

GROUNDWATER CONDITIONS AT
FRESNO CSA 10 (CUMORAH KNOLLS)

prepared for AECOM
Fresno, California

by
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May 2012

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May 24, 2012

Mr. Mark Reitz
AECOM
1360 E. Spruce Ave.
Suite 101
Fresno, CA 93720

Re: Fairmont School

Dear Mark:

Submitted herewith is our report on groundwater conditions at Fresno CSA 10. We appreciate the cooperation of AECOM in providing information for the report.

Sincerely yours,

Kenneth D. Schmidt
Geologist No. 1578
Certified Hydrogeologist
No. 176

KDS/td

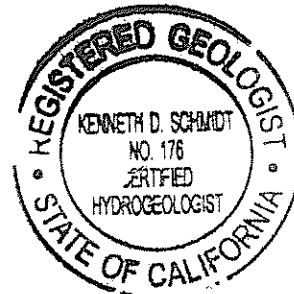
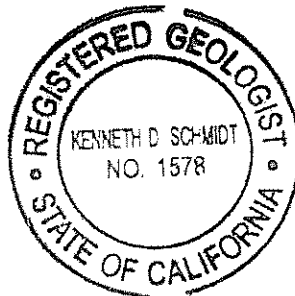


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GROUNDWATER CONDITIONS AT
FRESNO CSA 10 (CUMORAH KNOLLS)

INTRODUCTION

The Fairmont School needs to develop a water supply for potable use at the school, which is located north of Shields Avenue and west of Greenwood Avenue. Because of high nitrate concentrations in the groundwater in the alluvium, and relatively shallow bedrock, development of a potable supply on the school property hasn't been possible. According to AECOM, the potable water demand for the school averages 5,460 gpd for 185 days a year, which is equivalent to 3.1 acre-feet per year. The average water demand is 13 gpm. It has been proposed to connect the school potable system to CSA 10. The purpose of this report is to describe groundwater conditions at CSA 10 (the Cumorah Knolls subdivision) and to evaluate the potential impacts of supplying the Fairmont School potable water supply from CSA 10 wells.

EXISTING CONDITIONS

Schmidt (1973) described groundwater conditions at and near the Cumorah Knolls subdivision, as part of an EIR for Cumorah Knolls Ranch No. 2 (Consultive Planners, 1973). Some of this information was used in this report, and updated information was also obtained and used.

Subsurface Geologic Conditions

A northwest-southeast trending fault generally parallels the Friant-Kern Canal in eastern Fresno County and has downthrown the basement rock to the southwest. This fault is indicated by Page and LeBlanc (1969) to pass through the northeastern portion of section 10, T13S/R22E (Figure 1), and has been termed the Clovis Fault. The depth to basement is generally in the range of 40 to 60 feet in the area northeast of the fault, whereas the depth ranges from about 110 to 130 feet southwest of the fault. The thin saturated alluvium northeast of the fault greatly limits the groundwater production in that area.

CSA 10 Wells

The CSA 10 was previously termed Fresno County Waterworks District 36. Three wells were drilled for District 36 (Figure 1). All of these were southwest of the Clovis Fault and all penetrated decomposed granite at depths from about 120 to 130 feet beneath land surface. Completion reports for these wells are provided in Appendix A. Three major water-producing zones were encountered and were coarse sand, gravel, or cobbles. The upper zone ranged in depth from about 45 to 55 feet. The middle zone ranged in depth from 67 to 73 feet, and Wells 36-2 and 36-3 were perforated opposite this zone. The lower zone was found only at the south edge of the District, and ranged in depth from

