



April 24, 1998

Mr. Benito J. Garcia
Bureau Chief
Hazardous and Radioactive Materials Bureau
2044 Galisteo
P. O. Box 26110
Santa Fe, New Mexico 87502

Route 3, Box 7
Gallup, New Mexico
87301

505.
722.3833



**RE: 1997 Annual Groundwater Report
RCRA Part B Permit NMD 000333211-2**

Dear Mr. Garcia:

Pursuant to the requirements of the above captioned permit, the Annual Groundwater Report for sampling performed in 1997 is enclosed. No unusual results were observed as a result of the 1997 sampling events.

If you require additional information or have any questions regarding this report, please contact me at (505) 722-0258 or Dorinda Mancini at (505) 722-0227..

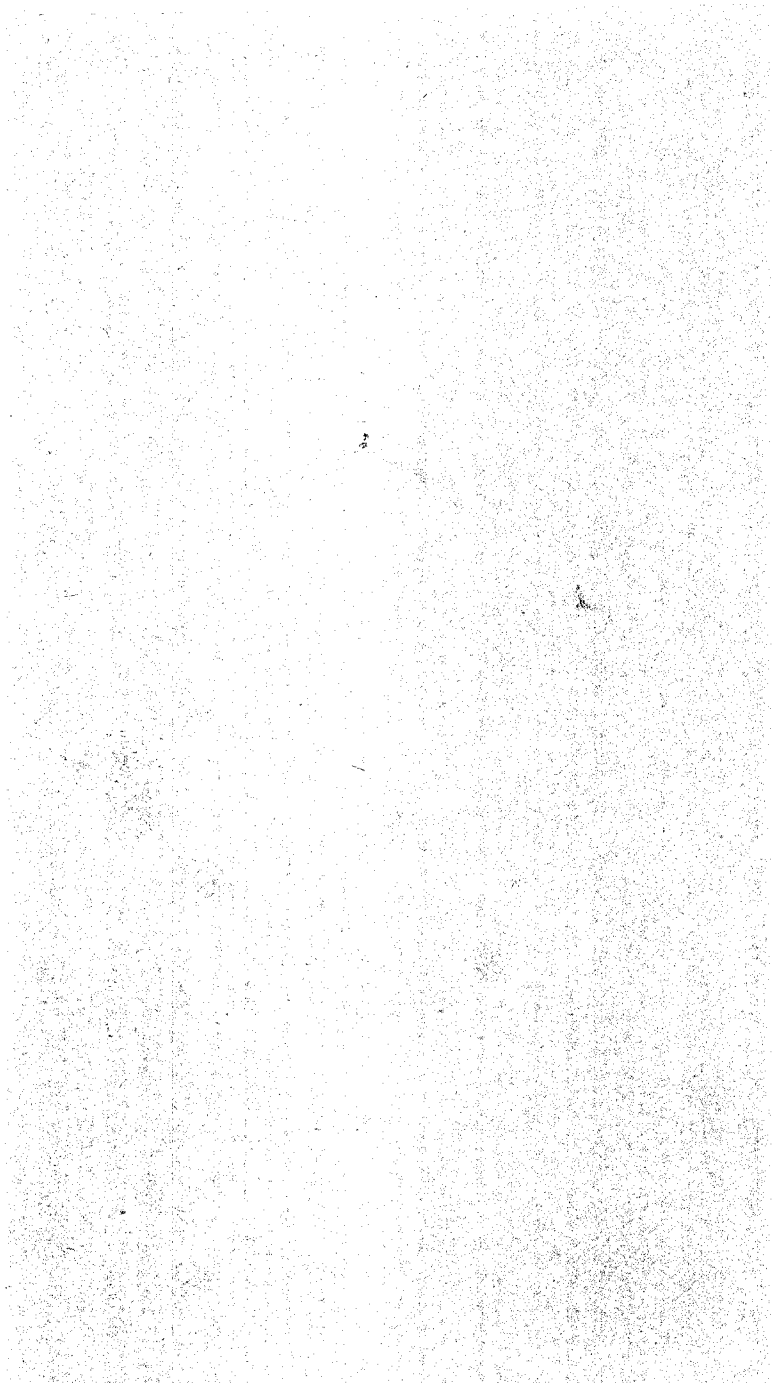
Sincerely,

Stephen C. Morris
Environmental Specialist, Ciniza Refinery

cc: Dave Pavlich, HSE Manager, Ciniza Refinery
Dorinda Mancini, Environmental Manager, Ciniza Refinery
Kathleen O'Leary, Corporate Counsel, Giant Industries, Inc.

