Western Refining
GALLUP

ENTERED

WNR LISTED NYSE

September 12, 2011

James P. Bearzi, Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive, East, Building 1
Santa Fe, NM, 87505-6303

Re: **Approval with Modifications**
Annual Ground Water Monitoring Report:
Gallup Refinery 2009
Western Refining Company, Southwest, Inc., Gallup Refinery,
HWB-WRG-10-007
EPA ID # NMD000333211

Dear Mr. Kieling:

Western Refining Company has prepared the following response to your letter dated July 22, 2011.

Comment 1

Western will improve its QA procedures prior to submitting reports to NMED. Part of this will be to conduct data entry well in advance of report preparation. The Summary of General Chemistry Detected in NAPIS Wells (2008-2009) replacement page is included as *Attachment 1*.

Comment 2

Western received Approval with Modifications of the New Well Installation Report from NMED on June 4, 2010 and no reference was made regarding MW-2A boring log as incomplete or revising report to cross reference MW-2A and MW-1A to the correct well identification of OW-50 and OW-52 throughout the report. The Letter Report from AMEC has been revised to incorporate OW-50 and OW-52 as the designated well identifications. The revised report is included as *Attachment 2.*

Comment 3

In the future Western will collect ground water samples within two weeks after installation and development of new ground water monitoring wells or state reasons for not completing the activity in future submittals.

If you have any further questions please contact Cheryl Johnson of my staff at 505-722-0231.

Sincerely,

Ed Riege
Environmental Manager
cc: J. Kieling, NMED HWB
D. Cobrain, NMED HWB
K. Van-Horn, NMED HWB
C. Chavez, OCD
Cheryl Johnson, WNR-Gallup
/attachments

Summary of General Chemistry detected in NAPIS Wells (2008-2009)

Sample ID	Collection Date	Method	Fl (mg/L)	Cl (mg/L)	Nitrate + Nitrate as N	Sulfate	pH	Specific Conductance (mmhos/cm)
Standards	NMWQS		1.6	250	10	600	6 to 9	NS
	EPA MCLS		4	250	10 Nitrate 1 Nitrite	250	6 to 9	10
	RRSL		NS	NS	58 / 3.7	NS	NS	NS
NAPIS 1	11/23/2009	GEN CHEM	1.4	170	1.8	100	7.39	**2000**
	8/11/2009	GEN CHEM	1.2	160	0.54	93	7.67	**1800**
	5/28/2009	GEN CHEM	1.2	150	0.31	71	7.82	**1900**
	3/24/2009	GEN CHEM	0.69	120	<1.0	38	7.69	**2000**
	11/10/2008	GEN CHEM	0.73	160	1.6	63	7.30	**1900**
	9/30/08	GEN CHEM	General Chemistry Parameters not requested					
	7/9/2008	GEN CHEM	1.4	180	<1.0	98	7.27	**1900**
	4/11/2008	GEN CHEM	0.79	170	0.55	<0.50	7.26	**2000**
NAPIS 2	11/23/2009	GEN CHEM	1.6	220	<1.0	13	7.16	**1500**
	8/11/2009	GEN CHEM	**1.7**	250	<1.0	17	7.56	**1500**
	5/28/2009	GEN CHEM	**1.7**	210	0.16	22	7.51	**1400**
	3/24/2009	GEN CHEM	1.5	240	<1.0	23	7.47	**1800**
	11/10/2008	GEN CHEM	1.4	200	<1.0	32	7.21	**1600**
	9/30/2008	GEN CHEM	General Chemistry Parameters not requested					
	7/9/2008	GEN CHEM	1.1	**270**	<1.0	33	7.18	**2000**
	4/11/2008	GEN CHEM	0.92	**360**	<1.0	42	7	**2100**
NAPIS 3	11/23/2009	GEN CHEM	0.49	**1100**	15	370	7.91	**4400** ok
	8/31/2009	GEN CHEM	**0.47**	1000	14	<10	8.07	**4000**
	6/15/2009	GEN CHEM	0.46	**1200**	18	330	8.23	**4200** ok
	3/25/2009	GEN CHEM	0.43	**1200**	<1.0/14	340	8.11	**5200**
	11/10/2008	GEN CHEM	1.1	**1100**	<1.0/2.6	310	8.05	**4300**
	9/30/2008	GEN CHEM	Not enough water to sample - DRY					
	7/9/2008	GEN CHEM	0.46	**1100**	9.1	**270**	8.29	**4200**
KA 3	11/23/2009	GEN CHEM	1.3	**610**	**3.2**	**120**	7.31	**2900**
	8/31/2009	GEN CHEM	2.4	**230**	**<2.0**	50	7.58	**1500**
	5/28/2009	GEN CHEM	1.6	**260**	**0.22**	**66**	7.71	**1700** ok
	3/25/2009	GEN CHEM	1.5	**340**	**<1.0/0.90**	**76**	7.64	**2400**
	11/10/2008	GEN CHEM	0.46	**590**	**2.0/11**	**140**	7.34	**2700**