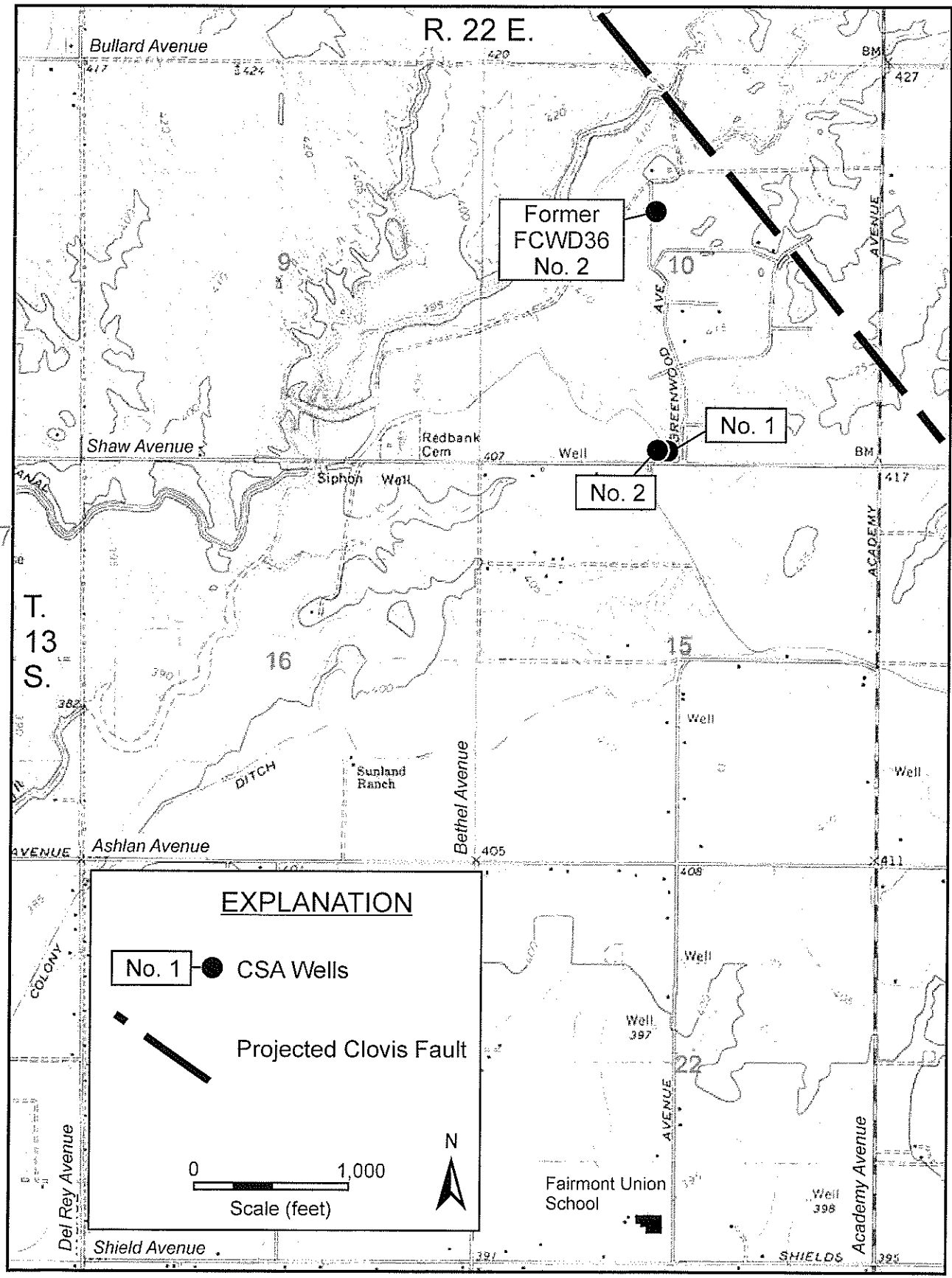


FIGURE 1 - LOCATION OF CSA WELLS AND VICINITY

about 95 to 120 feet. Wells 36-1 and 36-3 were perforated opposite this lower zone. Well 36-3 was drilled in 1969 to supplement water from the previous two wells. The present CSA 10 Wells No. 1 and 2 are the former FCWD 36-3 and 36-1, respectively. FCWD Well 36-2, which was located to the north, was subsequently abandoned.

Water Levels

The California Department of Water Resources, San Joaquin District, has prepared Spring and Fall water-level elevation maps for many decades. These maps indicate a southwesterly direction of groundwater flow in the area. The average water-level slope has been about 20 feet per mile in the vicinity of the CSA wells.

Figure 2 is a water-level elevation map for May 20, 2012. Water-level elevation ranged from 358 feet above sea level near Shields and Academy Avenues to 376 feet near Ashlan and Academy Avenues. The direction of groundwater flow was to the southwest and the average water level surveys about 17 feet per mile. Water-level measurements are available for CSA 10 Wells 1 and 2 since the 1960's. Figure and 3 and 4 are long-term water-level hydrographs for Wells No. 1 and 2. Static water levels in Well 1 ranged from about 27 feet deep in 1986 to 61 feet deep in 2009. Static water levels in Well No. 2 ranged from 30 feet deep in 1986 to 66 feet in 2009. Water levels in these wells have

