Western Refining
GALLUP

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Certified Return Receipt: #7010 0290 0002 7735 3387

December 5, 2011

Mr. John Kieling, Chief
NMED - Hazardous Waste Bureau
2905 Rodeo Park Drive East, Bldg 1
Santa Fe, NM 87505-6303

RE: Notice of Disapproval
Requirement to Resurvey Ground Water Monitoring Wells and Recovery Wells
Western Refining Company, Southwest, Inc., Gallup Refinery
EPA ID #NMD000333211
HWB-WRG-11-003

Dear Mr. Kieling:

Western Refining Southwest, Gallup Refinery is pleased to submit the following response to the above referenced matter.

Comment 1

NMED's NOD Annual Ground water Monitoring Report dated May 16, 2011, Comment 15 d. states "*It appears that all the wells need to be resurveyed to provide accurate information.*" On June 7, 2011, DePauli Engineering & Surveying, LLC completed their survey of the active ground water monitoring wells and the recovery wells at the request of Gallup Refinery. On June 8, 2011 Western received correspondence from NMED – HWB "Requirement to Resurvey Ground Water Monitoring Wells and Recovery Wells in which Western was required to submit a work plan describing the proposed methods that will be used to re-survey the existing wells. The survey had already been completed prior to receiving the correspondence requiring a work plan.

Comment 2

DePauli Engineering & Surveying has re-submitted their survey report to address issues concerning survey point locations on each well. Copy of survey report is attached.

Comment 3

Monitoring well (MW-2) has been added to the 2011 Corrected Well Elevation Summary Table. SMW-1 is no longer an active well and has been removed from the table. Artesian Wells (PW-2, PW-3, and PW-4) were not included in the survey as these wells

have never been included on the summary table or have had questionable elevations. These artesian wells are sampled annually and are currently on a 3-year schedule. These wells are not required to be gauged at time of sampling. These wells are enclosed and run continuously to provide potable and process water. A copy of an original survey conducted by DePauli Engineering dated February 13, 2003 is attached for reference.

Comment 4

The Well Summary Table has been revised per NMED's example table provided to include all the information requested by NMED. The table has been re-named "2011 Corrected Well Elevation Summary Table". A separate elevation table has been generated listing the Artesian Wells (PW-2, PW-3, PW-4) named "2011 Well Elevation Summary Table for Artesian Water Wells."

Comment 5

All future ground water elevation maps submitted will reflect corrected elevation data resulting from the survey by DePauli Engineering.

If you have any questions regarding Western's responses, please do not hesitate to contact Cheryl Johnson of my staff at (505) 722-0231.

Sincerely,

Ed Riege
Environmental Manager
attachments
cc: K. Van Horn, NMED HWB w/attach
C. Chavez, OCD w/attach
C. Johnson, Gallup w/o attach

Western Refining Monitoring Well 2011

Well #	Northing	Easting	Elevation	Description
napis-1	1,634,587.37	2,545,700.47	6913.86	North edge PVC casing
			6914.23	Center steel lid
			6913.56	South side ground elev. inside steel sleeve
			6913.62	North East & South West corner of concrete pad
napis-3	1,634,589.71	2,545,645.25	6912.76	North edge PVC casing
			6913.12	Center steel lid
			6912.53	South side ground elev. inside steel sleeve
			6913.38	North East & South West corner of concrete pad
ka-3	1,634,583.87	2,545,645.66	6912.52	North edge PVC casing
			6912.87	Center steel lid
			6912.20	South side ground elev. inside steel sleeve
			6913.29	North West & South East corner of concrete pad
napis-2	1,634,564.93	2,545,647.46	6912.65	North edge PVC casing
			6913.26	Center steel lid
			6912.54	South side ground elev. inside steel sleeve
			6913.41	North West & South East corner of concrete pad
gwm-2	1,634,680.33	2,545,348.57	6913.09	North edge PVC casing
			6913.39	Center steel lid
			6908.05	West side ground elev. inside steel sleeve
			6910.32	South West & South East corner of concrete pad
gwm-1	1,634,686.36	2,545,346.90	6912.61	North edge PVC casing
			6912.93	Center steel lid
			6908.36	West side ground elev. inside steel sleeve
			6910.22	South West & North East corner of concrete pad
gwm-3	1,634,932.99	2,545,364.09	6910.25	North edge PVC casing
			6910.51	Center steel lid
			6905.48	West side ground elev. inside steel sleeve
			** 6907.35	Ground elev.
			** Elevation is to the lowest concrete pad elevation surounding the well	
ow-12	1,635,128.64	2,546,062.41	6940.69	North edge PVC casing
			6941.59	Center steel lid
			6939.04	West side ground elev. inside steel sleeve
			6939.57	South West & North East corner of concrete pad

Well #	Northing	Easting	Elevation	Description
rw-5	1,634,761.32	2,546,311.24	6943.57	West edge PVC casing **
			6943.78	Center steel lid
			6940.82	West side ground elev. inside steel sleeve
			6941.53	South West & North East corner of concrete pad
				**Exsiting mark on west edge of PVC casing used
rw-6	1,634,688.45	2,546,381.03	6944.01	North edge PVC casing
			6944.26	Center steel lid
			6941.49	West side ground elev. inside steel sleeve
			6941.96	North West & South East corner of concrete pad
rw-2	1,634,624.56	2,547,167.32	6928.53	North edge PVC casing
			6929.29	Center steel lid
			6925.02	West side ground elev. inside steel sleeve
			6926.40	North West & South East corner of concrete pad
rw-1	1,634,179.63	2,547,362.39	6946.06	North edge PVC casing
			6946.42	Center steel lid
			6941.25	West side ground elev. inside steel sleeve
			6942.86	Surrounding South ground elev.
ow-10	1,633,507.94	2,544,187.82	6874.91	North edge PVC casing
			6875.39	Center steel lid
			6872.59	West side ground elev. inside steel sleeve
			6873.67	South West & North East corner of concrete pad
ow-1	1,634,052.94	2,542,464.15	6866.62	North edge PVC Casing**
			6868.83	Center steel lid
			6866.44	West side ground elev. inside steel sleeve
			6866.32	North West & South East corner of concrete pad
	** Top segment of pvc casing not connected to coupling, coupling is were elevation is referenced.			
mw-4	1,635,127.10	2,544,509.90	6881.63	North edge PVC casing
			6882.38	Center steel lid
			6879.34	West side ground elev. inside steel sleeve
			6879.89	South West & North East corner of concrete pad
smw-2	1,635,652.32	2,544,450.91	6883.97	North edge Aluminum casing
			6884.54	Center steel lid
			6879.07	West side ground elev. inside steel sleeve
			6881.63	South West & North East corner of concrete pad

Well #	Northing	Easting	Elevation	Description
mw-5	1,636,272.55	2,544,141.37	6882.83	North edge Aluminum casing
			6883.40	Center steel lid
			6881.77	South side ground elev. inside steel sleeve
			6880.20	North West & South West corner of concrete pad
mw-2	1,636,243.70	2,543,943.74	6880.30	North edge PVC Casing
			6880.57	Center steel lid
			6878.41	North side ground elev. inside steel sleeve
			6878.39	North West & South East corner of concrete pad
smw-4	1,636,213.12	2,543,883.04	6879.52	North edge PVC casing
			6880.63	Center steel lid
			6875.72	West side ground elev. inside steel sleeve
			6877.63	South West & North East corner of concrete pad
mw-1	1,636,171.89	2,543,811.84	6878.12	North edge PVC casing
			6878.85	Center steel lid
			6876.79	West side ground elev. inside steel sleeve
			6876.63	South West & North East corner of concrete pad
bw-3b	1,637,028.25	2,543,362.30	6878.59	North edge PVC casing
			6878.92	Center steel lid
			6875.41	West side ground elev. inside steel sleeve
			6876.16	North West & South East corner of concrete pad
bw-3a	1,637,035.46	2,543,363.75	6878.09	North edge PVC casing
			6878.39	Center steel lid
			6875.08	West side ground elev. inside steel sleeve
			6875.94	North West & South East corner of concrete pad
bw-3c	1,637,038.21	2,543,356.75	6877.95	North edge PVC casing
			6878.22	Center steel lid
			6875.27	West side ground elev. inside steel sleeve
			6875.72	North West & South East corner of concrete pad
bw-2c	1,636,859.87	2,542,467.18	6875.30	North edge PVC casing
			6875.78	Center steel lid
			6872.02	West side ground elev. inside steel sleeve
			6872.90	South West & South East corner of concrete pad

