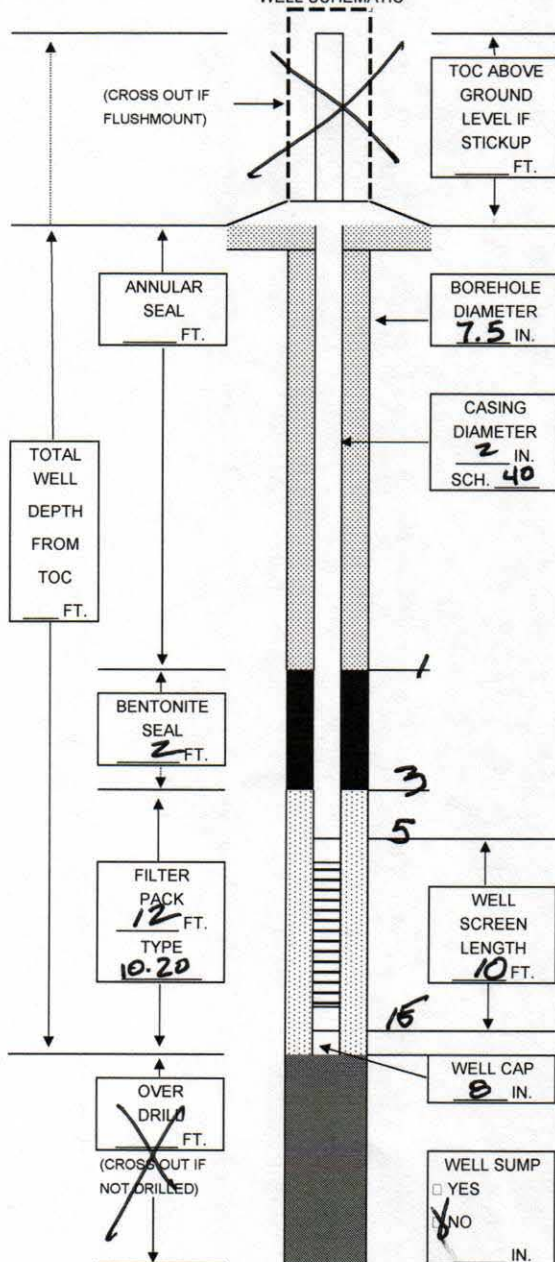
GPS Coordinates:

N35°29.266' W108°25.708

WELL TYPE:

☒ MONITOR☐ RECOVERY☐ OBSERVATION☐ TEMPORARY☐ PERMANENT☐ REPLACEMENT☐ SINGLE CASING☐ SHALLOW☐ INTERMEDIATE☐ DEEP☐ DOUBLE CASING☐ OTHER

WELL SCHEMATIC



INSTALLATION DATA

DECONTAMINATION:

☐ STEAM CLEAN☐ SOAP WASH☒ HIGH PRESSURE WASH

CASING TYPE:

☒ PVC☐ STAINLESS☐ TEFLON☐ OTHER

JOINTS:

☒ THREADED☐ WELDED☐ COUPLED☐ SCREWED

SURFACE CASING:

☒ NO☐ YES☐ DESCRIBE

WELL SCREEN:

☒ PVC☐ STAINLESS☐ TEFLON☐ OTHER

DIAMETER:

☒ 2"☐ 4"☐ 6"☐ OTHER

SLOT SIZE:

☒ 0.010☐ 0.020☐ OTHER

SAND:

SIZE 10-20

LBS/SACK

9

BENTONITE:

SIZE 3/8"

LBS/SACK

LBS/BUCKET

1

DRILLING

☒ HOLLOW STEM☐ SOLID STEM☐ MUD ROTARY☐ HAND AUGER

METHOD:

☐ AIR ROTARY☐ DIRECT PUSH☐ OTHER

BIT SIZE:

☐ 6"☐ 8"☐ 10"☐ 12"☐ 14"☒ OTHER 7.5 IN

DRILLING MUD:

☐ NONE☐ BENTONITE☐ WATER☐ OTHER

CENTRALIZER:

☐ NO☐ YES☐ INTERVAL

COMPLETION:

☒ FLUSH MOUNT☐ STICKUP☐ VAULT

PAD:

☐ 4' X 4'☐ 5' X 5'☐ OTHER

CUTTINGS:

☒ DRUMMED

NUMBER OF DRUMS

2

☐ ROLLOFF BOX

ID NUMBER OF BOX

☐ SPREAD

OTHER

COMMENTS:

WELL DEVELOPMENT DATA

DATE:

TIME:

PRE-DEVELOPMENT MEASUREMENTS/OBSERVATIONS:

DEPTH TO HC:

☐ BTOC☐ BGL

DEPTH TO GW:

☐ BTOC☐ BGL

TOTAL DEPTH:

☐ BTOC☐ BGL

APPEARANCE:

☐ PSH☐ SILTY☐ TURBID☐ OPAQUE☐ CLEAR

ODOR:

☐ YES☐ NO

TYPE

DEVELOPMENT

☐ NONE☐ BAILING☐ PUMPING☐ AIR LIFT

METHOD:

☐ SURGE & BLOCK☐ OTHER

TIME:

☐ 10 MIN☐ 20 MIN☐ OTHER

AMOUNT:

☐ 5 GAL☐ 10 GAL☐ OTHER

POST-DEVELOPMENT MEASUREMENTS/OBSERVATIONS:

DEPTH TO HC:

☐ BTOC☐ BGL

DEPTH TO GW:

☐ BTOC☐ BGL

TOTAL DEPTH:

☐ BTOC☐ BGL

APPEARANCE:

☐ PSH☐ SILTY☐ TURBID☐ OPAQUE☐ CLEAR

ODOR:

☐ YES☐ NO

TYPE

DISPOSITION OF

☐ DRUMMED☐ WWTS☐ TREATED☐ POTW☐ OTHER

COMMENTS: