



**ENVIRONMENTAL
PROTECTION**
FLUOR DANIEL GTI

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AQUIFER CHARACTERIZATION REPORT

**GMC TRUCK CENTER
8099 COLISEUM WAY
OAKLAND, CALIFORNIA**

Fluor Daniel GTI Project 040020487

May 14, 1996

Prepared for:

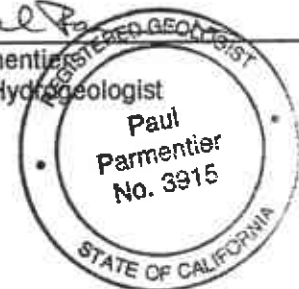
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1.0 INTRODUCTION

Fluor Daniel GTI, Inc., (Fluor Daniel GTI) was retained by General Motors Corporation (GMC) to characterize the uppermost saturated zone at the GMC Truck Center, 8099 South Coliseum Way, Oakland, California. The scope of work for aquifer characterization included performing a constant rate pump test on well MW-2, data processing and interpretation. The pump test began April 3, and concluded April 4, 1996. The response of the saturated zone to pumping was monitored by recording water levels in the test well and observation wells. Figures 1 and 2 show the site location and well locations.

The purpose of the aquifer test was to estimate the aquifer properties of the uppermost saturated zone (hydraulic conductivity, transmissivity, specific yield, and storativity). Time-drawdown and time-recovery data were collected from the test well and nearby observation wells during field testing for analysis. This report documents the procedures and findings of the aquifer pump test, and reports the results. The field activities were carried out as part of an underground storage tank (UST) investigation.

2.0 ENVIRONMENTAL SETTING

The site is located approximately 1 mile east of the San Francisco Bay at an elevation of 10 feet above mean sea level. The surrounding topography slopes gently down to the northwest toward the bay.

The local geology and hydrogeology have been reported elsewhere. In summary, the lithology is heterogeneous and reported to consist of unconsolidated sediment, primarily clay (Bay Mud) with some interbedded sand and gravel, and fill material. The fill material primarily consists of gravelly clay and was reported just below the paved ground surface down to 2 to 15 feet below surface grade (bsg). At the location of the test well, fill was reported to 6 feet bsg that was underlain by clay to 14 feet bsg. The clay bed was underlain by gravel and sand to 18 feet, followed by clay to the bottom of the boring at 20 feet bsg. Groundwater is reported between approximately 3 and 10 feet below the ground surface at the site. Groundwater elevations in the site monitoring wells recorded on April 3, 1996, prior to pumping, ranged from 0.10 feet to 6.04 feet above mean sea level (table 1).

The aquifer material is comprised of a 4-foot-thick sand and gravel bed between approximately 12 to 18 feet below grade surface in the area of MW-2 and PZ-1 through PZ-3. These materials are likely stream channel deposits that are discontinuous and were not found in monitoring wells MW-1 and MW-3 through MW-8. The deposits in the shallow water bearing zone in the area of wells MW-1 and MW-3 through MW-8 were reported as primarily sandy clay and gravelly clay.

Groundwater flow beneath the site is reported to the north under a gradient of approximately 0.01 feet per foot. Groundwater appears under confined conditions in the area of MW-2.

3.0 AQUIFER PUMPING TEST

Prior to aquifer testing each monitoring well (MW-1 through MW-8) was developed and water discharge rates were monitored to determine the most appropriate well and pumping rate for the pump test. Monitoring well MW-2 was identified for use in the pump test based on a significantly higher specific capacity than the other wells and its location relative to the contaminant plume. Subsequently three piezometers PZ-1, PZ-2 and PZ-3 were installed in the area of MW-2 as observation wells. The well screens for the piezometers were constructed to match the interval of MW-2, from 5 to 20 feet below surface grade (bsg), to monitor the same water bearing zone. Piezometers PZ-1, PZ-2 and PZ-3 were located 15.3, 45, and 24 feet from MW-2, respectively.

A constant rate pumping test was performed from April 3 to April 4, 1996. A 4-inch-diameter submersible pump was deployed in well MW-2. Pressure transducers were placed in well MW-2 and in piezometers PZ-1, PZ-2 and PZ-3 to record groundwater levels during and after pumping. The test well parameters are summarized in table 2.

Well MW-2 was gauged to measure depth to groundwater in the well before deploying the pump in the well. The submersible pump was deployed with the pump intake approximately 18 feet below the top of the well casing, placing the pump approximately 8 feet below the static groundwater surface. Groundwater was pumped from MW-2 and liquid levels in MW-2 and PZ-1, PZ-2 and PZ-3 were recorded periodically in the well using an electronic water level indicator and at regular intervals using the pressure transducers and a data logger. Water levels in all the monitoring wells were also monitored periodically throughout the test period to determine if these other wells were influenced by pumping.

Well MW-2 was tested using a pumping rate of approximately 1.9 gallons per minute (gpm). The well was pumped for the total duration of 1484 minutes (24 hours), during which time a total of 2875 gallons of groundwater was pumped.

Pump discharge rates were regulated using a ball valve and monitored using a totalizing flowmeter during testing. Groundwater was discharged through a hose into a 4500-gallon poly tank pending proper disposal.

Immediate response to pumping was observed in all three observation wells (PZ-1, PZ-2 and PZ-3). No direct correlation could be made from drawdown in the other monitoring wells (MW-1 and MW-3).

through MW-8) during pumping. Drawdown in the pumping well was 0.93 feet after 51 minutes of pumping, and 1.28 feet after 405 minutes of pumping. Drawdown in the nearest observation well (PZ-1), located 15.3 feet from the pumping well was 0.57 feet after 51 minutes and 0.92 feet after 405 minutes of pumping. Drawdown in the observation well PZ-3, located 24 feet from the pumping well was 0.58 feet after 51 minutes and 0.86 feet after 405 minutes of pumping. Drawdown in the observation well PZ-2, located 45 feet from the pumping well was 0.28 feet after 51 minutes and 0.46 feet after 405 minutes of pumping.

The pumping test parameters are summarized in table 2. The time-drawdown record for the pumping well and observation wells are tabulated in appendix A.

4.0 INTERPRETATION OF PUMPING TEST DATA

Two methods were used to estimate the aquifer properties using the test data from the pumping tests. Time versus drawdown data from each of the three observation wells were analyzed by the Theis solution using AQTESOLV™ Aquifer Test Solver, Version 2.1. The distance-drawdown solution (Jacob 1950) was also used.

Results from this evaluation, including the type-curves and the Jacob approximation, are included in appendix B and summarized in table 3.

4.1 Theis Method

Data from observation wells PZ-1, PZ-2 and PZ-3 were analyzed to estimate the hydraulic properties of the aquifer using AQTESOLV™ Aquifer Test Solver, Version 2.1. This method uses type-curve matching of the time-drawdown data collected from each observation well during pumping and is based on the graphical solution developed by Theis (1935), and modified by Hantush (1956) and Neuman (1975).

Type-curve solutions using the Theis method enable AQTESOLV™ to calculate the transmissivity and storativity. To determine the values of storativity and transmissivity, the drawdown versus time since pumping started was plotted on log-log paper. The resultant curve is matched against type curves. Using transmissivity estimates, hydraulic conductivity was calculated assuming a saturated thickness of 4 feet, or approximately the thickness of the coarser aquifer material likely to be producing most of the groundwater flow. No corrections for barometric pressure change or possible tidal influence were performed. Confined aquifer type curves were selected, based on the observed fine grained layers confining the coarser grain aquifer material.

The aquifer transmissivity obtained using AQUTESOLV™ was 2,385 gallons per day per foot (gpd/ft) for PZ-1, 2934 gpd/ft at PZ-2, and 2182 gpd/ft at PZ-3. Aquifer storativity was calculated at 0.0001, 0.0003 and 0.00006, respectively. Hydraulic conductivity values were calculated at 596 gpd/ft², 733 gpd/ft² and 545 gpd/ft², respectively.

4.2 Distance-Drawdown Method

The distance-drawdown method is a variation of the Theis method, using a Cooper-Jacob simplification, that may be used when water level drawdown in three or more observation wells are measured simultaneously to calculate the transmissivity and storativity. Drawdown is plotted on an arithmetic scale versus distance from the pumping well on a logarithmic scale. Data from the three piezometers were plotted after 1,373 minutes of pumping. The monitoring well drawdown data was plotted for this same time to evaluate well efficiency.

Interpretation of the distance-drawdown graph indicated an aquifer transmissivity of 1,270 gpd/ft and a storativity of 0.006. Hydraulic conductivity was calculated at 317 gpd/ft².

5.0 FINDINGS

Fluor Daniel GTI tested well MW-2 at the GMC Truck Center facility in April 1996. Testing involved a 24-hour constant rate pumping test to collect data for characterization of the uppermost saturated zone at the site.

Results from the 24 hour constant rate pumping test indicate aquifer transmissivity between 1,270 gpd/ft to 2930 gpd/ft and storativity of 0.006 to 0.00006. Hydraulic conductivity was 317 gpd/ft² to 733 gpd/ft². The range for transmissivity is representative of sand and gravel aquifer material and corresponds to the lithology of the water yielding zone recorded at the site during drilling.

Storativity values of 0.006 to 0.00006 are in the range of expected values for a confined aquifer. Storativity is a measure of the volume of water that an aquifer releases from or takes into storage per unit surface area of the aquifer per unit change in head. In a confined aquifer where the potentiometric head remains above the aquifer level the storativity is a function of compressibility of the aquifer frame work and the pore water so the values are generally low, between approximately 0.001 and 0.00001.

Based on results from the test, the estimated sustainable yield of this well is approximately 4 to 5 gpm with approximately 5 feet of drawdown in the well.

The graph of the distance-drawdown solution the data plotted from MW-2 very closely matches the best fit line for PZ-1, PZ-2 and PZ-3 data. This indicates that there was little or no drawdown at MW-2 due to well loss.

The relatively high hydraulic conductivity values measured during this test are representative of the sand/gravel layer observed in some of the wells at the site. The presence of finer grained layers (clays and silts) will significantly affect groundwater flow at the site. This heterogeneous lithology should be considered in the evaluation of remediation methods or in the estimation of associated health risks. The rapid response in observation wells to pumping indicates that the coarser grained layers are likely interconnected. No aquifer boundaries were observed during the test.