GLC

**ANNUAL GROUNDWATER
REPORT
1997
GIANT REFINING CO. - CINIZA
LIBRARY COPY**



MONITORING WELL IDENTIFICATION REPORT

Giant Refining Company - Ciniza Refinery

FACILITY NAME	Giant Refining Co. - Ciniza
EPA I.D. NUMBER	NMD000333211-2
COUNTY	McKinley
WELL NUMBER	MW-1
WELL LOCATION (LONGITUDE)	108° 25' 36"
WELL LOCATION (LATITUDE)	35° 29' 08"
NEW MEXICO STATE PLANE	(X) 320,903.76 (Y) 1,636,112.13
AQUIFER NAME	Sonsela
AQUIFER CONFINED xx	UNCONFINED
WELL INSTALLATION DATE	10/14/81
DRILLING METHOD	Cable
INNER CASING DIAMETER	5.0"
BOREHOLE DIAMETER	10.0"
CASING MATERIAL	PVC
METHOD OF DEVELOPMENT	Compr
ELEV. BOTTOM OF BOREHOLE	6745.80
ELEV. BOTTOM OF WELL CASING	6745.80
ELEV. BOTTOM OF SCREENED INT.	6750.80
ELEVATION OF SCREENED INTERVAL	6760.80
SURVEYED ELEVATION OF CASING TOP	6878.52

MONITORING WELL IDENTIFICATION REPORT

Giant Refining Company - Ciniza Refinery

FACILITY NAME	Giant Refining Co. - Ciniza
EPA I.D. NUMBER	NMD000333211-2
COUNTY	McKinley
WELL NUMBER	MW-2
WELL LOCATION (LONGITUDE)	108° 26' 00"
WELL LOCATION (LATITUDE)	35° 29' 43"
NEW MEXICO STATE PLANE	(X) 321,035.23 (Y) 1,636,184.06
AQUIFER NAME	Sonsela
AQUIFER CONFINED xx	UNCONFINED
WELL INSTALLATION DATE	10/15/81
DRILLING METHOD	Cable
INNER CASING DIAMETER	5.0"
BOREHOLE DIAMETER	10.0"
CASING MATERIAL	PVC
METHOD OF DEVELOPMENT	Compr
ELEV. BOTTOM OF BOREHOLE	6741.90
ELEV. BOTTOM OF WELL CASING	6741.90
ELEV. BOTTOM OF SCREENED INT.	6747.90
ELEVATION OF SCREENED INTERVAL	6847.90
SURVEYED ELEVATION OF CASING TOP	6880.84

MONITORING WELL IDENTIFICATION REPORT

Giant Refining Company - Ciniza Refinery

FACILITY NAME	Giant Refining Co. - Ciniza
EPA I.D. NUMBER	NMD000333211-2
COUNTY	McKinley
WELL NUMBER	MW-4
WELL LOCATION (LONGITUDE)	108° 26' 54"
WELL LOCATION (LATITUDE)	35° 29' 30"
NEW MEXICO STATE PLANE	(X) 321,602.07 (Y) 1,635,066.25
AQUIFER NAME	Sonsela
AQUIFER CONFINED xx	UNCONFINED
WELL INSTALLATION DATE	10/16/81
DRILLING METHOD	Cable
INNER CASING DIAMETER	5.0"
BOREHOLE DIAMETER	10.0"
CASING MATERIAL	PVC
METHOD OF DEVELOPMENT	Compr
ELEV. BOTTOM OF BOREHOLE	6761.60
ELEV. BOTTOM OF WELL CASING	6761.60
ELEV. BOTTOM OF SCREENED INT.	6761.60
ELEVATION OF SCREENED INTERVAL	6781.60
SURVEYED ELEVATION OF CASING TOP	6882.54

MONITORING WELL IDENTIFICATION REPORT

Giant Refining Company - Ciniza Refinery

FACILITY NAME	Giant Refining Co. - Ciniza
EPA I.D. NUMBER	NMD000333211-2
COUNTY	McKinley
WELL NUMBER	MW-5
WELL LOCATION (LONGITUDE)	108° 25' 57"
WELL LOCATION (LATITUDE)	35° 29' 43"
NEW MEXICO STATE PLANE	(X) 321,233.03 (Y) 1,636,212.58
AQUIFER NAME	Sonsela
AQUIFER CONFINED xx	UNCONFINED
WELL INSTALLATION DATE	7/21/86
DRILLING METHOD	HLWAG & AIRRT
INNER CASING DIAMETER	5.0"
BOREHOLE DIAMETER	10.0"
CASING MATERIAL	PVC
METHOD OF DEVELOPMENT	Compr
ELEV. BOTTOM OF BOREHOLE	6746.80
ELEV. BOTTOM OF WELL CASING	6753.30
ELEV. BOTTOM OF SCREENED INT.	6758.30
ELEVATION OF SCREENED INTERVAL	6768.80
SURVEYED ELEVATION OF CASING TOP	6883.32