Well #	Northing	Easting		Elevation	Description
bw-2a	1,636,848.27	2,542,473.25		6874.69	North edge PVC casing
				6875.20	Center steel lid
				6870.45	West side ground elev. inside steel sleeve
				6871.88	South West & South East corner of concrete pad
bw-2b	1,636,836.81	2,542,481.15		6874.50	North edge PVC casing
				6874.85	Center steel lid
				6870.06	West side ground elev. inside steel sleeve
				6871.66	South West & South East corner of concrete pad
bw-1a	1,635,367.32	2,542,393.40		6876.68	North edge PVC casing
				6877.09	Center steel lid
				6872.30	West side ground elev. inside steel sleeve
				6874.10	North West & South East corner of concrete pad
bw-1c	1,635,366.60	2,542,398.24		6876.78	North edge PVC casing
				6877.11	Center steel lid
				6872.28	West side ground elev. inside steel sleeve
				6873.95	South West & North East corner of concrete pad
bw-1b	1,635,368.46	2,542,404.18		6876.94	North edge PVC casing
				6877.28	Center steel lid
				6876.26	West side ground elev. inside steel sleeve
			**	6874.13	Ground elev.
					** Elevation is to the lowest concrete pad elevation surounding the well
ow-50	1,636,295.73	2,547,393.72		6914.21	North edge PVC casing
				6914.47	Center steel lid
				6911.46	West side ground elev. inside steel sleeve
				6912.63	South West & North East corner of concrete pad
ow-52	1,636,497.52	2,546,917.71		6907.68	North edge PVC casing
				6908.28	Center steel lid
				6905.31	West side ground elev. inside steel sleeve
				6906.53	North West & South East corner of concrete pad
ow-29	1,635,940.11	2,547,227.40		6917.00	North edge PVC casing
				6917.25	Center steel lid
				6912.09	West side ground elev. inside steel sleeve
				6913.89	South West & North East corner of concrete pad

Well #	Northing	Easting	Elevation	Description
ow-30	1,635,431.14	2,547,552.67	6924.69	North edge PVC casing
			6924.96	Center steel lid
			6919.84	West side ground elev. inside steel sleeve
			6921.81	North West & South East corner of concrete pad
ow-14	1,635,059.64	2,547,178.60	6926.65	North edge PVC casing
			6927.71	Center steel lid
			6924.40	West side ground elev. inside steel sleeve
			6924.55	South West & North East corner of concrete pad
ow-13	1,635,445.53	2,546,668.91	6920.07	North edge PVC casing
			6920.23	Center steel lid
			6915.33	West side ground elev. inside steel sleeve
			6918.95	South West & North East corner of concrete pad
ow-11	1,632,247.50	2,546,078.73	6923.51	North edge PVC casing
			6923.97	Center steel lid
			6921.80	West side ground elev. inside steel sleeve
			6922.05	South West & North East corner of concrete pad

Notes:
1) Date of Survey: June 7, 2011
2) Instrument: Leica 1200 GPS - Base & Rover
3) The method used to survey the wells was GPS-RTK

The horizontal and vertical positions of the top of the PVC casing (unless otherwise noted) and the vertical positions for the lid, ground elevation inside the steel casing, and the surrounding ground elevation is shown above. The horizontal position are NAD 83 datum and the vertical positions are NGVD 1929. The description were revised to indicate location of survey point. (revised 11/30/2011)