6.0 REFERENCES

Duffield, G.M., 1995, AQUATESOLV™ Aquifer Test Solver Version 2.01.

TABLES

1. Well Parameters
2. Well Mw-2 Constant Rate Pumping Test Summary
3. Summary of Aquifer Test Results

TABLE 1
Well Parameters

GMC Truck Center
8099 Coliseum Way
Oakland, California

April 3, 1996

Well	Depth to Groundwater (feet)	Water Elevation (feet)	Well Screen Interval (feet bsg)	Use
MW-1	6.59	3.20	5-20	Monitoring
MW-2	9.62	0.10	5-20	Test Well
MW-3	8.02	2.39	5-20	Monitoring
MW-4	3.78	6.04	5-20	Monitoring
MW-5	7.03	3.71	3-18	Monitoring
MW-6	8.05	1.62	3-18	Monitoring
MW-7	7.98	2.57	3-18	Monitoring
MW-8	5.27	4.76	5-20	Monitoring
PZ-1	9.82	0.15	5-20	Observation
PZ-2	9.98	0.61	5-20	Observation
PZ-3	9.60	0.10	5-20	Observation

Notes: Depth-to water measurements recorded prior to pumping, 4/3/96 (measured from top of the well casings).
Screen intervals are in feet below surface grade.

TABLE 2
Well MW-2 Constant Rate Pumping Test Summary

GMC Truck Center
8099 Coliseum Way
Oakland, California

April 3-4, 1996

Pumping Well	Pumping Rate in gpm	Test Duration in Minutes	Total Gallons Pumped	Number of Observation Wells
MW-2	1.9	1484	2875	3

Observation Well	Distance from Pumping Well in feet	Drawdown After 51 minutes in feet	Drawdown at End of Test in feet	% Recovery After Pumping Stopped
PZ-1	15.3	0.57	0.98	87% in 300 min
PZ-2	45	0.28	0.62	94% in 300 min
PZ-3	24	0.58	0.94	92 % in 300 min

Notes: Drawdown estimates based on difference in groundwater levels after 51 and 1484 minutes of pumping.

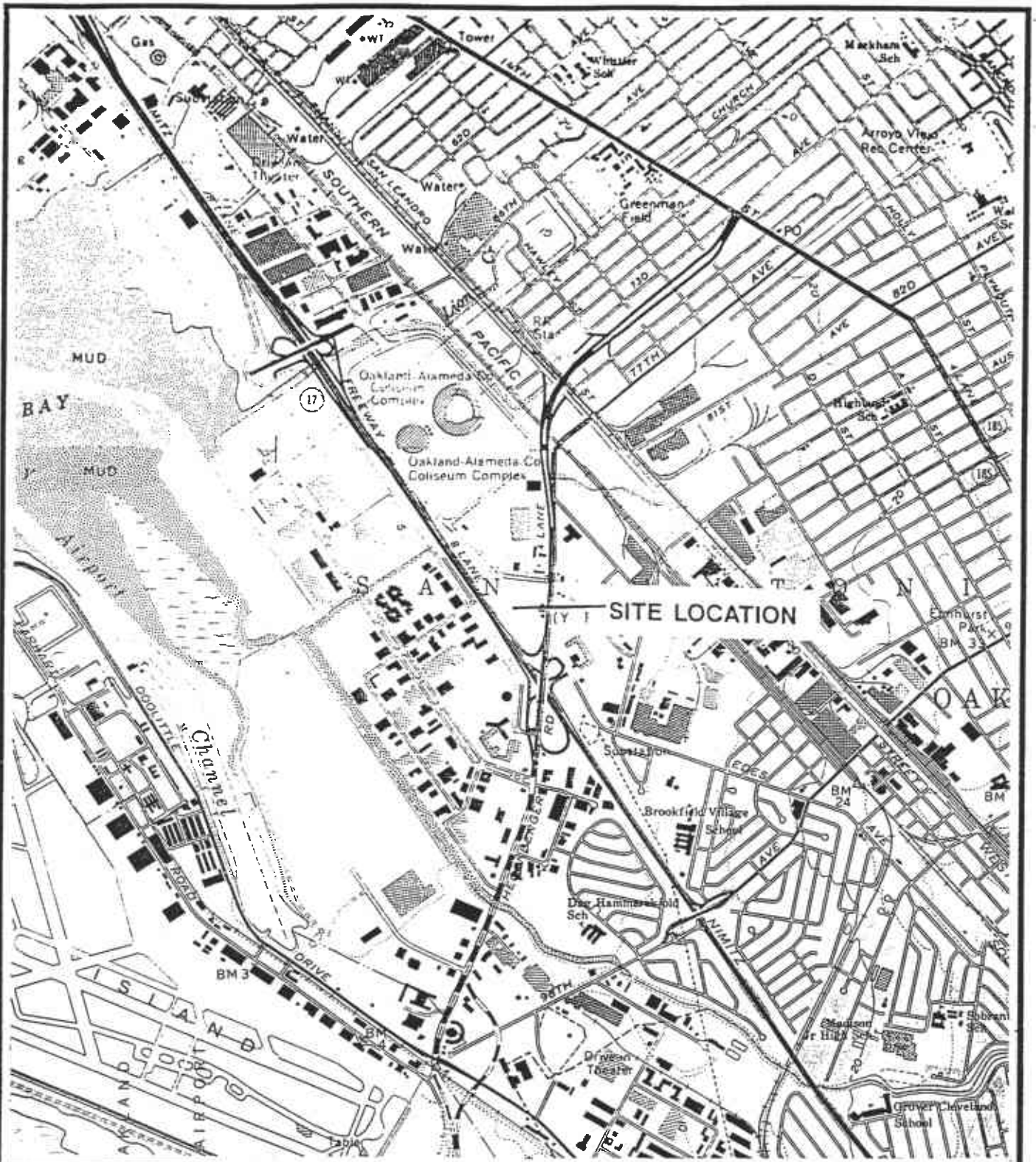
TABLE 3
Summary of Aquifer Test Results

Gmc Truck Center
8099 Coliseum Way
Oakland, California

April 3-4, 1996

Well Id.	Transmissivity gpd/ft	Hydraulic Conductivity gpd/ft ²	Storage Coefficient	Method of Solution
PZ-1	2385	596	0.0001	Theis Curve Match
PZ-2	2934	733	0.0003	Theis Curve Match
PZ-3	2182	545	0.00006	Theis Curve Match
PZ-1,2 and 3	1270	317	0.006	Jacob Approx.

Notes: Aquifer hydraulic conductivity computed assuming 4 feet of saturated thickness.



FLUOR DANIEL GTI



SOURCE: U.S.G.S. 7.5' QUAD SHEET
SAN LEANDRO, CALIFORNIA
PHOTOREVISED 1980



SCALE:

0 FEET 2000

SITE LOCATION MAP

CLIENT:

GMC TRUCK CENTER

DATE:

5/14/96

LOCATION:

8099 COLISEUM WAY
OAKLAND, CALIFORNIA

FIGURE:

1

LEGEND

- PROPERTY BOUNDARY
- ◆ MONITORING WELL
- PIEZOMETER

COLISEUM WAY



OIL/WATER SEPARATOR

BUILDING

GARBAGE COLLECTION AREA

VACANT LAND

INTERSTATE 880

MW-2 ◆ PZ-1 ● PZ-2 ●
PZ-3 ●

MW-3 ◆

MW-1 ◆


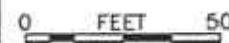
MW-4 ◆

MW-5 ◆

MW-7 ◆

MW-6 ◆

MW-8 ◆

FLUOR DANIEL GTI 		 0 FEET 50 APPROXIMATE SCALE
SITE PLAN		
CLIENT: GMC TRUCK CENTER		
LOCATION: 8099 COLISEUM WAY OAKLAND, CALIFORNIA		
ACAD FILE:	SP596	PROJECT NO.: 042020136
DES.: KPJ	DET.: ML	CHECKED: <i>KJ</i>
REV.: 2	DRAWING: 2	
DATE: 5/10/96		

APPENDIX A

MW-2 Constant Rate Test Time-Drawdown and Time-Recovery Data

GMC TRUCK CENTER

8099 Coliseum Way Oakland, CA

Well MW-2 Constant Rate Pumping Test

DATE	TIME	MW-2 FEET	PZ-1 FEET	PZ-3 FEET	PZ-2 FEET	REMARKS	Minutes	PZ-1 Drawdown	PZ-3 Drawdown	PZ-2 Drawdown
		FEET	FEET	FEET	FEET			Drawdown	Drawdown	Drawdown
04/03/96	11:12:10	7.93	7.10	7.83	5.05	Start @ 11:12	0.00	0.00	0	0
04/03/96	11:12:15	7.60	7.03	7.78	5.05	Q = 1.9 gpm	0.08	0.07	0.05	0
04/03/96	11:12:20	7.70	6.99	7.73	5.05		0.17	0.11	0.1	0
04/03/96	11:12:25	7.68	6.97	7.70	5.04		0.25	0.13	0.13	0.01
04/03/96	11:12:30	7.64	6.94	7.67	5.04		0.33	0.16	0.16	0.01
04/03/96	11:12:35	7.60	6.93	7.64	5.04		0.42	0.17	0.19	0.01
04/03/96	11:12:40	7.61	6.91	7.62	5.04		0.50	0.19	0.21	0.01
04/03/96	11:12:45	7.59	6.89	7.61	5.03		0.58	0.21	0.22	0.02
04/03/96	11:12:50	7.59	6.88	7.59	5.03		0.67	0.22	0.24	0.02
04/03/96	11:12:55	7.57	6.87	7.58	5.03		0.75	0.23	0.25	0.02
04/03/96	11:13:00	7.56	6.86	7.57	5.03		0.83	0.24	0.26	0.02
04/03/96	11:13:05	7.55	6.85	7.56	5.02		0.92	0.25	0.27	0.03
04/03/96	11:13:10	7.54	6.84	7.55	5.02		1.00	0.26	0.28	0.03
04/03/96	11:13:15	7.53	6.83	7.54	5.02		1.08	0.27	0.29	0.03
04/03/96	11:13:20	7.53	6.82	7.53	5.01		1.17	0.28	0.3	0.04
04/03/96	11:13:25	7.52	6.82	7.53	5.01		1.25	0.28	0.3	0.04
04/03/96	11:13:30	7.52	6.81	7.52	5.01		1.33	0.29	0.31	0.04
04/03/96	11:13:35	7.51	6.80	7.51	5.01		1.42	0.30	0.32	0.04
04/03/96	11:13:40	7.50	6.79	7.50	5.00		1.50	0.31	0.33	0.05
04/03/96	11:13:45	7.49	6.79	7.50	5.00		1.58	0.31	0.33	0.05
04/03/96	11:13:50	7.49	6.78	7.49	4.99		1.67	0.32	0.34	0.06
04/03/96	11:13:55	7.48	6.78	7.49	4.99		1.75	0.32	0.34	0.06
04/03/96	11:14:00	7.48	6.77	7.48	4.99		1.83	0.33	0.35	0.06

GMC TRUCK CENTER

8099 Coliseum Way Oakland, CA

Well MW-2 Constant Rate Pumping Test

DATE	TIME	MW-2 FEET	PZ-1 FEET	PZ-3 FEET	PZ-2 FEET	REMARKS	Minutes	PZ-1	PZ-3	PZ-2
								Drawdown	Drawdown	Drawdown
04/03/96	11:14:05	7.47	6.77	7.48	4.99		1.92	0.33	0.35	0.06
04/03/96	11:14:10	7.47	6.76	7.48	4.98		2.00	0.34	0.35	0.07
04/03/96	11:14:15	7.47	6.76	7.47	4.98		2.08	0.34	0.36	0.07
04/03/96	11:14:20	7.46	6.76	7.47	4.98		2.17	0.34	0.36	0.07
04/03/96	11:14:25	7.47	6.75	7.46	4.97		2.25	0.35	0.37	0.08
04/03/96	11:14:30	7.47	6.75	7.46	4.97		2.33	0.35	0.37	0.08
04/03/96	11:14:35	7.49	6.75	7.46	4.97		2.42	0.35	0.37	0.08
04/03/96	11:14:40	7.50	6.74	7.46	4.97		2.50	0.36	0.37	0.08
04/03/96	11:14:45	7.51	6.74	7.46	4.97		2.58	0.36	0.37	0.08
04/03/96	11:14:50	7.52	6.74	7.46	4.96		2.67	0.36	0.37	0.09
04/03/96	11:14:55	7.53	6.74	7.46	4.96		2.75	0.36	0.37	0.09
04/03/96	11:15:00	7.52	6.74	7.46	4.96		2.83	0.36	0.37	0.09
04/03/96	11:15:05	7.53	6.74	7.46	4.96		2.92	0.36	0.37	0.09
04/03/96	11:15:10	7.54	6.74	7.46	4.96		3.00	0.36	0.37	0.09
04/03/96	11:15:15	7.54	6.74	7.46	4.95		3.08	0.36	0.37	0.1
04/03/96	11:15:20	7.55	6.74	7.46	4.95		3.17	0.36	0.37	0.1
04/03/96	11:15:25	7.55	6.74	7.46	4.95		3.25	0.36	0.37	0.1
04/03/96	11:15:30	7.55	6.74	7.46	4.95		3.33	0.36	0.37	0.1
04/03/96	11:15:35	7.55	6.74	7.46	4.95		3.42	0.36	0.37	0.1
04/03/96	11:15:40	7.55	6.74	7.46	4.95		3.50	0.36	0.37	0.1
04/03/96	11:15:45	7.55	6.74	7.46	4.94		3.58	0.36	0.37	0.11
04/03/96	11:15:50	7.56	6.74	7.46	4.94		3.67	0.36	0.37	0.11
04/03/96	11:15:55	7.56	6.74	7.46	4.94		3.75	0.36	0.37	0.11
04/03/96	11:16:00	7.56	6.74	7.46	4.94		3.83	0.36	0.37	0.11

GMC TRUCK CENTER

8099 Coliseum Way Oakland, CA

Well MW-2 Constant Rate Pumping Test

DATE	TIME	MW-2 FEET	PZ-1 FEET	PZ-3 FEET	PZ-2 FEET	REMARKS	Minutes	PZ-1 Drawdown	PZ-3 Drawdown	PZ-2 Drawdown
04/03/96	11:16:05	7.56	6.74	7.46	4.94		3.92	0.36	0.37	0.11
04/03/96	11:16:10	7.56	6.74	7.46	4.94		4.00	0.36	0.37	0.11
04/03/96	11:16:15	7.56	6.74	7.46	4.94		4.08	0.36	0.37	0.11
04/03/96	11:16:20	7.55	6.74	7.46	4.94		4.17	0.36	0.37	0.11
04/03/96	11:16:25	7.56	6.74	7.45	4.94		4.25	0.36	0.38	0.11
04/03/96	11:16:30	7.56	6.74	7.45	4.93		4.33	0.36	0.38	0.12
04/03/96	11:16:35	7.56	6.74	7.45	4.93		4.42	0.36	0.38	0.12
04/03/96	11:16:40	7.56	6.74	7.45	4.93		4.50	0.36	0.38	0.12
04/03/96	11:16:45	7.56	6.74	7.45	4.93		4.58	0.36	0.38	0.12
04/03/96	11:16:50	7.56	6.74	7.46	4.93		4.67	0.36	0.37	0.12
04/03/96	11:16:55	7.55	6.74	7.45	4.93		4.75	0.36	0.38	0.12
04/03/96	11:17:00	7.56	6.74	7.45	4.93		4.83	0.36	0.38	0.12
04/03/96	11:18:00	7.55	6.73	7.45	4.92		5.83	0.37	0.38	0.13
04/03/96	11:19:00	7.53	6.73	7.44	4.91		6.83	0.37	0.39	0.14
04/03/96	11:20:00	7.46	6.71	7.43	4.90		7.83	0.39	0.4	0.15
04/03/96	11:21:00	7.40	6.69	7.40	4.90		8.83	0.41	0.43	0.15
04/03/96	11:22:00	7.31	6.66	7.38	4.89		9.83	0.44	0.45	0.16
04/03/96	11:23:00	7.26	6.64	7.36	4.88		10.83	0.46	0.47	0.17
04/03/96	11:24:00	7.24	6.62	7.34	4.87		11.83	0.48	0.49	0.18
04/03/96	11:25:00	7.25	6.62	7.34	4.86		12.83	0.48	0.49	0.19
04/03/96	11:26:00	7.24	6.61	7.33	4.85		13.83	0.49	0.5	0.2
04/03/96	11:27:00	7.24	6.61	7.33	4.85		14.83	0.49	0.5	0.2
04/03/96	11:28:00	7.24	6.61	7.33	4.84		15.83	0.49	0.5	0.21
04/03/96	11:29:00	7.21	6.60	7.32	4.84		16.83	0.50	0.51	0.21

GMC TRUCK CENTER

8099 Coliseum Way Oakland, CA

Well MW-2 Constant Rate Pumping Test

DATE	TIME	MW-2 FEET	PZ-1 FEET	PZ-3 FEET	PZ-2 FEET	REMARKS	Minutes	PZ-1 Drawdown	PZ-3 Drawdown	PZ-2 Drawdown
04/03/96	11:30:00	7.22	6.60	7.32	4.83		17.83	0.50	0.51	0.22
04/03/96	11:31:00	7.22	6.60	7.32	4.83		18.83	0.50	0.51	0.22
04/03/96	11:32:00	7.22	6.60	7.32	4.83		19.83	0.50	0.51	0.22
04/03/96	11:33:00	7.23	6.59	7.32	4.82		20.83	0.51	0.51	0.23
04/03/96	11:34:00	7.21	6.59	7.32	4.82		21.83	0.51	0.51	0.23
04/03/96	11:35:00	7.20	6.59	7.31	4.82		22.83	0.51	0.52	0.23
04/03/96	11:36:00	7.19	6.58	7.31	4.81		23.83	0.52	0.52	0.24
04/03/96	11:37:00	7.18	6.58	7.31	4.81		24.83	0.52	0.52	0.24
04/03/96	11:38:00	7.18	6.58	7.31	4.81		25.83	0.52	0.52	0.24
04/03/96	11:39:00	7.17	6.57	7.30	4.80		26.83	0.53	0.53	0.25
04/03/96	11:40:00	7.19	6.57	7.30	4.80		27.83	0.53	0.53	0.25
04/03/96	11:41:00	7.18	6.57	7.30	4.80		28.83	0.53	0.53	0.25
04/03/96	11:42:00	7.17	6.57	7.30	4.80		29.83	0.53	0.53	0.25
04/03/96	11:43:00	7.19	6.57	7.30	4.80		30.83	0.53	0.53	0.25
04/03/96	11:44:00	7.19	6.57	7.30	4.80		31.83	0.53	0.53	0.25
04/03/96	11:45:00	7.19	6.57	7.30	4.79		32.83	0.53	0.53	0.26
04/03/96	11:46:00	7.19	6.57	7.30	4.79		33.83	0.53	0.53	0.26
04/03/96	11:47:00	7.18	6.57	7.30	4.79		34.83	0.53	0.53	0.26
04/03/96	11:51:00	7.18	6.57	7.30	4.79		38.83	0.53	0.53	0.26
04/03/96	11:55:00	7.16	6.57	7.29	4.79		42.83	0.53	0.54	0.26
04/03/96	11:59:00	7.13	6.56	7.29	4.78		46.83	0.54	0.54	0.27
04/03/96	12:03:00	7.00	6.53	7.25	4.77		50.83	0.57	0.58	0.28
04/03/96	12:07:00	7.02	6.52	7.25	4.76		54.83	0.58	0.58	0.29
04/03/96	12:11:00	6.25	6.43	7.17	4.76		58.83	0.67	0.66	0.29

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Well MW-2 Constant Rate Pumping Test

DATE	TIME	MW-2 FEET	PZ-1 FEET	PZ-3 FEET	PZ-2 FEET	REMARKS	Minutes	PZ-1 Drawdown	PZ-3 Drawdown	PZ-2 Drawdown
04/03/96	12:15:00	7.78	6.77	7.51	4.83		62.83	0.33	0.32	0.22
04/03/96	12:19:00	7.11	6.65	7.38	4.85		66.83	0.45	0.45	0.2
04/03/96	12:23:00	6.97	6.55	7.29	4.80		70.83	0.55	0.54	0.25
04/03/96	12:27:00	7.06	6.56	7.30	4.78		74.83	0.54	0.53	0.27
04/03/96	12:31:00	7.10	6.57	7.32	4.79		78.83	0.53	0.51	0.26
04/03/96	12:35:00	7.11	6.57	7.32	4.79		82.83	0.53	0.51	0.26
04/03/96	12:39:00	7.10	6.58	7.32	4.79		86.83	0.52	0.51	0.26
04/03/96	12:43:00	6.99	6.54	7.29	4.78		90.83	0.56	0.54	0.27
04/03/96	12:47:00	7.01	6.55	7.30	4.78		94.83	0.55	0.53	0.27
04/03/96	12:51:00	7.03	6.55	7.30	4.78		98.83	0.55	0.53	0.27
04/03/96	12:55:00	6.90	6.54	7.29	4.78		102.83	0.56	0.54	0.27
04/03/96	12:59:00	6.88	6.51	7.26	4.77		106.83	0.59	0.57	0.28
04/03/96	13:03:00	6.88	6.51	7.26	4.76		110.83	0.59	0.57	0.29
04/03/96	13:07:00	6.89	6.51	7.26	4.76		114.83	0.59	0.57	0.29
04/03/96	13:11:00	6.89	6.51	7.26	4.75		118.83	0.59	0.57	0.3
04/03/96	13:15:00	6.88	6.51	7.26	4.75		122.83	0.59	0.57	0.3
04/03/96	13:19:00	6.89	6.51	7.25	4.75		126.83	0.59	0.58	0.3
04/03/96	13:23:00	6.89	6.50	7.25	4.75		130.83	0.60	0.58	0.3
04/03/96	13:27:00	6.89	6.50	7.25	4.75		134.83	0.60	0.58	0.3
04/03/96	13:31:00	6.89	6.50	7.25	4.75		138.83	0.60	0.58	0.3
04/03/96	13:35:00	6.89	6.49	7.25	4.75		142.83	0.61	0.58	0.3
04/03/96	13:39:00	6.85	6.48	7.24	4.75		146.83	0.62	0.59	0.3
04/03/96	13:43:00	6.84	6.48	7.23	4.74		150.83	0.62	0.6	0.31
04/03/96	13:47:00	6.84	6.47	7.23	4.75		154.83	0.63	0.6	0.3

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Well MW-2 Constant Rate Pumping Test

DATE	TIME	MW-2 FEET	PZ-1 FEET	PZ-3 FEET	PZ-2 FEET	REMARKS	Minutes	PZ-1 Drawdown	PZ-3 Drawdown	PZ-2 Drawdown
04/03/96	13:57:00	6.83	6.46	7.22	4.73		164.83	0.64	0.61	0.32
04/03/96	14:07:00	6.83	6.46	7.22	4.73		174.83	0.64	0.61	0.32
04/03/96	14:17:00	6.82	6.44	7.20	4.72		184.83	0.66	0.63	0.33
04/03/96	14:27:00	6.81	6.42	7.19	4.71		194.83	0.68	0.64	0.34
04/03/96	14:37:00	6.80	6.42	7.19	4.71		204.83	0.68	0.64	0.34
04/03/96	14:47:00	6.78	6.39	7.16	4.70		214.83	0.71	0.67	0.35
04/03/96	14:57:00	6.75	6.38	7.15	4.69		224.83	0.72	0.68	0.36
04/03/96	15:07:00	6.75	6.37	7.13	4.68		234.83	0.73	0.7	0.37
04/03/96	15:17:00	6.74	6.35	7.12	4.68		244.83	0.75	0.71	0.37
04/03/96	15:27:00	6.72	6.33	7.11	4.67		254.83	0.77	0.72	0.38
04/03/96	15:37:00	6.73	6.32	7.10	4.66		264.83	0.78	0.73	0.39
04/03/96	15:47:00	6.72	6.31	7.08	4.65		274.83	0.79	0.75	0.4
04/03/96	15:57:00	6.73	6.30	7.08	4.65		284.83	0.80	0.75	0.4
04/03/96	16:07:00	6.72	6.29	7.06	4.64		294.83	0.81	0.77	0.41
04/03/96	16:17:00	6.70	6.27	7.05	4.63		304.83	0.83	0.78	0.42
04/03/96	16:27:00	6.70	6.26	7.04	4.63		314.83	0.84	0.79	0.42
04/03/96	16:37:00	6.69	6.25	7.02	4.62		324.83	0.85	0.81	0.43
04/03/96	16:47:00	6.70	6.24	7.02	4.61		334.83	0.86	0.81	0.44
04/03/96	16:57:00	6.69	6.23	7.01	4.61		344.83	0.87	0.82	0.44
04/03/96	17:07:00	6.68	6.22	7.00	4.60		354.83	0.88	0.83	0.45
04/03/96	17:17:00	6.68	6.23	7.00	4.60		364.83	0.87	0.83	0.45
04/03/96	17:27:00	6.67	6.22	6.99	4.60		374.83	0.88	0.84	0.45
04/03/96	17:37:00	6.67	6.21	6.99	4.60		384.83	0.89	0.84	0.45
04/03/96	17:47:00	6.66	6.20	6.97	4.59		394.83	0.90	0.86	0.46

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DATE	TIME	MW-2 FEET	PZ-1 FEET	PZ-3 FEET	PZ-2 FEET	REMARKS	Minutes	PZ-1 Drawdown	PZ-3 Drawdown	PZ-2 Drawdown
04/03/96	17:57:00	6.65	6.18	6.97	4.59		404.83	0.92	0.86	0.46
04/03/96	18:07:00	6.65	6.18	6.96	4.58		414.83	0.92	0.87	0.47
04/03/96	18:17:00	6.65	6.15	6.95	4.56		424.83	0.95	0.88	0.49
04/03/96	18:27:00	6.64	6.16	6.95	4.55		434.83	0.94	0.88	0.5
04/03/96	18:37:00	6.64	6.19	6.95	4.54		444.83	0.91	0.88	0.51
04/03/96	18:47:00	6.63	6.18	6.94	4.53		454.83	0.92	0.89	0.52
04/03/96	18:57:00	6.62	6.17	6.93	4.53		464.83	0.93	0.9	0.52
04/03/96	19:07:00	6.61	6.17	6.93	4.52		474.83	0.93	0.9	0.53
04/03/96	19:17:00	6.61	6.16	6.92	4.51		484.83	0.94	0.91	0.54
04/03/96	19:27:00	6.61	6.15	6.91	4.51		494.83	0.95	0.92	0.54
04/03/96	19:37:00	6.60	6.15	6.91	4.50		504.83	0.95	0.92	0.55
04/03/96	19:47:00	6.59	6.14	6.91	4.50		514.83	0.96	0.92	0.55
04/03/96	19:57:00	6.59	6.14	6.90	4.49		524.83	0.96	0.93	0.56
04/03/96	20:07:00	6.59	6.14	6.90	4.49		534.83	0.96	0.93	0.56
04/03/96	20:17:00	6.59	6.14	6.90	4.49		544.83	0.96	0.93	0.56
04/03/96	20:27:00	6.59	6.14	6.91	4.50		554.83	0.96	0.92	0.55
04/03/96	20:37:00	6.59	6.14	6.91	4.49		564.83	0.96	0.92	0.56
04/03/96	20:47:00	6.60	6.15	6.92	4.49		574.83	0.95	0.91	0.56
04/03/96	20:57:00	6.59	6.16	6.92	4.50		584.83	0.94	0.91	0.55
04/03/96	21:07:00	6.62	6.17	6.93	4.50		594.83	0.93	0.9	0.55
04/03/96	21:17:00	6.62	6.18	6.95	4.51		604.83	0.92	0.88	0.54
04/03/96	21:27:00	6.63	6.19	6.95	4.51		614.83	0.91	0.88	0.54
04/03/96	21:37:00	6.65	6.20	6.97	4.52		624.83	0.90	0.86	0.53
04/03/96	21:47:00	6.66	6.21	6.98	4.53		634.83	0.89	0.85	0.52

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Well MW-2 Constant Rate Pumping Test

DATE	TIME	MW-2 FEET	PZ-1 FEET	PZ-3 FEET	PZ-2 FEET	REMARKS	Minutes	PZ-1 Drawdown	PZ-3 Drawdown	PZ-2 Drawdown
04/03/96	21:57:00	6.67	6.22	6.99	4.53		644.83	0.88	0.84	0.52
04/03/96	22:07:00	6.68	6.23	7.00	4.54		654.83	0.87	0.83	0.51
04/03/96	22:17:00	6.68	6.25	7.02	4.55		664.83	0.85	0.81	0.5
04/03/96	22:27:00	6.70	6.26	7.03	4.56		674.83	0.84	0.8	0.49
04/03/96	22:37:00	6.71	6.27	7.04	4.57		684.83	0.83	0.79	0.48
04/03/96	22:47:00	6.73	6.28	7.06	4.57		694.83	0.82	0.77	0.48
04/03/96	22:57:00	6.73	6.29	7.06	4.58		704.83	0.81	0.77	0.47
04/03/96	23:07:00	6.75	6.31	7.08	4.59		714.83	0.79	0.75	0.46
04/03/96	23:17:00	6.76	6.32	7.09	4.60		724.83	0.78	0.74	0.45
04/03/96	23:27:00	6.78	6.33	7.11	4.61		734.83	0.77	0.72	0.44
04/03/96	23:37:00	5.86	6.16	6.93	4.59		744.83	0.94	0.9	0.46
04/03/96	23:47:00	6.48	6.25	7.03	4.56		754.83	0.85	0.8	0.49
04/03/96	23:57:00	6.57	6.30	7.07	4.59		764.83	0.80	0.76	0.46
04/04/96	00:07:00	6.60	6.32	7.09	4.60		774.83	0.78	0.74	0.45
04/04/96	00:17:00	6.62	6.33	7.11	4.61		784.83	0.77	0.72	0.44
04/04/96	00:27:00	6.63	6.34	7.12	4.62		794.83	0.76	0.71	0.43
04/04/96	00:37:00	6.64	6.35	7.13	4.63		804.83	0.75	0.7	0.42
04/04/96	00:47:00	6.65	6.36	7.14	4.63		814.83	0.74	0.69	0.42
04/04/96	00:57:00	6.66	6.37	7.14	4.64		824.83	0.73	0.69	0.41
04/04/96	01:07:00	6.66	6.37	7.15	4.64		834.83	0.73	0.68	0.41
04/04/96	01:17:00	6.66	6.37	7.15	4.65		844.83	0.73	0.68	0.4
04/04/96	01:27:00	6.66	6.38	7.15	4.65		854.83	0.72	0.68	0.4
04/04/96	01:37:00	6.66	6.38	7.15	4.65		864.83	0.72	0.68	0.4
04/04/96	01:47:00	6.66	6.38	7.15	4.65		874.83	0.72	0.68	0.4