MONITORING WELL IDENTIFICATION REPORT

Giant Refining Company - Ciniza Refinery

FACILITY NAME	Giant Refining Co. - Ciniza
EPA I.D. NUMBER	NMD000333211-2
COUNTY	McKinley
WELL NUMBER	OW-11
WELL LOCATION (LONGITUDE)	108° 25' 36"
WELL LOCATION (LATITUDE)	35° 29' 08"
NEW MEXICO STATE PLANE	(X) 323,167.68 (Y) 1,632,185.21
AQUIFER NAME	Sonsela?
AQUIFER CONFINED xx	UNCONFINED
WELL INSTALLATION DATE	12/30/80
DRILLING METHOD	Cable
INNER CASING DIAMETER	4.0"
BOREHOLE DIAMETER	8.0"
CASING MATERIAL	PVC
METHOD OF DEVELOPMENT	Compr
ELEV. BOTTOM OF BOREHOLE	6773.00
ELEV. BOTTOM OF WELL CASING	6773.00
ELEV. BOTTOM OF SCREENED INT.	6858.00
ELEVATION OF SCREENED INTERVAL	6880.00
SURVEYED ELEVATION OF CASING TOP	6923.89

MONITORING WELL IDENTIFICATION REPORT

Giant Refining Company - Ciniza Refinery

FACILITY NAME	Giant Refining Co. - Ciniza
EPA I.D. NUMBER	NMD000333211-2
COUNTY	McKinley
WELL NUMBER	SMW-3
WELL LOCATION (LONGITUDE)	108° 25' 56"
WELL LOCATION (LATITUDE)	35° 29' 40"
NEW MEXICO STATE PLANE	(X) 321,397.90 (Y) 1,635,648.75
AQUIFER NAME	Unnamed *
AQUIFER CONFINED xx	UNCONFINED
WELL INSTALLATION DATE	10/1/85
DRILLING METHOD	HLWAG
INNER CASING DIAMETER	2.0"
BOREHOLE DIAMETER	6.5"
CASING MATERIAL	SS304
METHOD OF DEVELOPMENT	Compr
ELEV. BOTTOM OF BOREHOLE	6836.15
ELEV. BOTTOM OF WELL CASING	6838.65
ELEV. BOTTOM OF SCREENED INT.	6841.65
ELEVATION OF SCREENED INTERVAL	6861.65
SURVEYED ELEVATION OF CASING TOP	6884.56

* The well is completed in a combination of fluvially-derived sands of the valley floor and an alluvially-derived zone lying directly on top of the shales of the Chinle.

MONITORING WELL IDENTIFICATION REPORT

Giant Refining Company - Ciniza Refinery

FACILITY NAME	Giant Refining Co. - Ciniza
EPA I.D. NUMBER	NMD000333211-2
COUNTY	McKinley
WELL NUMBER	SMW-4
WELL LOCATION (LONGITUDE)	108° 26' 01"
WELL LOCATION (LATITUDE)	35° 29' 44"
NEW MEXICO STATE PLANE	(X) 321,397.90 (Y) 1,635,948.75
AQUIFER NAME	Unnamed *
AQUIFER CONFINED xx	UNCONFINED
WELL INSTALLATION DATE	9/25/85
DRILLING METHOD	HLWAG
INNER CASING DIAMETER	2.0"
BOREHOLE DIAMETER	6.5"
CASING MATERIAL	SS304
METHOD OF DEVELOPMENT	Compr
ELEV. BOTTOM OF BOREHOLE	6806.74
ELEV. BOTTOM OF WELL CASING	6807.84
ELEV. BOTTOM OF SCREENED INT.	6810.84
ELEVATION OF SCREENED INTERVAL	6830.84
SURVEYED ELEVATION OF CASING TOP	6880.08

* The well is completed in a combination of fluviially-derived sands of the valley floor and an alluvially-derived zone lying directly on top of the shales of the Chinle.