Marc DePauli PS13606

11/30/2011
Date

MARC A. DEPAULI
NEW MEXICO
13606
REGISTERED PROFESSIONAL SURVEYOR

2011 CORRECTED WELL ELEVATION SUMMARY TABLE

Date of Installation	Well ID Number	2011 Survey Measurement date[1]	Previous Casing Diameter (Inch)	2011 Verified Casing Diameter[2] (Inch)	Previous Ground Level Elevation (feet)	2011 Survey Ground Level Elevation[1] (feet)	Previous Well Casing Rim Elevation (feet)	2011 Survey Well Casing Rim Elevation[1] (feet)	2011 Measuring Point Description[1]	2011 Ground Elevation Inside Steel Sleeve[1] (feet)	Previous Stick-up length (feet)	2011 Survey Stick-up length[1] (feet)	Previous Well Casing Bottom Elevation (feet)	2011 Survey Well Casing Bottom Elevation[3] (feet)	Previous Total Well Depth (feet)	2011 Survey Total Well Depth (feet)[4]	Screened Interval Depth Top to Bottom (ft)	Stratigraphic unit in which screen exists
11/10/2003	BW-1A	6/7/2011	2.00	2.00	6,876.73	6,874.10	6,876.73	6,876.68	North edge PVC casing	6,872.30	4.37	4.38	6,836.73	6,839.06	40.00	37.62	30 - 35	Chinle/alluvium
10/28/2003	BW-1B	6/7/2011	2.00	2.00	6,876.91	6874.13*	6,876.91	6,876.94	North edge PVC casing	6,876.26	2.38	0.68	6,811.71	6,809.49	67.55	67.45	54.6 - 64.6	Chinle/alluvium
11/10/2003	BW-1C	6/7/2011	2.00	2.00	6,876.75	6,873.95	6,876.75	6,876.78	North edge PVC casing	6,872.28	4.51	4.50	6,719.75	6,740.39	157.00	136.39	125 -135	Sonsela sandstone
11/10/2003	BW-2A	6/7/2011	2.00	2.00	6,874.72	6,871.88	6,974.72	6,874.69	North edge PVC casing	6,870.45	4.26	4.24	6,809.22	6,807.12	65.50	67.57	55 - 65	Upper sand wells
10/28/2003	BW-2B	6/7/2011	2.00	2.00	6,874.58	6,871.66	6,874.58	6,874.50	North edge PVC casing	6,870.06	4.49	4.44	6,784.08	6,782.24	90.50	92.26	80 - 90	Chinle/alluvium
10/28/2003	BW-2C	6/7/2011	2.00	2.00	6,875.40	6,872.90	6,875.40	6,875.30	North edge PVC casing	6,872.02	2.97	3.28	6,724.40	6,722.46	151.00	152.84	139.5 - 149.5	Sonsela sandstone
6/15/2004	BW-3A	6/7/2011	2.00	2.00	6,878.22	6,875.94	6,878.22	6,878.39	North edge PVC casing	6,875.08	2.99	3.31	6,828.22	6,826.04	52.60	52.35	39.5 - 49.5	Upper sand wells
10/15/2003	BW-3B	6/7/2011	2.00	2.00	6,878.79	6,876.16	6,878.79	6,878.59	North edge PVC casing	6,875.41	3.14	3.18	6,803.79	6,809.19	75.00	69.40	63 - 73	Chinle/alluvium
7/20/2004	BW-3C	6/7/2011	2.00	2.00	6,878.08	6,875.72	6,878.08	6,877.95	North edge PVC casing	6,875.27	2.68	2.68	6,723.08	6,723.40	155.00	154.55	144.5 - 154.5	Sonsela sandstone
1/5/1981	OW-1	6/7/2011	4.00	4.00	6,868.00	6,866.32	6,868.45	6,866.62	North edge PVC casing**	6,866.44	1.91	0.18	6,773.96	6,772.07	94.04	94.55	89.3 - 99.3	Sonsela sandstone
11/25/1980	OW-10	6/7/2011	4.00	4.00	6,872.00	6,873.67	6,875.12	6,874.91	North edge PVC casing	6,872.59	1.59	2.32	6,804.00	6,814.58	68.00	60.33	40 - 60	Sonsela sandstone
9/25/1981	OW-11	6/7/2011	4.00	4.00	6,923.89	6,922.05	6,923.51	6,923.51	North edge PVC casing	6,921.80	2.08	1.71	6,857.27	6,857.72	66.62	65.79	43 - 65	Chinle/alluvium
12/15/1980	OW-12	6/7/2011	4.00	4.00	6,940.43	6,939.57	6,940.43	6,940.69	North edge PVC casing	6,939.04	1.87	1.65	6,795.43	6,811.84	145.00	128.85	117.8 - 137.8	Sonsela sandstone