Napis 1 & 2: Began sampling in second quarter of 2008. NAPIS 3 began sampling in third quarter 2008. KA-3 began sampling in fourth quarter of 2008.

Notes: NS = No Standards;
-- = No Detect;
Bold Values represent Values above the applicable standard.

ATTACHMENT 2

12 September 2011
AMEC Project No. 9-517-000057

Ms. Michelle Young
Western Refining: Gallup Refinery
Route 3, Box 7
Gallup, NM 87301

Re: Letter Report for Monitoring Well Construction

Dear Ms. Young:

AMEC Earth and Environmental, Inc. (AMEC) is pleased to submit this letter report documenting groundwater monitoring well activities at the Western Refinery facility located near Gallup, New Mexico.

Site Background

The project site is located at the Gallup Refinery located north of I-40. The area to the north of the existing refinery consists of an open area. Access roads run through these open areas in the northeast portion of the property. Previously constructed monitor wells are located throughout the property.

Investigation Activities Conducted

AMEC drilled two (2) groundwater monitor wells MW-1A (OW-52) and MW-2A (OW-50) to depths of between 50 and 79 feet using a CME-75 truck mounted drill rig in the northeast corner of the property. A site plan showing the location of the new monitoring wells is attached.

The original two monitor wells (MW-1, MW-2) were abandoned due to difficult subsurface conditions. Two replacement wells were drilled (MW-1A, MW-2A). Soil samples from MW-1 and MW-2 were obtained at several depth intervals and tested for VOC's with a photo ionization detector (PID). Results are shown in Table 1 below.

Table 1
Photo Ionization Detector (PID) Results
Collected on October 1 and 2, 2009

Sample Depth (ft)	MW-1	Sample Depth (ft)	MW-2
60	ND**	5	ND
65	ND	10	ND
70	ND	15	ND
		20	ND
		25	ND
		30	ND
		35	1.1*
		40	1.1
		45	1.1

* Concentration in parts per million (ppm)
** ND = Not detected within limits of PID

If you have questions regarding the information contained within this letter report, please do not hesitate to contact us at 505.821.1801

Best Regards,

AMEC Earth and Environmental, Inc.

Rosanne Klausfer

Lee J. Mitchell, P.E.
Project Engineer

Ralph E. Crockett, P.E.
Senior Geotechnical Engineer

Copies: Addressee (3)