MONITORING WELL IDENTIFICATION REPORT

Giant Refining Company - Ciniza Refinery

FACILITY NAME	Giant Refining Co. - Ciniza
EPA I.D. NUMBER	NMD000333211-2
COUNTY	McKinley
WELL NUMBER	SMW-5
WELL LOCATION (LONGITUDE)	108° 26' 03"
WELL LOCATION (LATITUDE)	35° 29' 41"
NEW MEXICO STATE PLANE	(X) 320,778.61 (Y) 1,636,054.28
AQUIFER NAME	Unnamed *
AQUIFER CONFINED xx	UNCONFINED
WELL INSTALLATION DATE	9/25/85
DRILLING METHOD	HLWAG
INNER CASING DIAMETER	2.0"
BOREHOLE DIAMETER	6.5"
CASING MATERIAL	SS304
METHOD OF DEVELOPMENT	Compr
ELEV. BOTTOM OF BOREHOLE	6800.68
ELEV. BOTTOM OF WELL CASING	6801.78
ELEV. BOTTOM OF SCREENED INT.	6804.78
ELEVATION OF SCREENED INTERVAL	6824.78
SURVEYED ELEVATION OF CASING TOP	6878.02

* The well is completed in a combination of fluvially-derived sands of the valley floor and an alluvially-derived zone lying directly on top of the shales of the Chinle.

Calculation Sheet for Semi-Annual Evaluation of Indicator Parameters

MW-1 Giant Refining - Ciniza (Down Gradient Well)

Parameter: pH

Background Indicator Values: $X_b = 8.51$ $S_b^2 = 0.015$
 $W_b = 0.00937$ $t_b = 2.947$

Current well sample values:	<u>Sample</u>	<u>Value</u>	<u>(Value-X_m)²</u>
	1	8.70	0.0127
	2	8.83	0.0003
	3	8.85	0.0014
	4	8.87	0.0033

Mean $X_m = (\text{Sum of Sample Values}) / 4 = 8.81$ Variance $S_m^2 = [\text{Sum of (Value-X}_m)^2] / 3 = 0.0059$

$t_m (\text{pH}) = 5.841$

$W_m = S_m^2 / n_m = 0.0015$

$t^* = (X_m - X_b) / (W_m + W_b)^{1/2} = 2.91$

$t_c = [(W_b \times t_b) + (W_m \times t_m)] / (W_b + W_m) = 3.34$ $|t^*| < t_c$: Statistically significant change not likely.

Parameter: Specific Conductivity

Background Indicator Values: $X_b = 984$ $S_b^2 = 1487$
 $W_b = 92.9375$ $t_b = 2.602$

Current well sample values:	<u>Sample</u>	<u>Value</u>	<u>(Value-X_m)²</u>
	1	1111	4.0000
	2	1112	9.0000
	3	1107	4.0000
	4	1106	9.0000

Mean $X_m = (\text{Sum of Sample Values}) / 4 = 1109$ Variance $S_m^2 = [\text{Sum of (Value-X}_m)^2] / 3 = 8.6667$

$t_m (\text{Specific Conduct.}) = 4.541$

$W_m = S_m^2 / n_m = 2.1667$

$t^* = (X_m - X_b) / (W_m + W_b)^{1/2} = 12.82$

$t_c = [(W_b \times t_b) + (W_m \times t_m)] / (W_b + W_m) = 2.65$ $t^* > t_c$: Statistically significant change possible.

Note: W_b, W_m = Special Weighting Factors; t_b, t_m = Standard T-Table Levels of Significance; t^* = the t-statistic; and t_c = the comparison t-statistic.
 This statistical treatment is set forth in 40 CFR Part 264, Appendix IV: *Cochran's Approximation To The Behrens-Fisher Students' T-Test*.

Calculation Sheet for Semi-Annual Evaluation of Indicator Parameters

MW-2 Giant Refining - Ciniza (Down Gradient Well)

Parameter: pH

Background Indicator Values: $X_b = 8.51$ $S_b^2 = 0.015$
 $W_b = 0.00937$ $t_b = 2.947$

Current well sample values:	Sample	Value	$(\text{Value}-X_m)^2$
	1	8.87	0.0000
	2	8.92	0.0030
	3	8.86	0.0000
	4	8.81	0.0030

Mean $X_m = (\text{Sum of Sample Values}) / 4 = 8.87$ Variance $S_m^2 = [\text{Sum of } (\text{Value}-X_m)^2] / 3 = 0.0020$

$$t_m (\text{pH}) = 5.841$$

$$W_m = S_m^2 / n_m = 0.0005$$

$$t^* = (X_m - X_b) / (W_m + W_b)^{1/2} = 3.57$$

$$t_c = [(W_b \times t_b) + (W_m \times t_m)] / (W_b + W_m) = 3.10 \quad |t^*| > t_c : \text{Statistically significant change possible.}$$

Parameter: Specific Conductivity

Background Indicator Values: $X_b = 984$ $S_b^2 = 1487$
 $W_b = 92.9375$ $t_b = 2.602$