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Well MW-2 Constant Rate Pumping Test

DATE	TIME	MW-2 FEET	PZ-1 FEET	PZ-3 FEET	PZ-2 FEET	REMARKS	Minutes	PZ-1 Drawdown	PZ-3 Drawdown	PZ-2 Drawdown
04/04/96	01:57:00	6.65	6.37	7.15	4.65		884.83	0.73	0.68	0.4
04/04/96	02:07:00	6.65	6.36	7.14	4.64		894.83	0.74	0.69	0.41
04/04/96	02:17:00	6.65	6.36	7.13	4.64		904.83	0.74	0.7	0.41
04/04/96	02:27:00	6.63	6.35	7.12	4.63		914.83	0.75	0.71	0.42
04/04/96	02:37:00	6.61	6.33	7.11	4.62		924.83	0.77	0.72	0.43
04/04/96	02:47:00	6.62	6.33	7.10	4.61		934.83	0.77	0.73	0.44
04/04/96	02:57:00	6.60	6.31	7.09	4.60		944.83	0.79	0.74	0.45
04/04/96	03:07:00	6.60	6.30	7.08	4.60		954.83	0.80	0.75	0.45
04/04/96	03:17:00	6.58	6.29	7.06	4.59		964.83	0.81	0.77	0.46
04/04/96	03:27:00	6.57	6.28	7.05	4.58		974.83	0.82	0.78	0.47
04/04/96	03:37:00	6.57	6.27	7.04	4.57		984.83	0.83	0.79	0.48
04/04/96	03:47:00	6.56	6.25	7.02	4.56		994.83	0.85	0.81	0.49
04/04/96	03:57:00	6.54	6.24	7.01	4.55		1004.83	0.86	0.82	0.5
04/04/96	04:07:00	6.52	6.22	7.00	4.54		1014.83	0.88	0.83	0.51
04/04/96	04:17:00	6.51	6.21	6.98	4.53		1024.83	0.89	0.85	0.52
04/04/96	04:27:00	6.50	6.20	6.97	4.52		1034.83	0.90	0.86	0.53
04/04/96	04:37:00	6.49	6.18	6.96	4.51		1044.83	0.92	0.87	0.54
04/04/96	04:47:00	6.47	6.18	6.95	4.51		1054.83	0.92	0.88	0.54
04/04/96	04:57:00	6.46	6.17	6.94	4.50		1064.83	0.93	0.89	0.55
04/04/96	05:07:00	6.45	6.16	6.93	4.49		1074.83	0.94	0.9	0.56
04/04/96	05:17:00	6.44	6.15	6.92	4.48		1084.83	0.95	0.91	0.57
04/04/96	05:27:00	6.42	6.14	6.91	4.47		1094.83	0.96	0.92	0.58
04/04/96	05:37:00	6.44	6.13	6.90	4.47		1104.83	0.97	0.93	0.58
04/04/96	05:47:00	6.42	6.12	6.90	4.46		1114.83	0.98	0.93	0.59

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Well MW-2 Constant Rate Pumping Test

DATE	TIME	MW-2 FEET	PZ-1 FEET	PZ-3 FEET	PZ-2 FEET	REMARKS	Minutes	PZ-1 Drawdown	PZ-3 Drawdown	PZ-2 Drawdown
04/04/96	05:57:00	6.42	6.12	6.89	4.46		1124.83	0.98	0.94	0.59
04/04/96	06:07:00	6.42	6.11	6.89	4.45		1134.83	0.99	0.94	0.6
04/04/96	06:17:00	6.42	6.11	6.88	4.45		1144.83	0.99	0.95	0.6
04/04/96	06:27:00	6.41	6.10	6.87	4.44		1154.83	1.00	0.96	0.61
04/04/96	06:37:00	6.41	6.10	6.87	4.44		1164.83	1.00	0.96	0.61
04/04/96	06:47:00	6.20	6.05	6.82	4.43		1174.83	1.05	1.01	0.62
04/04/96	06:57:00	6.32	6.07	6.84	4.42		1184.83	1.03	0.99	0.63
04/04/96	07:07:00	6.35	6.07	6.84	4.42		1194.83	1.03	0.99	0.63
04/04/96	07:17:00	6.38	6.07	6.84	4.41		1204.83	1.03	0.99	0.64
04/04/96	07:27:00	6.41	6.08	6.85	4.42		1214.83	1.02	0.98	0.63
04/04/96	07:37:00	6.42	6.08	6.85	4.42		1224.83	1.02	0.98	0.63
04/04/96	07:47:00	6.44	6.08	6.85	4.41		1234.83	1.02	0.98	0.64
04/04/96	07:57:00	6.44	6.08	6.85	4.41		1244.83	1.02	0.98	0.64
04/04/96	08:07:00	6.45	6.08	6.85	4.42		1254.83	1.02	0.98	0.63
04/04/96	08:17:00	6.46	6.08	6.85	4.41		1264.83	1.02	0.98	0.64
04/04/96	08:27:00	6.42	6.07	6.84	4.41		1274.83	1.03	0.99	0.64
04/04/96	08:37:00	6.42	6.07	6.84	4.41		1284.83	1.03	0.99	0.64
04/04/96	08:47:00	6.43	6.07	6.83	4.41		1294.83	1.03	1	0.64
04/04/96	08:57:00	6.42	6.07	6.83	4.41		1304.83	1.03	1	0.64
04/04/96	09:07:00	6.42	6.06	6.83	4.41		1314.83	1.04	1	0.64
04/04/96	09:17:00	6.43	6.07	6.84	4.41		1324.83	1.03	0.99	0.64
04/04/96	09:27:00	6.43	6.07	6.84	4.41		1334.83	1.03	0.99	0.64
04/04/96	09:37:00	6.45	6.08	6.84	4.41		1344.83	1.02	0.99	0.64
04/04/96	09:47:00	6.46	6.08	6.85	4.41		1354.83	1.02	0.98	0.64

GMC TRUCK CENTER

8099 Coliseum Way Oakland, CA

Well MW-2 Constant Rate Pumping Test

DATE	TIME	MW-2 FEET	PZ-1 FEET	PZ-3 FEET	PZ-2 FEET	REMARKS	Minutes	PZ-1 Drawdown	PZ-3 Drawdown	PZ-2 Drawdown
04/04/96	09:57:00	6.45	6.09	6.85	4.41		1364.83	1.01	0.98	0.64
04/04/96	10:07:00	6.35	6.07	6.84	4.42		1374.83	1.03	0.99	0.63
04/04/96	10:17:00	6.37	6.08	6.84	4.41		1384.83	1.02	0.99	0.64
04/04/96	10:27:00	6.39	6.09	6.86	4.42		1394.83	1.01	0.97	0.63
04/04/96	10:37:00	6.42	6.10	6.87	4.43		1404.83	1.00	0.96	0.62
04/04/96	10:47:00	6.44	6.12	6.89	4.43		1414.83	0.98	0.94	0.62
						Pump off @ 11:56				
04/04/96	10:57:00	6.47	6.13	6.90	4.45	Recovery Data				
04/04/96	11:07:00	6.26	6.10	6.86	4.44					
04/04/96	11:17:00	6.30	6.11	6.87	4.44					
04/04/96	11:27:00	6.34	6.12	6.89	4.45					
04/04/96	11:37:00	6.37	6.14	6.91	4.46					
04/04/96	11:47:00	6.40	6.16	6.93	4.47					
04/04/96	11:55:00	6.42	6.17	6.94	4.47					
04/04/96	11:55:05	6.42	6.17	6.94	4.47					
04/04/96	11:55:10	6.42	6.17	6.94	4.47					
04/04/96	11:55:15	6.42	6.17	6.94	4.47					
04/04/96	11:55:20	6.42	6.17	6.94	4.47					
04/04/96	11:55:25	6.53	6.17	6.94	4.47					
04/04/96	11:55:30		6.17	6.93	4.46					
04/04/96	11:55:35		6.18	6.94	4.46					
04/04/96	11:55:40		6.19	6.95	4.46					
04/04/96	11:55:45		6.17	6.95	4.46					
04/04/96	11:55:50		6.15	6.93	4.46					

GMC TRUCK CENTER

8099 Coliseum Way Oakland, CA

Well MW-2 Constant Rate Pumping Test

DATE	TIME	MW-2 FEET	PZ-1 FEET	PZ-3 FEET	PZ-2 FEET	REMARKS	Minutes	PZ-1 Drawdown	PZ-3 Drawdown	PZ-2 Drawdown
04/04/96	11:55:55		6.18	6.94	4.46					
04/04/96	11:56:00	5.56	6.21	6.97	4.47					
04/04/96	11:56:05	5.98	6.23	6.99	4.47					
04/04/96	11:56:10	6.06	6.25	7.01	4.47					
04/04/96	11:56:15	6.12	6.26	7.02	4.47					
04/04/96	11:56:20	6.18	6.27	7.04	4.47					
04/04/96	11:56:25	6.24	6.28	7.05	4.47					
04/04/96	11:56:30	6.33	6.29	7.06	4.47					
04/04/96	11:56:35	6.40	6.31	7.08	4.48					
04/04/96	11:56:40	6.45	6.32	7.09	4.48					
04/04/96	11:56:45	6.49	6.33	7.10	4.48					
04/04/96	11:56:50	6.53	6.34	7.11	4.48					
04/04/96	11:56:55	6.58	6.35	7.12	4.48					
04/04/96	11:57:00	6.62	6.36	7.13	4.48					
04/04/96	11:57:05	6.66	6.37	7.14	4.49					
04/04/96	11:57:10	6.70	6.38	7.15	4.49					
04/04/96	11:57:15	6.73	6.39	7.16	4.50					
04/04/96	11:57:20	6.76	6.40	7.17	4.50					
04/04/96	11:57:25	6.80	6.40	7.17	4.50					
04/04/96	11:57:30	6.83	6.41	7.17	4.50					
04/04/96	11:57:35	6.86	6.42	7.18	4.50					
04/04/96	11:57:40	6.89	6.43	7.19	4.50					
04/04/96	11:57:45	6.92	6.43	7.19	4.50					
04/04/96	11:57:50	6.95	6.44	7.20	4.51					