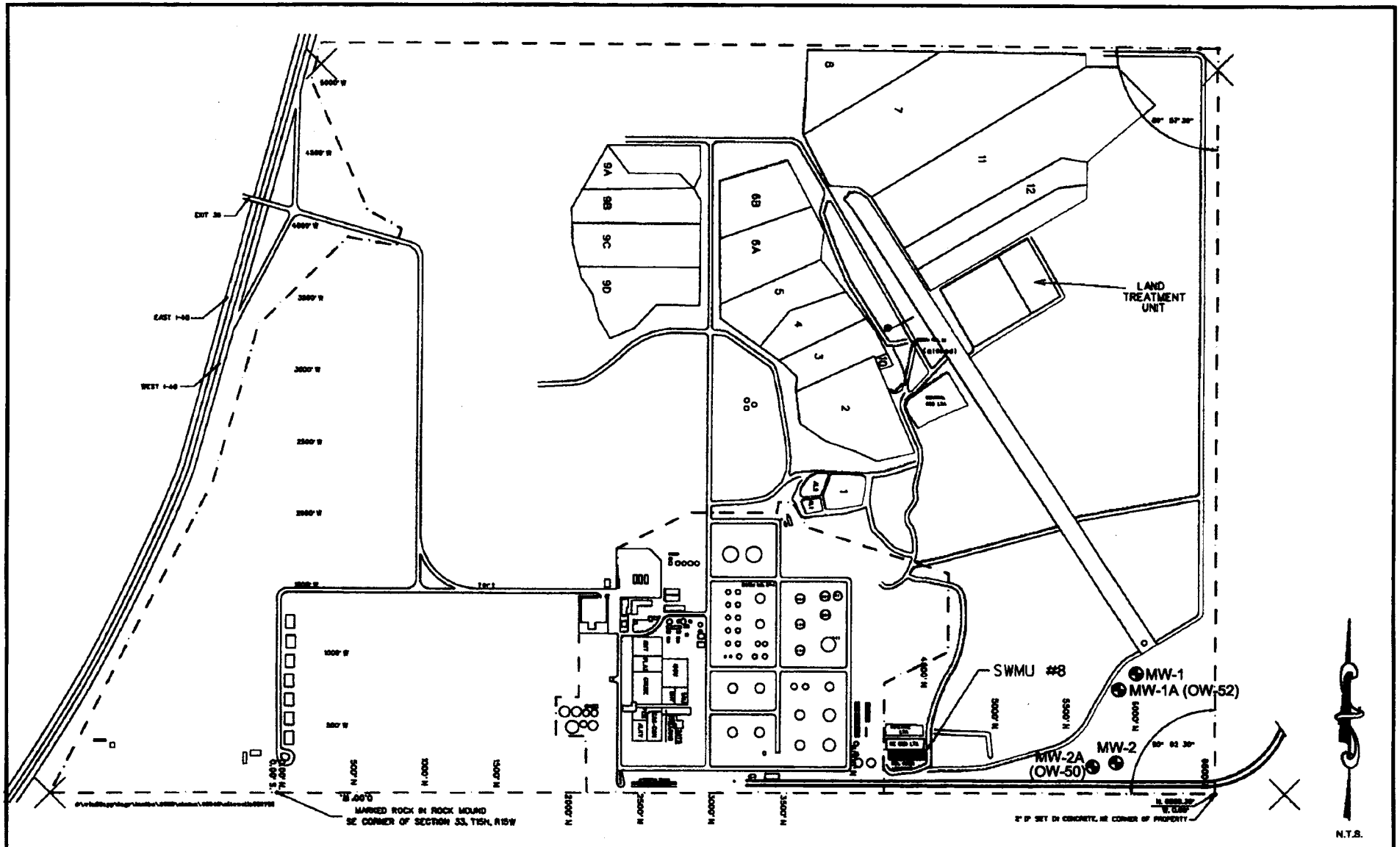
AMEC Earth & Environmental, Inc.
8519 Jefferson, N.E.
Albuquerque, New Mexico 87113
Telephone: 505/821-1801
Fax: 505/821-7371
www.amec.com

APPENDIX A

SITE PLAN

SOIL BORING LOGS

WELL CONSTRUCTION DIAGRAMS



CLIENT LOGO	CLIENT	DWN BY: BDP	PROJECT	REV. NO.: A
	WESTERN REFINERIES	CHK'D BY: N/A	GALLUP REFINERY	DATE: NOV 2009
AMEC Earth & Environmental 3519 Jefferson Rd NE Albuquerque, New Mexico 87113	amec	DATUM: N/A PROJECTION: N/A SCALE: AS SHOWN	TITLE SOIL BORING LOCATION PLAN	PROJECT NO: 9-517-000057 FIGURE No. 1

PROJECT Gallup Refinery Monitoring Wells
Gallup, New Mexico
DATE 10/5/09
AMEC PROJECT NO. 9517-000057

BORING NO. MW-1

LOCATION See Site Plan
RIG TYPE CME-75
BORING TYPE Air Rotary
SURFACE ELEV.
DATUM

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/ft. 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0								SM		**SILTY SAND**, fine grained, reddish-brown
5				BS				CH	PID - 0	**CLAY**, high plasticity, red-brown, moist
10				BS						
15				BS						
20				BS						
▼ 25				BS						
30				BS						
35				BS						
40				BS				CH	PID - 0	**CLAY**, trace of silt and sand, high plasticity, dark brown, moist trace of gravel at 41', gravel up to 1/4"
45				BS				CH	PID - 0	**CLAY**, some silt, high plasticity, pink-brown, moist
50										