Current well sample values:	Sample	Value	$(\text{Value}-X_m)^2$
	1	1110	256.0000
	2	1127	1.0000
	3	1132	36.0000
	4	1135	81.0000

Mean $X_m = (\text{Sum of Sample Values}) / 4 = 1126$ Variance $S_m^2 = [\text{Sum of } (\text{Value}-X_m)^2] / 3 = 124.6667$

$$t_m (\text{Specific Conduct.}) = 4.541$$

$$W_m = S_m^2 / n_m = 31.1667$$

$$t^* = (X_m - X_b) / (W_m + W_b)^{1/2} = 12.75$$

$$t_c = [(W_b \times t_b) + (W_m \times t_m)] / (W_b + W_m) = 3.09 \quad t^* > t_c : \text{Statistically significant change possible.}$$

Note: W_b, W_m = Special Weighting Factors; t_b, t_m = Standard T-Table Levels of Significance; t^* = the t-statistic; and t_c = the comparison t-statistic.
 This statistical treatment is set forth in 40 CFR Part 264, Appendix IV: *Cochran's Approximation To The Behrens-Fisher Students' T-Test*.

Calculation Sheet for Semi-Annual Evaluation of Indicator Parameters

MW-4 Giant Refining - Ciniza (Down Gradient Well)

Parameter: pH

Background Indicator Values: $X_b = 8.51$ $S_b^2 = 0.015$
 $W_b = 0.00937$ $t_b = 2.947$

Current well sample values:	<u>Sample</u>	<u>Value</u>	<u>(Value-X_m)²</u>
	1	8.70	0.0132
	2	8.57	0.0002
	3	8.54	0.0020
	4	8.53	0.0030

Mean $X_m = (\text{Sum of Sample Values}) / 4 = 8.59$ Variance $S_m^2 = [\text{Sum of (Value-X}_m)^2] / 3 = 0.0062$

$$t_m (\text{pH}) = 5.841$$

$$W_m = S_m^2 / n_m = 0.0015$$

$$t^* = (X_m - X_b) / (W_m + W_b)^{1/2} = 0.72$$

$$t_c = [(W_b \times t_b) + (W_m \times t_m)] / (W_b + W_m) = 3.36 \quad |t^*| < t_c : \text{Statistically significant change not likely.}$$

Parameter: Specific Conductivity

Background Indicator Values: $X_b = 984$ $S_b^2 = 1487$
 $W_b = 92.9375$ $t_b = 2.602$

Current well sample values:	<u>Sample</u>	<u>Value</u>	<u>(Value-X_m)²</u>
	1	1171	1.5625
	2	1172	0.0625
	3	1174	3.0625
	4	1172	0.0625

Mean $X_m = (\text{Sum of Sample Values}) / 4 = 1172$ Variance $S_m^2 = [\text{Sum of (Value-X}_m)^2] / 3 = 1.5833$

$$t_m (\text{Specific Conduct.}) = 4.541$$

$$W_m = S_m^2 / n_m = 0.3958$$

$$t^* = (X_m - X_b) / (W_m + W_b)^{1/2} = 19.49$$

$$t_c = [(W_b \times t_b) + (W_m \times t_m)] / (W_b + W_m) = 2.61 \quad t^* > t_c : \text{Statistically significant change possible.}$$

Note: W_b, W_m = Special Weighting Factors; t_b, t_m = Standard T-Table Levels of Significance; t^* = the t-statistic; and t_c = the comparison t-statistic.
 This statistical treatment is set forth in 40 CFR Part 264, Appendix IV: *Cochran's Approximation To The Behrens-Fisher Students' T-Test*.

Calculation Sheet for Semi-Annual Evaluation of Indicator Parameters

MW-5 Giant Refining - Ciniza (Down Gradient Well)

Parameter: pH

Background Indicator Values: $X_b = 8.51$ $S_b^2 = 0.015$
 $W_b = 0.00937$ $t_b = 2.947$

Current well sample values:	<u>Sample</u>	<u>Value</u>	<u>(Value-X_m)²</u>
	1	8.89	0.0042
	2	8.81	0.0002
	3	8.80	0.0006
	4	8.80	0.0006

Mean $X_m = (\text{Sum of Sample Values}) / 4 = 8.83$ Variance $S_m^2 = [\text{Sum of (Value-X}_m)^2] / 3 = 0.0019$

$$t_m (\text{pH}) = 5.841$$

$$W_m = S_m^2 / n_m = 0.0005$$

$$t^* = (X_m - X_b) / (W_m + W_b)^{1/2} = 3.17$$

$$t_c = [(W_b \times t_b) + (W_m \times t_m)] / (W_b + W_m) = 3.09 \quad |t^*| > t_c : \text{Statistically significant change possible.}$$