12/10/1980	OW-13	6/7/2011	4.00	4.00	6,920.12	6,918.95	6,920.12	6,920.07	North edge PVC casing	6,915.33	4.79	4.74	6,820.12	6,820.92	100.00	99.15	78.2 - 98.2	Sonsela sandstone
12/17/1980	OW-14	6/7/2011	4.00	4.00	6,926.64	6,924.55	6,926.64	6,926.65	North edge PVC casing	6,924.40	2.25	2.25	6,881.64	6,880.13	45.00	46.52	35 - 45	Chinle/alluvium
8/23/1996	OW-29	6/7/2011	4.00	4.00	6,913.50	6,913.89	6,913.50	6,917.00	North edge PVC casing	6,912.09	3.87	4.91	6,864.50	6,865.92	49.00	51.08	37.5 - 47.5	Chinle/alluvium
8/28/1996	OW-30	6/7/2011	4.00	4.00	6,921.60	6,921.81	6,921.60	6,924.69	North edge PVC casing	6,919.84	4.85	4.85	6,873.20	6,874.79	48.40	49.90	37.9 - 47.9	Chinle/alluvium
10/5/2009	OW-50	6/7/2011	2.00	2.00	6,929.00	6,912.63	6,992.00	6,914.21	North edge PVC casing	6,911.46	2.70	2.75	6,847.63	6,850.21	63.00	64.00	48 - 63	Chinle/alluvium
10/5/2009	OW-52	6/7/2011	2.00	2.00	6,823.00	6,906.53	6,902.00	6,907.68	North edge PVC casing	6,905.31	2.20	2.37	6,828.53	6,829.94	79.00	77.74	64 - 79	Chinle/alluvium
10/14/1981	MW-1	6/7/2011	5.00	5.00	6,878.52	6,876.63	6,878.15	6,878.12	North edge PVC casing	6,876.79	1.25	1.33	6,746.50	6,747.29	132.02	130.83	117.72 - 127.72	Sonsela sandstone
10/15/1981	MW-2	6/7/2011	5.00	5.00	6,880.84	6,878.39	6,880.84	6,880.30	North edge PVC casing	6,878.41	1.82	1.89	6,741.90	6,742.82	140.24	137.48	112 - 122	Sonsela sandstone
10/16/1981	MW-4	6/7/2011	5.00	5.00	6,882.54	6,879.89	6,882.20	6,881.63	North edge PVC casing	6,879.34	2.31	2.29	6,760.40	6,759.91	122.14	121.72	101 - 121	Sonsela sandstone
7/21/1986	MW-5	6/7/2011	4.00	4.00	6,883.32	6,880.20	6,882.93	6,882.83	North edge aluminum casing	6,881.77	2.02	1.06	6,750.30	6,752.00	133.02	130.83	115 - 125	Sonsela sandstone
3/28/1995	RW-1	6/7/2011	4.00	4.00	6,943.50	6,942.86	6,943.50	6,946.06	North edge PVC casing	6,941.25	4.41	4.81	6,900.50	6,903.02	43.00	43.04	25 - 40	Chinle/alluvium
3/29/1995	RW-2	6/7/2011	4.00	4.00	6,927.20	6,926.40	6,927.20	6,928.53	North edge PVC casing	6,925.02	3.58	3.51	6,889.20	6,888.73	38.00	39.80	26.1 - 36.1	Chinle/alluvium
8/27/1997	RW-5	6/7/2011	4.00	4.00	6,942.50	6,941.53	6,942.50	6,943.57	West Edge PVC Casing (Existing Mark)	6,940.82	2.92	2.75	6,902.50	6,903.98	40.00	39.59	29.5 - 39.5	Chinle/alluvium
8/27/1997	RW-6	6/7/2011	4.00	4.00	6,972.60	6,941.96	6,972.60	6,944.01	North edge PVC casing	6,941.49	2.58	2.52	6,933.80	6,903.11	38.80	40.90	28.5 - 38.5	Chinle/alluvium
9/26/1985	SMW-2	6/7/2011	2.00	2.00	6,884.44	6,881.63	6,884.11	6,883.97	North edge aluminum casing	6,879.07	4.54	4.90	6,827.10	6,831.17	57.34	52.80	34.31 - 54.31	Upper sand wells
9/25/1985	SMW-4	6/7/2011	2.00	2.00	6,882.54	6,877.63	6,882.73	6,879.52	North edge aluminum casing	6,875.72	3.83	3.80	6,760.40	6,809.84	72.20	69.68	51.7 - 71.7	Upper sand wells
7/8/2004	GWM-1	6/7/2011	2.00	2.00	6,912.65	6,910.22	6,912.65	6,912.61	North edge PVC casing	6,908.36	3.87	4.25	6,888.95	6,886.41	23.70	26.20	17.5 - 23.5	Chinle/alluvium
9/25/2005	GWM-2	6/7/2011	2.00	2.00	6,913.17	6,910.32	6,913.17	6,913.09	North edge PVC casing	6,908.05	4.75	5.04	6,896.97	6,894.28	18.97	18.81	3.2 - 16.2	Chinle/alluvium