GEOTECH_BH 9517-057 GALLUP REFINERY.GPJ GINT STD US JANNEY GDT 9/12/11

GROUNDWATER

	DEPTH	HOUR	DATE
▽	70.7	16:30	10/1/09
▼	25.4	7:30	10/2/09

SAMPLE TYPE
A-Auger cuttings, NR-No Recovery
BS-Bulk Sample
S-2" O.D. 1.38" I.D. tube sample.
U-3" O.D. 2.42" I.D. tube sample
T-3" O.D. thin-walled Shelby tube.
R-Ring Sample

AMEC Earth & Environmental

PROJECT Gallup Refinery Monitoring Wells
Gallup, New Mexico
DATE 10/5/09
AMEC PROJECT NO. 9517-000057

BORING NO. MW-1
LOCATION See Site Plan
RIG TYPE CME-75
BORING TYPE Air Rotary
SURFACE ELEV.
DATUM

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/ft. 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
50				BS				CH	PID - 0.0	**CLAY**, some silt, high plasticity, pink-brown, moist trace of calcareous cementation nodules at 50' - 59'
55				BS						
60				BS				CH	PID - 0.0	**CLAY**, some silt, some calcareous cementation nodules, high plasticity, light purple
65									PID - 0.0	pink-brown at 64' - 67' light purple at 67'
70									PID - 0.0	**SILTY SAND TO SAND** fine grained, nonplastic, light purple and white, some calcareous cementation nodules, very moist at 72' - 74'
75										End of boring at 74'
80										
85										
90										
95										
100										

GEOTECH_RH 9517-057 GALLUP REFINERY.GPJ GINT STD US JANNEY GDT 9/12/11

GROUNDWATER

	DEPTH	HOUR	DATE
▽	70.7	16:30	10/1/09
▼	25.4	7:30	10/2/09

SAMPLE TYPE
A-Auger cuttings; NR-No Recovery
BS-Bulk Sample
S-2" O.D. 1.38" I.D. tube sample
U-3" O.D. 2.42" I.D. tube sample
T-3" O.D. thin-walled Shelby tube
R-Ring Sample

AMEC Earth & Environmental

PROJECT Gallup Refinery Monitoring Wells
Gallup, New Mexico
DATE 10/5/09
AMEC PROJECT NO. 9517-000057

BORING NO. MW-1A (OW-52)

LOCATION See Site Plan
RIG TYPE CME-75
BORING TYPE HSA
SURFACE ELEV. 6823.00
DATUM

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/ft. 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0								SM		**SILTY SAND** fine, reddish-brown, dry (0' - 3')
5								CH		**CLAY**, some silt, high plasticity, reddish-brown, dry (5' - 20')
10										
15										
20										some silt, dry (20' - 30')
25										
30										damp @ (30' - 40')
35										
40										**CLAY**, trace medium gravel, reddish-brown, high to medium plasticity, dry (40' - 50')
45										
50										

GEOTECH_BH 9517-057 GALLUP REFINERY.GPJ GINT STD US JANNEY GDT 9/12/11

GROUNDWATER

	DEPTH	HOUR	DATE
▽	72.0		
▼			

SAMPLE TYPE
A-Auger cuttings, NR-No Recovery
BS-Bulk Sample
S-2" O.D. 1.38" I.D. tube sample
U-3" O.D. 2.42" I.D. tube sample
T-3" O.D. thin-walled Shelby tube
R-Ring Sample

AMEC Earth & Environmental

PROJECT Gallup Refinery Monitoring Wells
Gallup, New Mexico
DATE 10/5/09
AMEC PROJECT NO. 9517-000057

BORING NO. MW-1A (OW-52)

LOCATION See Site Plan
RIG TYPE CME-75
BORING TYPE HSA
SURFACE ELEV. 6823.00
DATUM

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/ft. 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
50										
55										
60										**CLAY<** (shale), with calcareous cementation nodules, reddish-brown, dry (60' - 68')
65										**CLAY<** (shale), with calcareous cementation nodules, reddish-brown, dry (65' - 68")
70									split spoon sample	**SHALE** reddish-brown, calcareous cementation nodules, dry (BGS 68' - 70')
										fine to medium silty sand, fine gravel, gray, reddish-brown, wet at 70' bgs (70' - 72' 5")
75										**SILTY SAND** gravel, calcareous cementation nodules, wet (72' 5" - 79')
80										Stopped boring at 79'
85										
90										
95										
100										