Parameter: Specific Conductivity

Background Indicator Values: $X_b = 984$ $S_b^2 = 1487$
 $W_b = 92.9375$ $t_b = 2.602$

Current well sample values:	<u>Sample</u>	<u>Value</u>	<u>(Value-X_m)²</u>
	1	1145	4.0000
	2	1148	1.0000
	3	1147	0.0000
	4	1148	1.0000

Mean $X_m = (\text{Sum of Sample Values}) / 4 = 1147$ Variance $S_m^2 = [\text{Sum of (Value-X}_m)^2] / 3 = 2.0000$

$$t_m (\text{Specific Conduct.}) = 4.541$$

$$W_m = S_m^2 / n_m = 0.5000$$

$$t^* = (X_m - X_b) / (W_m + W_b)^{1/2} = 16.86$$

$$t_c = [(W_b \times t_b) + (W_m \times t_m)] / (W_b + W_m) = 2.61 \quad t^* > t_c : \text{Statistically significant change possible.}$$

Note: W_b, W_m = Special Weighting Factors; t_b, t_m = Standard T-Table Levels of Significance; t^* = the t-statistic; and t_c = the comparison t-statistic.
 This statistical treatment is set forth in 40 CFR Part 264, Appendix IV: *Cochran's Approximation To The Behrens-Fisher Students' T-Test*.

Calculation Sheet for Semi-Annual Evaluation of Indicator Parameters

OW-11 Giant Refining - Ciniza (Down Gradient Well)

Parameter: pH

Background Indicator Values: $X_b = 8.51$ $S_b^2 = 0.015$
 $W_b = 0.00937$ $t_b = 2.947$

Current well sample values:	Sample	Value	$(\text{Value}-X_m)^2$
	1	8.30	0.0000
	2	8.30	0.0000
	3	8.30	0.0000
	4	8.30	0.0000

Mean $X_m = (\text{Sum of Sample Values}) / 4 = 8.30$ Variance $S_m^2 = [\text{Sum of } (\text{Value}-X_m)^2] / 3 = 0.0000$

$$t_m (\text{pH}) = 5.841$$

$$W_m = S_m^2 / n_m = 0.0000$$

$$t^* = (X_m - X_b) / (W_m + W_b)^{1/2} = -2.17$$

$$t_c = [(W_b \times t_b) + (W_m \times t_m)] / (W_b + W_m) = 2.95 \quad |t^*| < t_c : \text{Statistically significant change not likely.}$$

Parameter: Specific Conductivity

Background Indicator Values: $X_b = 984$ $S_b^2 = 1487$
 $W_b = 92.9375$ $t_b = 2.602$

Current well sample values:	Sample	Value	$(\text{Value}-X_m)^2$
	1	2770	0.0000
	2	2770	0.0000
	3	2770	0.0000
	4	2770	0.0000

Mean $X_m = (\text{Sum of Sample Values}) / 4 = 2770$ Variance $S_m^2 = [\text{Sum of } (\text{Value}-X_m)^2] / 3 = 0.0000$

$$t_m (\text{Specific Conduct.}) = 4.541$$

$$W_m = S_m^2 / n_m = 0.0000$$

$$t^* = (X_m - X_b) / (W_m + W_b)^{1/2} = 185.26$$

$$t_c = [(W_b \times t_b) + (W_m \times t_m)] / (W_b + W_m) = 2.60 \quad t^* > t_c : \text{Statistically significant change possible.}$$

Note: W_b, W_m = Special Weighting Factors; t_b, t_m = Standard T-Table Levels of Significance; t^* = the t-statistic; and t_c = the comparison t-statistic.
 This statistical treatment is set forth in 40 CFR Part 264, Appendix IV: *Cochran's Approximation To The Behrens-Fisher Students' T-Test*.

Tolerance Interval

SMW-3 Giant Refining - Ciniza

pH

	Current Value	Historic Mean	Historic Standard Deviation	Tolerance Interval	
Fall 96 sampling period	7.72	7.83	0.16	7.50 - 8.15	(Does not exceed tolerance limit.)
Spring 97 sampling period	7.60	8.00	0.20	7.60 - 8.40	(Does exceed tolerance limit.)

Specific Conductivity

	Current Value	Historic Mean	Historic Standard Deviation	Tolerance Interval	
Fall 96 sampling period	2868	3192	325	2542 - 3841	(Does not exceed tolerance limit.)
Spring 97 sampling period	2850	3181	322	2537 - 3824	(Does not exceed tolerance limit.)