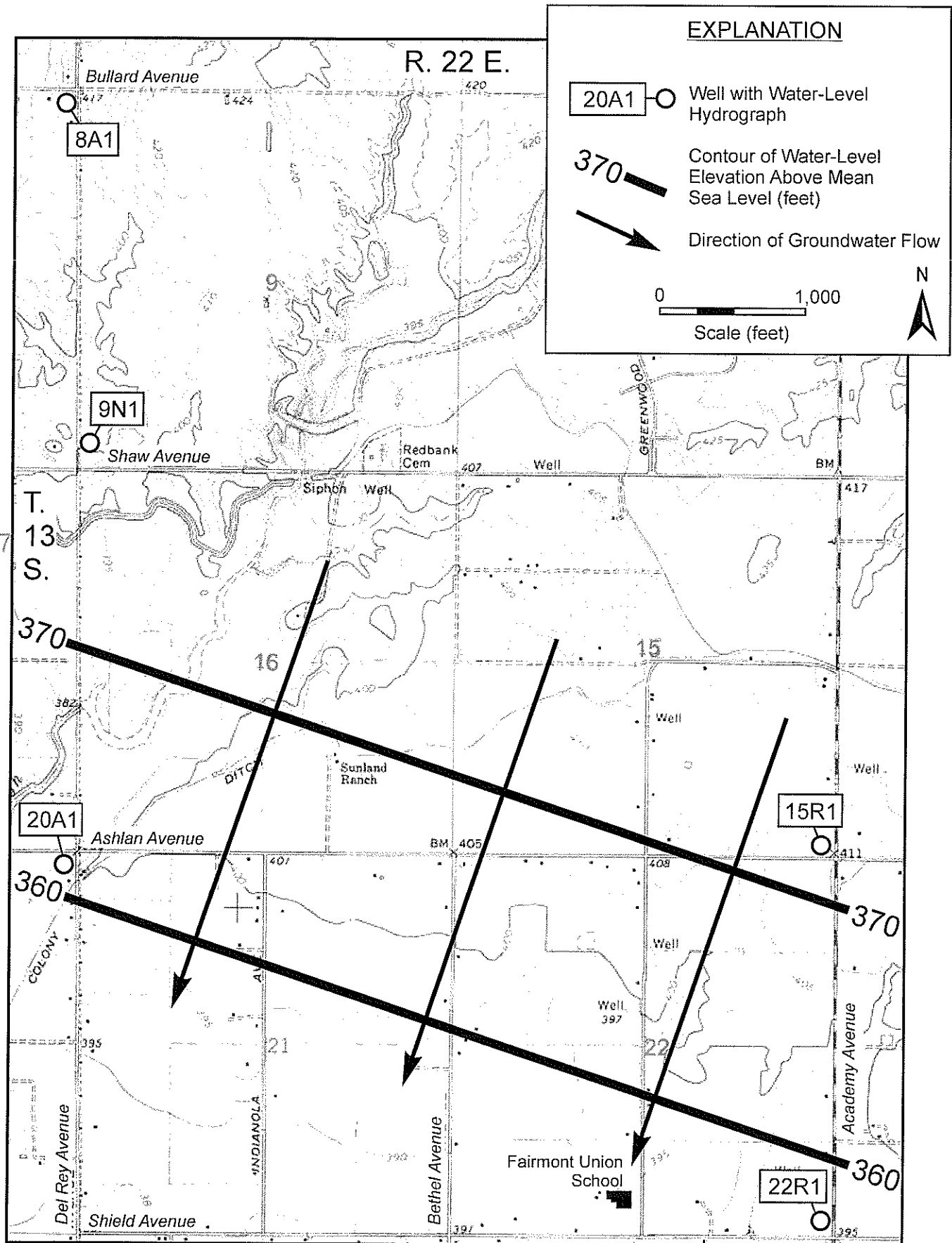


FIGURE 2 - WATER-LEVEL ELEVATIONS AND DIRECTION OF GROUNDWATER FLOW (MAY 20, 2010)