GMC TRUCK CENTER

8099 Coliseum Way Oakland, CA

Well MW-2 Constant Rate Pumping Test

DATE	TIME	MW-2 FEET	PZ-1 FEET	PZ-3 FEET	PZ-2 FEET	REMARKS	Minutes	PZ-1 Drawdown	PZ-3 Drawdown	PZ-2 Drawdown
04/04/96	11:57:55	6.98	6.46	7.21	4.51					
04/04/96	11:58:00	7.00	6.46	7.23	4.51					
04/04/96	11:58:05	7.03	6.46	7.23	4.52					
04/04/96	11:58:10	7.05	6.47	7.24	4.52					
04/04/96	11:58:15	7.08	6.48	7.25	4.52					
04/04/96	11:58:20	7.10	6.49	7.25	4.52					
04/04/96	11:58:25	7.12	6.49	7.26	4.52					
04/04/96	11:58:30	7.14	6.50	7.27	4.52					
04/04/96	11:58:35	7.16	6.51	7.27	4.52					
04/04/96	11:58:40	7.19	6.51	7.28	4.53					
04/04/96	11:58:45	7.20	6.52	7.29	4.53					
04/04/96	11:58:50	7.22	6.53	7.29	4.53					
04/04/96	11:58:55	7.24	6.53	7.30	4.53					
04/04/96	11:59:00	7.26	6.54	7.30	4.53					
04/04/96	11:59:05	7.27	6.54	7.31	4.54					
04/04/96	11:59:10	7.29	6.55	7.31	4.54					
04/04/96	11:59:15	7.30	6.55	7.32	4.54					
04/04/96	11:59:20	7.32	6.56	7.33	4.54					
04/04/96	11:59:25	7.33	6.56	7.33	4.54					
04/04/96	11:59:30	7.34	6.57	7.34	4.55					
04/04/96	11:59:35	7.35	6.57	7.34	4.55					
04/04/96	11:59:40	7.37	6.57	7.34	4.55					
04/04/96	11:59:45	7.38	6.58	7.35	4.55					
04/04/96	11:59:50	7.39	6.59	7.35	4.56					

GMC TRUCK CENTER

8099 Coliseum Way Oakland, CA

Well MW-2 Constant Rate Pumping Test

DATE	TIME	MW-2 FEET	PZ-1 FEET	PZ-3 FEET	PZ-2 FEET	REMARKS	Minutes	PZ-1 Drawdown	PZ-3 Drawdown	PZ-2 Drawdown
04/04/96	11:59:55	7.40	6.59	7.36	4.56					
04/04/96	12:00:00	7.41	6.59	7.36	4.56					
04/04/96	12:01:00	7.50	6.63	7.40	4.58					
04/04/96	12:02:00	7.55	6.66	7.43	4.60					
04/04/96	12:03:00	7.59	6.68	7.45	4.62					
04/04/96	12:04:00	7.61	6.70	7.47	4.64					
04/04/96	12:05:00	7.64	6.72	7.49	4.66					
04/04/96	12:06:00	7.65	6.73	7.50	4.68					
04/04/96	12:07:00	7.66	6.74	7.51	4.69					
04/04/96	12:08:00	7.67	6.75	7.51	4.70					
04/04/96	12:09:00	7.68	6.76	7.52	4.71					
04/04/96	12:10:00	7.69	6.76	7.53	4.72					
04/04/96	12:11:00	7.70	6.77	7.53	4.73					
04/04/96	12:12:00	7.70	6.78	7.54	4.73					
04/04/96	12:13:00	7.71	6.78	7.55	4.74					
04/04/96	12:14:00	7.71	6.78	7.55	4.74					
04/04/96	12:15:00	7.72	6.79	7.55	4.75					
04/04/96	12:16:00	7.72	6.79	7.56	4.75					
04/04/96	12:17:00	7.73	6.80	7.56	4.76					
04/04/96	12:18:00	7.73	6.80	7.57	4.76					
04/04/96	12:19:00	7.73	6.81	7.57	4.77					
04/04/96	12:20:00	7.74	6.81	7.58	4.77					
04/04/96	12:21:00	7.74	6.81	7.58	4.78					
04/04/96	12:22:00	7.74	6.82	7.58	4.78					

GMC TRUCK CENTER

8099 Coliseum Way Oakland, CA

Well MW-2 Constant Rate Pumping Test

DATE	TIME	MW-2 FEET	PZ-1 FEET	PZ-3 FEET	PZ-2 FEET	REMARKS	Minutes	PZ-1 Drawdown	PZ-3 Drawdown	PZ-2 Drawdown
04/04/96	12:23:00	7.75	6.82	7.59	4.79					
04/04/96	12:24:00	7.75	6.82	7.59	4.79					
04/04/96	12:25:00	7.76	6.83	7.59	4.79					
04/04/96	12:26:00	7.76	6.83	7.60	4.80					
04/04/96	12:27:00	7.76	6.83	7.60	4.80					
04/04/96	12:28:00	7.76	6.84	7.60	4.80					
04/04/96	12:29:00	7.77	6.84	7.60	4.80					
04/04/96	12:30:00	7.77	6.84	7.61	4.81					
04/04/96	12:34:00	7.78	6.85	7.61	4.82					
04/04/96	12:38:00	7.79	6.86	7.63	4.84					
04/04/96	12:42:00	7.80	6.87	7.64	4.84					
04/04/96	12:46:00	7.81	6.88	7.64	4.85					
04/04/96	12:50:00	7.82	6.89	7.66	4.86					
04/04/96	12:54:00	7.83	6.90	7.66	4.87					
04/04/96	12:58:00	7.83	6.90	7.67	4.88					
04/04/96	13:02:00	7.84	6.91	7.67	4.88					
04/04/96	13:06:00	7.85	6.92	7.68	4.89					
04/04/96	13:10:00	7.85	6.93	7.69	4.91					
04/04/96	13:14:00	7.86	6.93	7.69	4.90					
04/04/96	13:18:00	7.86	6.94	7.70	4.90					
04/04/96	13:22:00	7.87	6.94	7.70	4.91					
04/04/96	13:26:00	7.88	6.95	7.71	4.91					
04/04/96	13:30:00	7.88	6.95	7.72	4.92					
04/04/96	13:34:00	7.89	6.96	7.72	4.92					

GMC TRUCK CENTER

8099 Coliseum Way Oakland, CA

Well MW-2 Constant Rate Pumping Test

DATE	TIME	MW-2 FEET	PZ-1 FEET	PZ-3 FEET	PZ-2 FEET	REMARKS	Minutes	PZ-1 Drawdown	PZ-3 Drawdown	PZ-2 Drawdown
04/04/96	13:38:00	7.89	6.96	7.73	4.93					
04/04/96	13:42:00	7.89	6.97	7.73	4.94					
04/04/96	13:46:00	7.90	6.97	7.74	4.94					
04/04/96	13:50:00	7.91	6.98	7.74	4.95					
04/04/96	13:54:00	7.91	6.98	7.74	4.95					
04/04/96	13:58:00	7.91	6.98	7.75	4.96					
04/04/96	14:02:00	7.91	6.99	7.75	4.96					
04/04/96	14:06:00	7.91	6.99	7.75	4.96					
04/04/96	14:10:00	7.92	6.99	7.76	4.97					
04/04/96	14:14:00	7.92	7.00	7.76	4.97					
04/04/96	14:18:00	7.92	7.00	7.76	4.98					
04/04/96	14:22:00	7.93	7.00	7.76	4.97					
04/04/96	14:26:00	7.93	7.00	7.76	4.97					
04/04/96	14:30:00	7.93	7.00	7.76	4.98					
04/04/96	14:40:00	7.93	7.00	7.76	4.98					
04/04/96	14:50:00	7.93	7.00	7.77	4.99					
04/04/96	15:00:00	7.93	7.00	7.77	4.99					
04/04/96	15:10:00	7.93	7.00	7.77	5.00					
04/04/96	15:20:00	7.93	7.00	7.77	5.00					
04/04/96	15:30:00	7.92	6.99	7.76	5.00					
04/04/96	15:40:00	7.91	6.99	7.75	4.99					
04/04/96	15:50:00	7.91	6.99	7.75	4.99					
04/04/96	16:00:00	7.90	6.97	7.74	4.99					
04/04/96	16:10:00	7.89	6.97	7.73	4.99					