Date of Installation	Well ID Number	2011 Survey Measurement date[1]	Previous Casing Diameter (Inch)	2011 Verified Casing Diameter[2] (Inch)	Previous Ground Level Elevation (feet)	2011 Survey Ground Level Elevation[1] (feet)	Previous Well Casing Rim Elevation (feet)	2011 Survey Well Casing Rim Elevation[1] (feet)	2011 Measuring Point Description[1]	2011 Ground Elevation Inside Steel Sleeve[1] (feet)	Previous Stick-up length (feet)	2011 Survey Stick-up length[1] (feet)	Previous Well Casing Bottom Elevation (feet)	2011 Survey Well Casing Bottom Elevation[3] (feet)	Previous Total Well Depth (feet)	2011 Survey Total Well Depth (feet)[4]	Screened Interval Depth Top to Bottom (ft)	Stratigraphic unit in which screen exists
9/25/2005	GWM-3	6/7/2011	2.00	2.00	6,912.65	6,907.35	6,912.65	6,910.25	North edge PVC casing	6,905.48	4.85	4.77	6,896.15	6,892.45	17.94	17.80	3 - 15	Chinle/alluvium
3/14/2008	NAPIS-1	6/7/2011	2.00	2.00	6,918.43	6,913.62	6,918.43	6,913.86	North edge PVC casing	6,913.56	0.29	0.30	6,904.40	6,900.33	14.00	13.53	3.7 - 13.7	Chinle/alluvium
3/14/2008	NAPIS-2	6/7/2011	2.00	2.00	6,917.27	6,913.40	6,917.27	6,912.65	North edge PVC casing	6,912.54	0.10	0.11	6,902.80	6,899.04	14.50	13.61	4.2 - 14.2	Chinle/alluvium
3/14/2008	NAPIS-3	6/7/2011	2.00	2.00	6,917.31	6,913.38	6,917.31	6,912.76	North edge PVC casing	6,912.53	0.29	0.23	6,886.60	6,882.34	30.70	30.42	25.4 - 30-4	Chinle/alluvium
6/11/2007	KA-3	6/7/2011	2.00	2.00	6,917.17	6,913.29	6,917.17	6,912.52	North edge PVC casing	6,912.20	0.17	0.32	6,892.40	6,889.32	25.00	23.20	15 - 25	Chinle/alluvium

NOTES:

* Ground elevation is to the lowest concrete pad elevation surrounding the well

** Top segment of pvc casing not connected to coupling. Coupling is where elevation is referenced.

1) Surveyed by DePauli Engineering & Surveying, LLC on June 7, 2011 at request of NMED due to discrepancies on well casing and ground level elevations.
2) Field verified using a tape measure by Gallup Refinery field technician.
3) Corrected bottom well elevation is determined by using 2011Survey Well Casing Rim Elevation minus the 2011 Survey Total Well Depth measurement
4) Total well depth was determined using a bottom sensing meter, Testwell Water level meter with bottom sensing indicator.