GEOTECH BH 9517-057 GALLUP REFINERY.GPJ GINT STD US JANNEY GDT 9/12/11

GROUNDWATER

	DEPTH	HOUR	DATE
▽	72.0		
▼			

SAMPLE TYPE
A-Auger cuttings, NR-No Recovery
BS-Bulk Sample
S-2" O.D. 1.38" I.D. tube sample
U-3" O.D. 2.42" I.D. tube sample
T-3" O.D. thin-walled Shelby tube
R-Ring Sample

AMEC Earth & Environmental

PROJECT Gallup Refinery Monitoring Wells
Gallup, New Mexico

DATE 10/2/09

AMEC PROJECT NO. 9517-000057

BORING NO. MW-2

LOCATION N35° 29' 45.1", W 108° 25' 25"
RIG TYPE CME-75
BORING TYPE Air Rotary
SURFACE ELEV. 6748.00
DATUM

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/ft. 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0								CH		**CLAY**, high plasticity, reddish-brown
5				BS					PID - 0.0	
10				BS					PID - 0.0	
15				BS					PID - 0.0	
20				BS					PID - 0.0	
25				BS					PID - 0.0	
30				BS					PID - 0.0	
35				BS					PID - 1.1 ppm	
40				BS					PID - 1.0 ppm	trace of calcareous cementation at 40', dark brown
45				BS					PID - 1.1 ppm	
50										

GEOTECH_BH 9517-057 GALLUP REFINERY.GPJ GINT STD US JANNEY GDT 9/12/11

GROUNDWATER

	DEPTH	HOUR	DATE
▽	none		
▼			

SAMPLE TYPE
A-Auger cuttings; NR-No Recovery
BS-Bulk Sample
S-2" O.D. 1.36" I.D. tube sample.
U-3" O.D. 2.42" I.D. tube sample
T-3" O.D. thin-walled Shelby tube
R-Ring Sample

AMEC Earth & Environmental

PROJECT Gallup Refinery Monitoring Wells
Gallup, New Mexico

JOB NO. 9517-000057 **DATE** 10/2/09

LOG OF TEST BORING NO. MW-2

LOCATION N35° 29' 45.1", W 108° 25' 25"
RIG TYPE CME-75
BORING TYPE Air Rotary
SURFACE ELEV. 6748.00
DATUM

Depth in Feet	Continuous Penetration Resistance	Graphic Soil Log	Sample	Sample Type	Blows/6-in. 140 lb. 30" free-fall drop hammer	Downhole LEL/PID	Headspace PID (ppm)	Unified Soil Classification	ANALYTICAL SAMPLE NUMBER	VISUAL CLASSIFICATION
50										Borehole plugged at 50' due to swelling clay
55										
60										
65										
70										
75										
80										
85										
90										
95										
100										

GROUNDWATER

	DEPTH	HOUR	DATE
▽	none		
▼			

SAMPLE TYPE
A-ANALYTICAL SAMPLE
BS-BULK SAMPLE

PROJECT Gallup Refinery Monitoring Wells
Gallup, New Mexico
DATE 10/5/09
AMEC PROJECT NO. 9517-000057

BORING NO. MW-2A (OW-50)

LOCATION See Site Plan
RIG TYPE CME-75
BORING TYPE HSA
SURFACE ELEV. 6748.00
DATUM

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/ft. 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0								SM		**FINE SILTY SAND**, reddish clay nodules (0' - 5')
5								CH		**CLAY**, high plasticity, red, damp (5' - 10')
10										some silt, damp (10' - 20')
15										
20										
25										
30									pull 5' auger out of hole, knock out wood plug, let set over night time: 15:45	
35										
40										
45								CH		**CLAY**, high plasticity, brown
50										

GEOTECH_BH 9517-057 GALLUP REFINERY.GPJ GINT STD US JANNEY.GDT 9/12/11

GROUNDWATER

	DEPTH	HOUR	DATE
▽	none		
▼			

SAMPLE TYPE
A-Auger cuttings; NR-No Recovery
BS-Bulk Sample.
S-2" O.D. 1 38" I.D tube sample
U-3" O.D. 2 42" I D tube sample
T-3" O.D. thin-walled Shelby tube
R-Ring Sample