GMC TRUCK CENTER

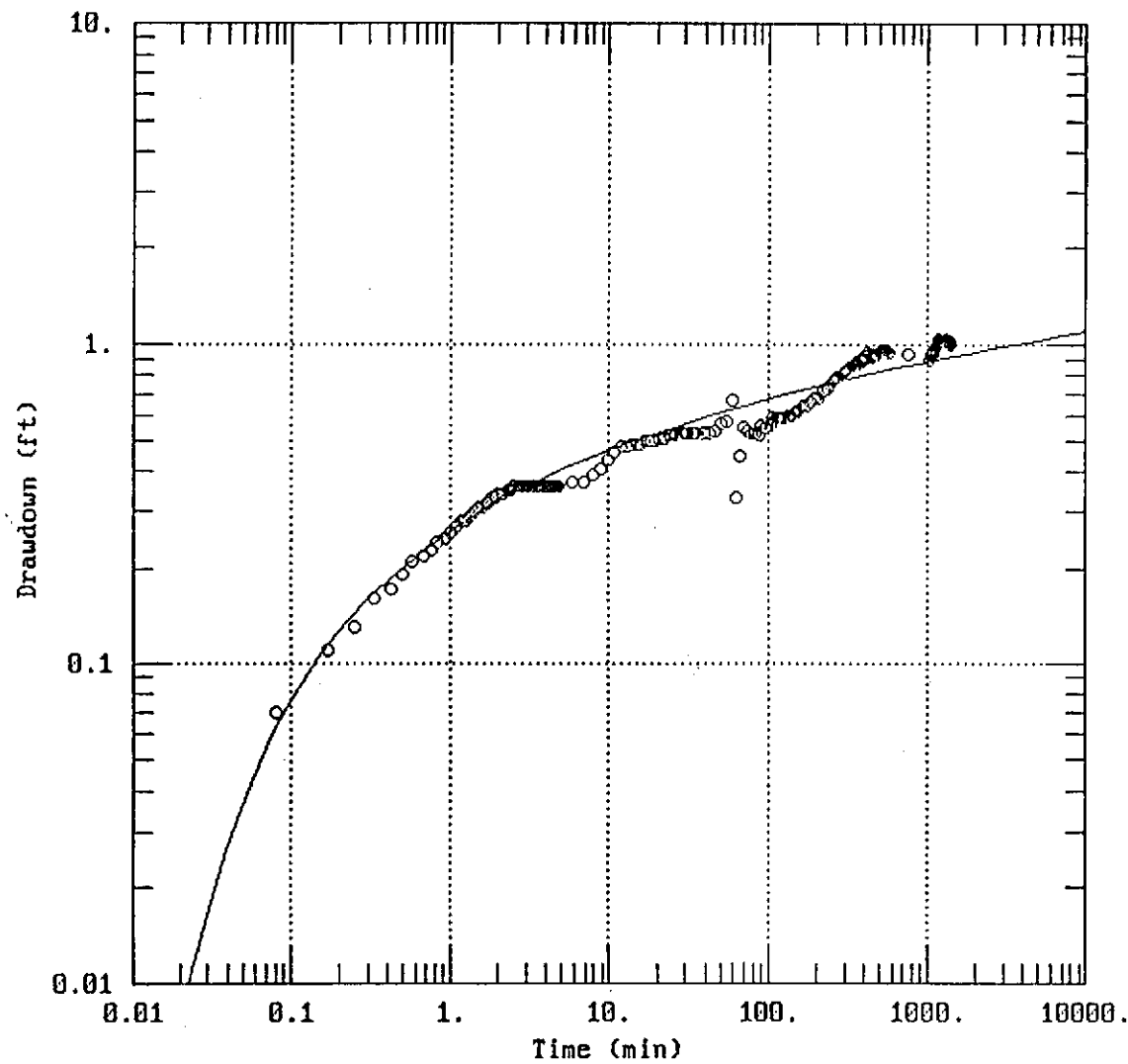
8099 Coliseum Way Oakland, CA

Well MW-2 Constant Rate Pumping Test

DATE	TIME	MW-2 FEET	PZ-1 FEET	PZ-3 FEET	PZ-2 FEET	REMARKS	Minutes	PZ-1 Drawdown	PZ-3 Drawdown	PZ-2 Drawdown
04/04/96	16:20:00	7.89	6.96	7.72	4.98					
04/04/96	16:30:00	7.87	6.95	7.71	4.98					
04/04/96	16:40:00	7.87	6.94	7.70	4.97					
04/04/96	16:50:00	7.85	6.92	7.69		End of File				

APPENDIX B

Theis Method and Distance-Drawdown Results



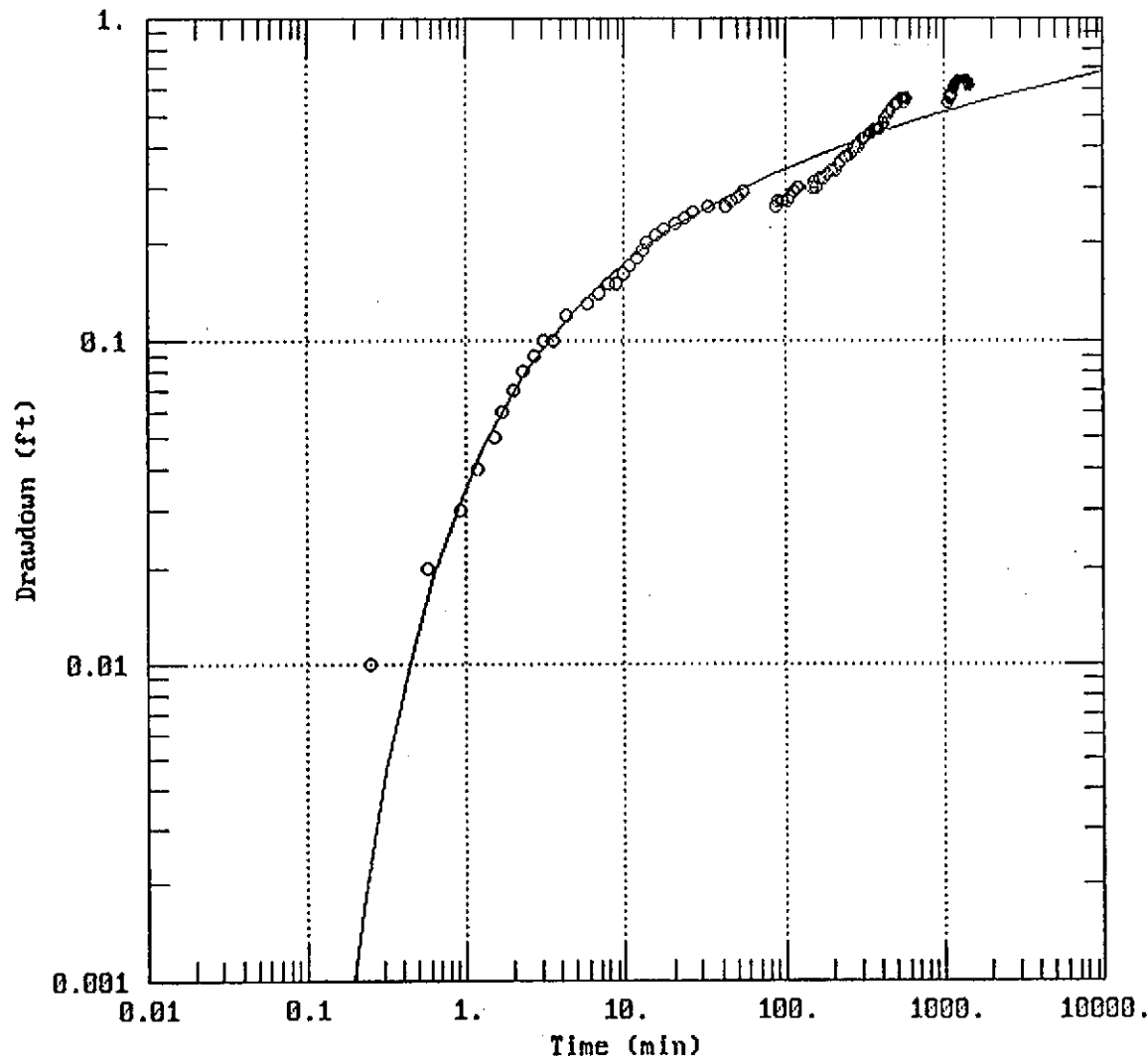
DATA SET:
PZ-1.DAT
04/25/96

AQUIFER MODEL:
Confined
SOLUTION METHOD:
Theis

PROJECT DATA:
test date: 04/03/96
test well: MW-2
obs. well: PZ-1

TEST DATA:
 $Q = 1.9$ gal/min
 $r = 15.3$ ft
 $r_c = 0.33$ ft
 $r_w = 0.83$ ft
 $b = 4.$ ft

PARAMETER ESTIMATES:
 $T = 2384.8$ gal/day/ft
 $S = 0.0001258$



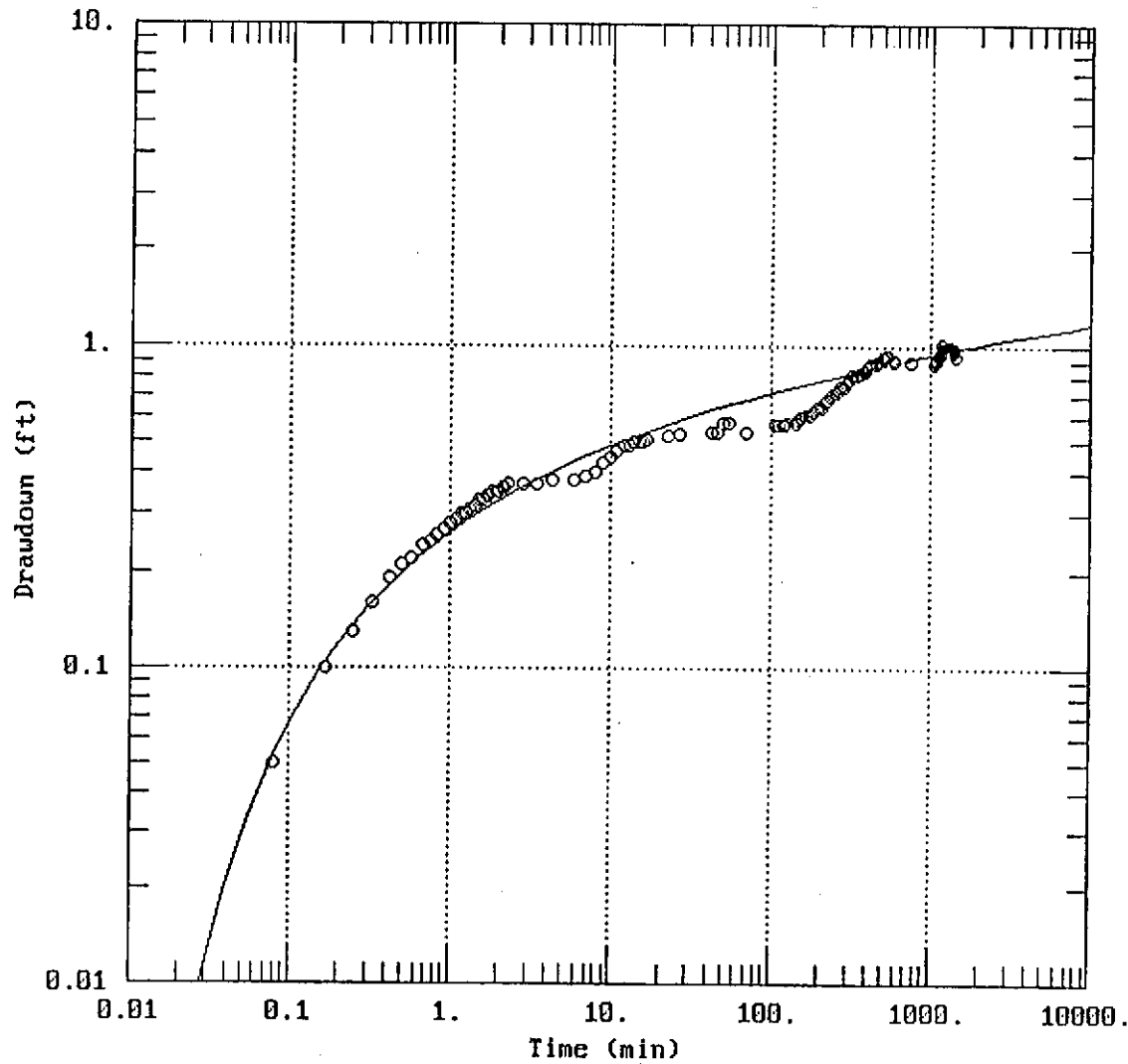
DATA SET:
 PZ-2.DAT
 04/25/96

AQUIFER MODEL:
 Confined
 SOLUTION METHOD:
 Theis

PROJECT DATA:
 test date: 04/03/96
 test well: MW-2
 obs. well: PZ-2

TEST DATA:
 $Q = 1.9$ gal/min
 $r = 45$ ft
 $r_c = 0.33$ ft
 $r_w = 0.83$ ft
 $b = 4$ ft