Chromium

	Current Value	Historic Mean	Historic Standard Deviation	Tolerance Interval	
Fall 96 sampling period	0.005	0.058	0.154	0.000 - 0.365	(Does not exceed tolerance limit.)
Spring 97 sampling period	0.005	0.055	0.150	0.000 - 0.356	(Does not exceed tolerance limit.)

Lead

	Current Value	Historic Mean	Historic Standard Deviation	Tolerance Interval	
Fall 96 sampling period	0.003	0.025	0.080	0.000 - 0.185	(Does not exceed tolerance limit.)
Spring 97 sampling period	0.003	0.024	0.078	0.000 - 0.180	(Does not exceed tolerance limit.)

Tolerance Interval = (Mean \pm 2 Standard Deviations)

Tolerance Interval

SMW-4 Giant Refining - Ciniza

pH

	Current Value	Historic Mean	Historic Standard Deviation	Tolerance Interval	
Fall 96 sampling period	8.62	8.35	0.20	7.95 - 8.74	(Does not exceed tolerance limit.)
Spring 97 sampling period	8.40	8.35	0.19	7.96 - 8.73	(Does not exceed tolerance limit.)

Specific Conductivity

	Current Value	Historic Mean	Historic Standard Deviation	Tolerance Interval	
Fall 96 sampling period	1263	1298	172	953 - 1642	(Does not exceed tolerance limit.)
Spring 97 sampling period	1230	1296	169	958 - 1635	(Does not exceed tolerance limit.)

Chromium

	Current Value	Historic Mean	Historic Standard Deviation	Tolerance Interval	
Fall 96 sampling period	0.005	0.011	0.014	0.000 - 0.038	(Does not exceed tolerance limit.)
Spring 97 sampling period	0.005	0.010	0.014	0.000 - 0.038	(Does not exceed tolerance limit.)

Lead

	Current Value	Historic Mean	Historic Standard Deviation	Tolerance Interval	
Fall 96 sampling period	0.003	0.008	0.021	0.000 - 0.050	(Does not exceed tolerance limit.)
Spring 97 sampling period	0.003	0.007	0.021	0.000 - 0.049	(Does not exceed tolerance limit.)

Tolerance Interval = (Mean ± 2 Standard Deviations)

Tolerance Interval

SMW-5 Giant Refining - Ciniza

pH

	Current Value	Historic Mean	Historic Standard Deviation	Tolerance Interval	
Fall 96 sampling period	8.64	8.55	0.27	8.01 - 9.10	(Does not exceed tolerance limit.)
Spring 97 sampling period	8.70	8.56	0.27	8.02 - 9.09	(Does not exceed tolerance limit.)

Specific Conductivity

	Current Value	Historic Mean	Historic Standard Deviation	Tolerance Interval	
Fall 96 sampling period	1283	1141	73	996 - 1286	(Does not exceed tolerance limit.)
Spring 97 sampling period	1157	1142	71	999 - 1285	(Does not exceed tolerance limit.)

Chromium

	Current Value	Historic Mean	Historic Standard Deviation	Tolerance Interval	
Fall 96 sampling period	0.005	0.022	0.031	0.000 - 0.084	(Does not exceed tolerance limit.)
Spring 97 sampling period	0.005	0.022	0.030	0.000 - 0.082	(Does not exceed tolerance limit.)