AMEC Earth & Environmental

PROJECT Gallup Refinery Monitoring Wells
Gallup, New Mexico
DATE 10/5/09
AMEC PROJECT NO. 9517-000057

BORING NO. MW-2A (OW-50)

LOCATION See Site Plan
RIG TYPE CME-75
BORING TYPE HSA
SURFACE ELEV. 6748.00
DATUM

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/ft. 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
50								CH		**CLAY**, high plasticity, brown
55										
60								SM		**SILTY SAND**, gravel, calcareous cementation nodules
										SHALE, reddish-brown, calcareous cementation nodules
										Stopped boring @ 63'
65										
70										
75										
80										
85										
90										
95										
100										

GEOTECH_BH 9517-057 GALLUP REFINERY.GPJ GINT STD US JANNEY.GDT 9/12/11

GROUNDWATER

	DEPTH	HOUR	DATE
▽	none		
▼			

SAMPLE TYPE
A-Auger cuttings; NR-No Recovery
BS-Bulk Sample
S-2" O.D. 1.38" I.D. tube sample.
U-3" O.D. 2.42" I.D. tube sample.
T-3" O.D. thin-walled Shelby tube.
R-Ring Sample

AMEC Earth & Environmental

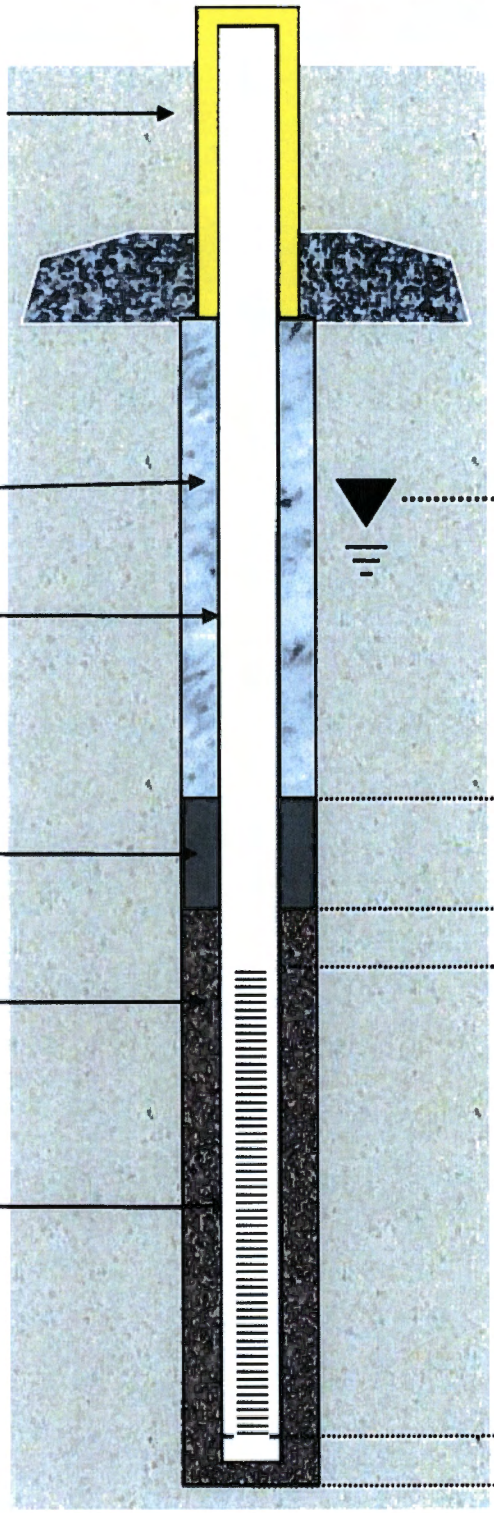
Project Name: Western Refining	
Project Number: 9-517-000057	

WELL CONSTRUCTION DIAGRAM

WELL NUMBER: OW-52 (MW-1A)
LOCATION: Western Refining Gallup, NM
DRILL METHODS: Air Rotary/HSA