2011 WELL ELEVATION SUMMARY TABLE FOR ARTESIAN WATER WELLS

Date of Installation	Well ID Number	Submersible pump depth (feet)	Casing Diameter (Inch)	Well Head Elevation Mark* (North) (feet)	Well Head Elevation Mark* (West) (feet)	Well Head Elevation Mark* (Z) (feet)	Measuring Point Description	Total Well Depth (feet)	Well Casing Bottom Elevation[1] (feet)	Stratigraphic unit	Aquifer
9/24/1956	PW-2	800	16.0	3,300.40	4,694.28	162.78	1st Discharge tee or elbow	1,075.00	2,225.40	Chinle	San Andreas/Yeso Aquifer
April 1979	PW-3	900	14.0	2,932.83	1,387.79	248.00	1st Discharge tee or elbow	1,030.00	1,902.83	Chinle	San Andreas/Yeso Aquifer
11/12/1999	PW-4	750	24.0**	1,895.73	2,979.78	178.51	1st Discharge tee or elbow	1,076.00	819.73	Chinle	San Andreas/Yeso Aquifer

NOTES:

* Basis of survey Refinery Control Point at 1000W, 2575N, plant elevation = 254.87 feet and MSL elevation = 6959.41feet.

** 176 feet of 24" Surface Casing Steel

1) Well casing bottom elevation using Well Head Elevation Mark (North) as reference point.

At the time of the survey by DePauli Engineering the artesian wells were not included as these wells have never been listed on the summary table or had questionable elevations. These wells are sampled every three years and are not required to be gauged when sampling. A copy of an original survey dated February 13, 2003 conducted by DePauli Engineering is attached for reference.

DePauli Engineering
& Surveying, LLC.
Civil Engineers and Land Surveyors

Phone: 505-863-5440 • Fax: 505-863-1919 • des@cnetco.com
102 W. Hill Avenue • Gallup, NM 87301
PO Box 876 • Gallup, NM 87305

February 13, 2003

Mike Spolar
Giant Refining Company
Route 3, Box 7
Gallup, NM 87301

RE: Artesian Wells

Dear Mike:

We have completed the requested land surveying services as scheduled for February 12, 2003 for locations of Giant Refinery Artesian Wells.

Locations for the "1st discharge tee or elbow" are as follows:

Artesian Well 2	Artesian Well 3	Artesian Well 4
N: 3300.40	N: 2932.83	N: 1895.73
W: 4694.28	W: 1387.79	W: 2979.78
Z: 162.78	Z: 248.00	Z: 178.51

The above coordinates are based on the Giant Refining Company Control Points and Plant Coordinate System.

If you have any questions, please feel free to contact me.

Sincerely:

Marc DePauli

Marc DePauli PE\PS
AH\lvb

MARC A. DEPAULI
NEW MEXICO
13606
REGISTERED PROFESSIONAL SURVEYOR

DePauli Engineering & Surveying Co.

Marc A. DePauli PE/PS
Donald Sterling PE/PS
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601 W. Aztec Avenue
Gallup, New Mexico 87301
PO Box 876
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GIANT REFINERY
CONTROL POINTS

3½" BRONZE CAPS SET IN CONCRETE

	PLANT GRID & PLANT ELEV.	GRID EQUATION NORTH NO CHANGE W 0.00 (PLANT) = E 10.000.00	LOCATION
1.	N 4313.85 W 1531.20 Z 234.84	N 4313.85 E 8468.80 El. 6939.34	South Side Conc. Base At OW-12
2.	N 3872.22 W 1537.05 Z 234.85	N 3872.22 E 8462.95 El. 6939.35	NE Cor. Conc. Pad w/Pipe & Sampling Bibs
3.	N 3583.22 W 2053.28 Z 207.81	N 3583.22 E 7946.72 El. 6912.29	SE Cor. Conc. Pad West of API Pit
4.	N 3017.62 W 1351.23 Z 249.53	N 3017.62 E 8648.77 El. 6954.03	Just North of East to West Road at South End of 6"x30" Conc. Footing
5.	N 2992.97 W 1080.19 Z 252.70	N 2992.97 E 8919.81 El. 6957.20	Just South of East to West Road in the Center of a Square Conc. Pad

Basis of survey Refinery Control Point at 1000W; 2575-N, Plant Elev. = 254.87 and MSL Elev. = 6959.41. This data furnished by Refinery personnel.