Lead

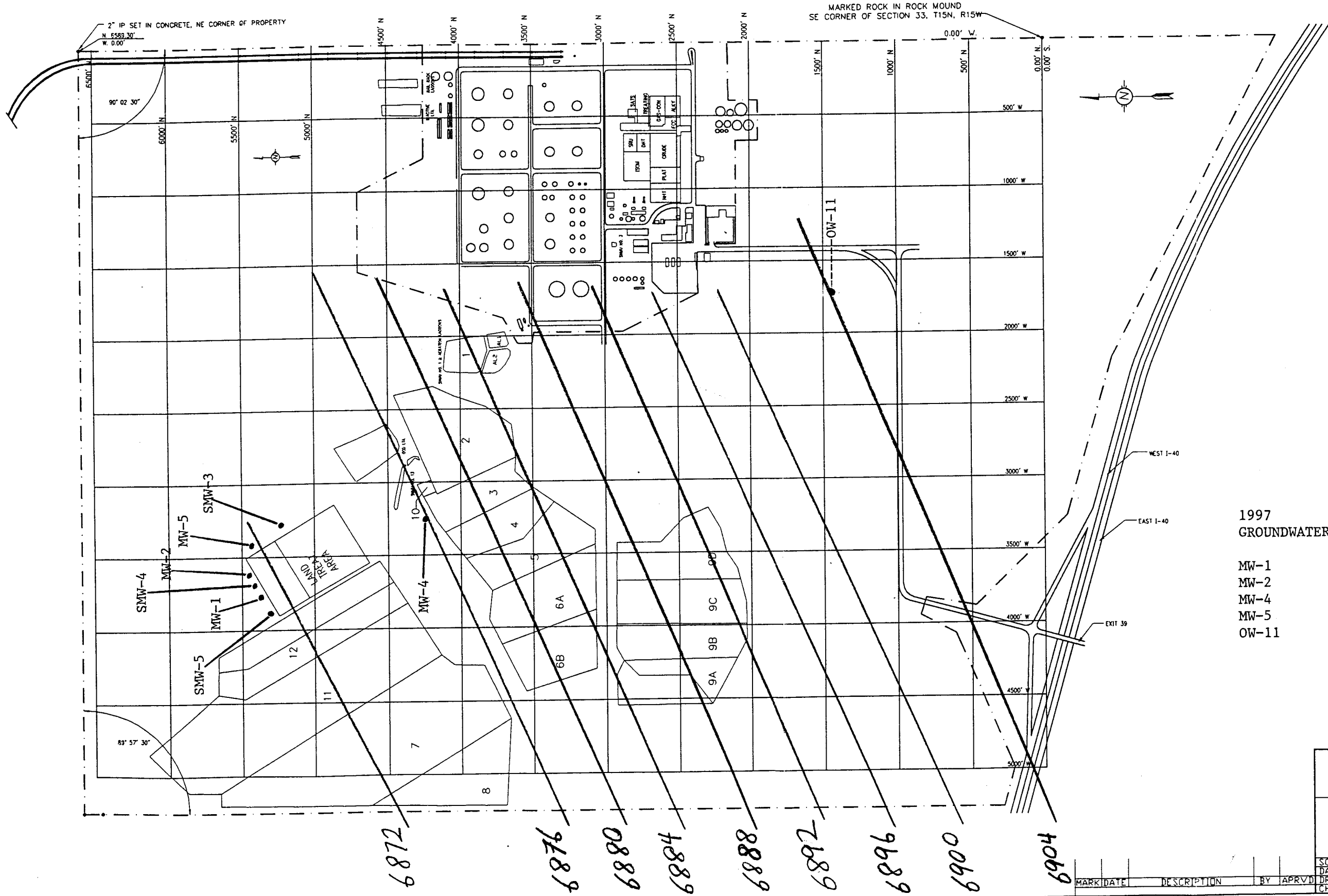
	Current Value	Historic Mean	Historic Standard Deviation	Tolerance Interval	
Fall 96 sampling period	0.003	0.013	0.047	0.000 - 0.108	(Does not exceed tolerance limit.)
Spring 97 sampling period	0.003	0.013	0.047	0.000 - 0.106	(Does not exceed tolerance limit.)

Tolerance Interval = (Mean \pm 2 Standard Deviations)

GROUNDWATER ELEVATION MEASUREMENTS

Giant Refining Company - Ciniza

<u>Well No.</u>	<u>Date</u>	<u>Casing Elevation</u>	<u>Depth to Water</u>	<u>Groundwater Elevation</u>
MW-1	Spring 97	6878.52	6.02	6872.5
	Fall 97		6.92	6871.6
MW-2	Spring 97	6880.84	9.54	6871.3
	Fall 97		9.33	6871.51
MW-4	Spring 97	6882.54	6.54	6876
	Fall 97		7.75	6874.79
MW-5	Spring 97	6883.32	12.22	6871.1
	Fall 97		11.33	6871.99
OW-11	Fall 96	6923.89	30.29	6893.6
	Spring 97		19.99	6903.9
SMW-3	Fall 96	6884.56	31.56	6853
	Spring 97		31.46	6853.1
SMW-4	Fall 96	6880.08	30.08	6850
	Spring 97		32.48	6847.6
SMW-5	Fall 96	6878.02	31.02	6847
	Spring 97		30.32	6847.7



1997
GROUNDWATER ELEVATION CONTOUR MAP

MW-1	6871.6
MW-2	6871.5
MW-4	6874.8
MW-5	6872.0
OW-11	6903.8

CINIZA REFINERY **GIANT** GALLUP NEW MEXICO
REFINING CO.
A DIVISION OF GIANT INDUSTRIES

MASTER PLOT PLAN

SCALE	1"=300'	APRVD.	
DATE	9-1-94	APRVD.	
DRN	SPS	IPS	300MS
CHK'D	DWG NO.	Z-02-146	REV. 1

MARK	DATE	DESCRIPTION	BY	APRVD.