DIAMETER: 2" ID
DATE INSTALLED: 10-06-09
DRILL COMPANY: GSI

NOT TO SCALE



Approximate Depth Below Ground Surface (feet)

ABOVE GROUND MONUMENT
3' Above Ground Surface w/ J-plug & locking lid

BACKFILL
TYPE: Expansive Grout
(Portland cement/bentonite slurry)

Static Water Depth 16.75

RISER
MATERIAL: SCH 40 PVC
DIAMETER: 2" ID

58.0

Pure Bentonite
Thickness: 4.0 '

62.0

64.0

SAND PACK
TYPE: 10/20 Silica Sand

SCREEN
MATERIAL: SCH 40 PVC
DIAMETER: 2" ID
SLOT: 0.010 "

79.0

79.5

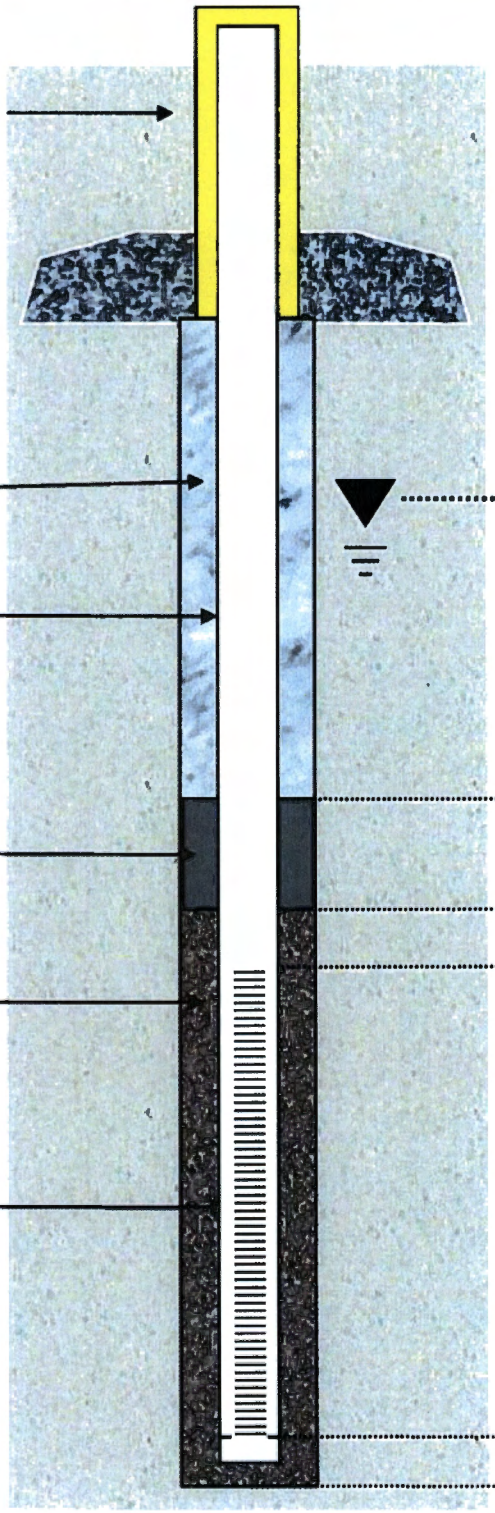
Project Name: Western Refining	
Project Number: 9-517-000057	

WELL CONSTRUCTION DIAGRAM

WELL NUMBER: OW-50 (MW-2A)
LOCATION: Western Refining Gallup, NM
DRILL METHODS: Air Rotary/HSA

DIAMETER: 2" ID
DATE INSTALLED: 10-08-09
DRILL COMPANY: GSI

NOT TO SCALE



Approximate Depth Below Ground Surface (feet)

ABOVE GROUND MONUMENT
3' Above Ground Surface w/ J-plug & locking lid

BACKFILL
TYPE: Expansive Grout
(Portland cement/bentonite slurry)

Static Water Depth 18.20

RISER
MATERIAL: SCH 40 PVC
DIAMETER: 2" ID

44.0

Pure Bentonite
Thickness: 4.0 '

46.0

48.0

SAND PACK
TYPE: 10/20 Silica Sand

SCREEN
MATERIAL: SCH 40 PVC
DIAMETER: 2" ID
SLOT: 0.010 "

63.0

63.5