PARAMETER ESTIMATES:
 $T = 2933.9$ gal/day/ft
 $S = 0.0003116$



DATA SET:
PZ-3.DAT
04/26/96

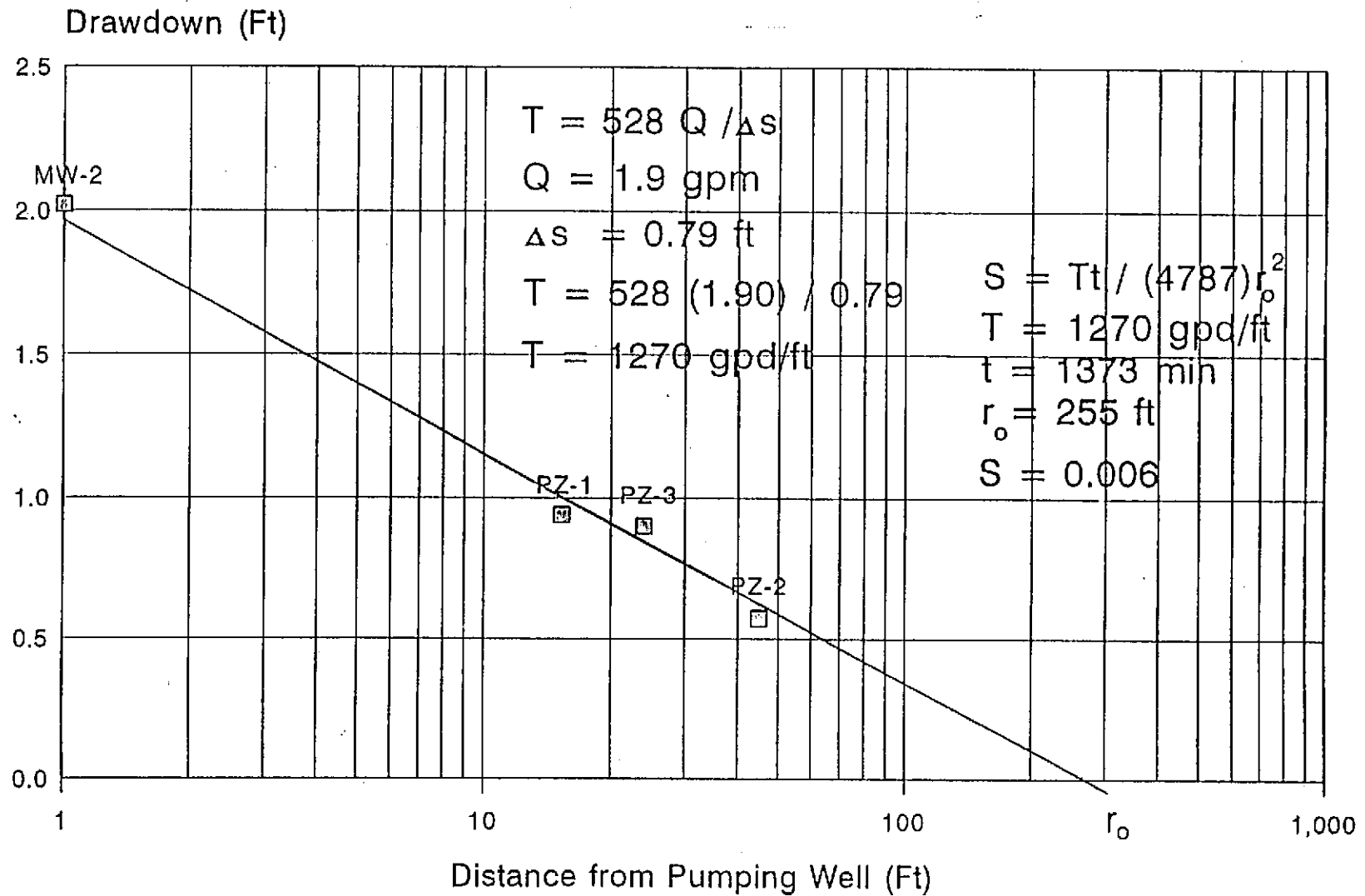
AQUIFER MODEL:
Confined
SOLUTION METHOD:
Theis

PROJECT DATA:
test date: 04/03/96
test well: MW-2
obs. well: PZ-3

TEST DATA:
 $Q = 1.9$ gal/min
 $r = 24.$ ft
 $r_c = 0.33$ ft
 $r_w = 0.83$ ft
 $b = 4.$ ft

PARAMETER ESTIMATES:
 $T = 2182.3$ gal/day/ft
 $S = 5.99E-05$

GMC TRUCK CENTER
 8099 COLISEUM WAY OAKLAND, CA
 WELL MW-2 PUMPING TEST (04/03/96)





Drilling Log

Piezometer PZ-1

Project Oakland Truck Center Owner General Motors Corporation
 Location 8099 S. Coliseum Way, Oakland, CA Proj. No. 040020487
 Surface Elev. _____ Total Hole Depth 20 ft. Diameter 8.5 in.
 Top of Casing _____ Water Level Initial 10 ft. Static _____
 Screen: Dia 2 in. Length 15 ft. Type/Size 0.020 in.
 Casing: Dia 2 in. Length 5 ft. Type PVC Riser
 Fill Material Lonestar 2/12 Rig/Core Mobile B-53
 Drill Co. Gregg Drilling Method Hollow Stem Auger
 Driller Eric Christan Log By Bob Fehr Date 03/21/96 Permit # _____
 Checked By Ken Johnson License No. RG #6254

See Site Map
For Boring Location

COMMENTS:

Soil cuttings stored on-site in a 55-gallon steel drum pending proper disposal.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2							
0							FILL, Clay with some gravel and sand and concrete debris
2							
4						FI	
6							
8							
10						CL	CLAY, medium gray, soft, plastic, wet
12							Sandy CLAY (sand: fine grain), soft, plastic, wet
14						SW	Gravelly SAND, poorly sorted, some fines, medium gray, loose, saturated
16						CL	Clayey Sand
16						SW	Gravelly SAND, poorly sorted, some fines, medium gray, loose, saturated
18							CLAY, greenish gray, stiff, plastic, moist
18						CL	
20							End of boring at 1225. Installed piezometer.
22							
24							



GROUNDWATER
TECHNOLOGY

Drilling Log

Piezometer PZ-2

Project Oakland Truck Center Owner General Motors Corporation
 Location 8099 S. Coliseum Way, Oakland, CA Proj. No. 040020487
 Surface Elev. _____ Total Hole Depth 20 ft. Diameter 8.5 in.
 Top of Casing _____ Water Level Initial 10 ft. Static _____
 Screen: Dia 2 in. Length 15 ft. Type/Size 0.020 in.
 Casing: Dia 2 in. Length 5 ft. Type PVC Riser
 Fill Material Lonestar 2/12 Rig/Core Mobile B-53
 Drill Co. Gregg Drilling Method Hollow Stem Auger
 Driller Eric Christan Log By Bob Fehr Date 03/21/96 Permit # _____
 Checked By Ken Johnson License No. RG #6254

See Site Map
For Boring Location

COMMENTS:

Soil cuttings stored on-site in a 55-gallon steel drum pending proper disposal.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2							
0							
2							FILL, Clay with some gravel and sand and concrete debris
4							
6						Fill	
8							
10							
12						CL	CLAY, highly organic, greenish gray, soft, plastic, wet Grades to decreasing organic matter
13						SP	Sandy CLAY (sand: fine grain), soft, plastic, wet
14						CL	SAND, well sorted, medium grain, saturated
15						CL	Silty CLAY, greenish gray to gray, soft, plastic, wet
16						SW	Gravelly SAND, poorly sorted, some clay, greenish gray/gray, loose, saturated
17							Grades to decreasing clay, no gravel
18							Grades to CLAY, stiff, plastic
19							Grades to increasing silt
20						CL	Silty CLAY, greenish brown, medium stiff, plastic, moist to wet
21							End of boring at 1035. Installed piezometer.
22							
24							



Drilling Log

Piezometer PZ-3

Project Oakland Truck Center Owner General Motors Corporation
 Location 8099 S. Coliseum Way, Oakland, CA Proj. No. 040020487
 Surface Elev. _____ Total Hole Depth 20 ft. Diameter 8.5 in.
 Top of Casing _____ Water Level Initial 10 ft. Static _____
 Screen: Dia 2 in. Length 15 ft. Type/Size 0.020 in.
 Casing: Dia 2 in. Length 5 ft. Type PVC Riser
 Fill Material Lonestar 2/12 Rig/Core Mobile B-53
 Drill Co. Gregg Drilling Method Hollow Stem Auger
 Driller Eric Christan Log By Bob Fehr Date 03/21/96 Permit # _____
 Checked By Ken Johnson License No. RG #6254

See Site Map
For Boring Location

COMMENTS:

Soil cuttings stored on-site in a 55-gallon steel drum pending proper disposal.