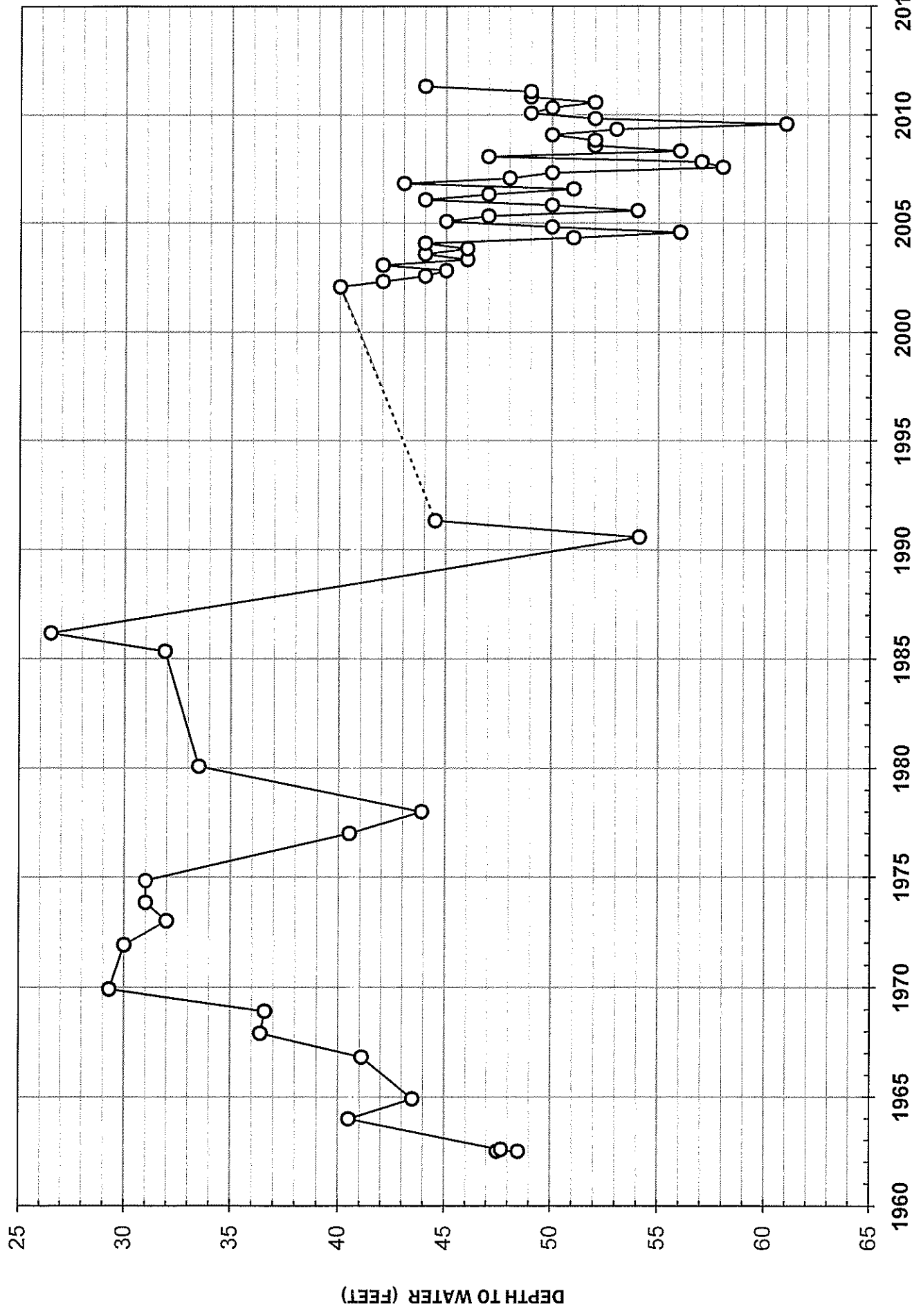


FIGURE 3 - LONG-TERM WATER-LEVEL HYDROGRAPH FOR CSA 10 WELL NO. 1

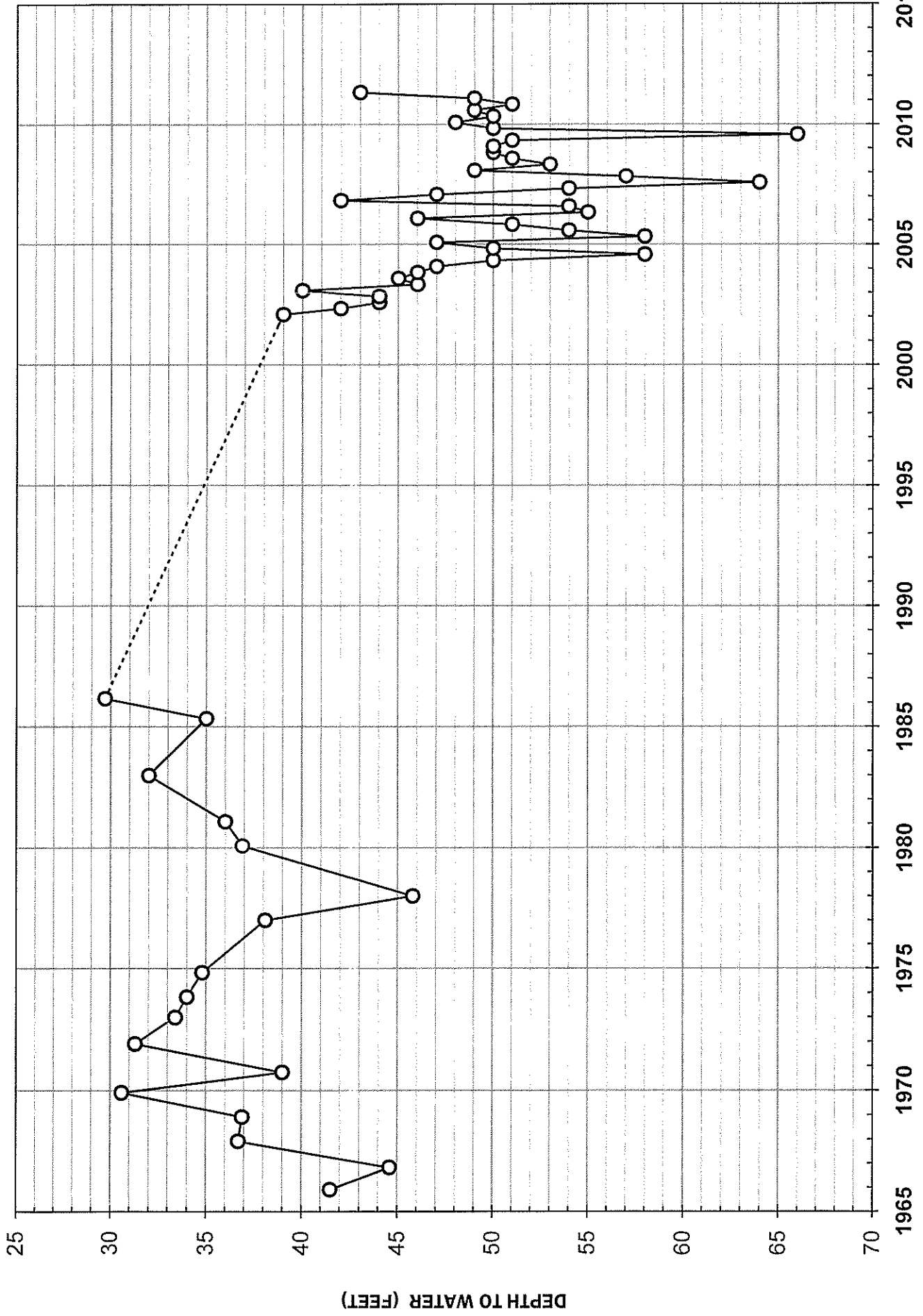


FIGURE 4 - LONG-TERM WATER-LEVEL HYDROGRAPH FOR CSA 10 WELL NO. 2

varied, depending on climatic conditions. The mid-1960's was a wet period and water levels were shallow. The early 1990's and the late 2000's were dry periods and the water levels were deeper. Over the long-term, there has been a slight water-level decline (averaging about 0.4 foot per year).

Since 2002, Fresno County has measured static levels in the two CSA 10 wells on a quarterly basis (Figure 5). These hydrographs also indicate slight water-level declines, averaging about 0.4 foot per year. Water-level hydrographs for wells in the vicinity, modified from the DWR water-level chart base, are provided in Appendix B.

Pumpage

Monthly pumpage for CSA 10 Wells 1 and 2 for 2000-10 are provided in Appendix C. Since 2005, the annual pumpage has ranged from 117 to 137 acre-feet and averaged 126 acre feet. For the 60 water service connections, the average pumpage was 2.1 acre-feet per year per lot. The greater values for annual pumpage generally correspond to years of lower rainfall, when the irrigation demand was greater. The maximum monthly pumpage has been during June-September, and the peak monthly pumpage has been about 170 gpm. Pumping rates for Well 1 have usually ranged from 300 to 400 gpm, and for Well 2 have usually ranged from about 150 to 200 gpm in recent years. The specific capacities of Well No. 1 have

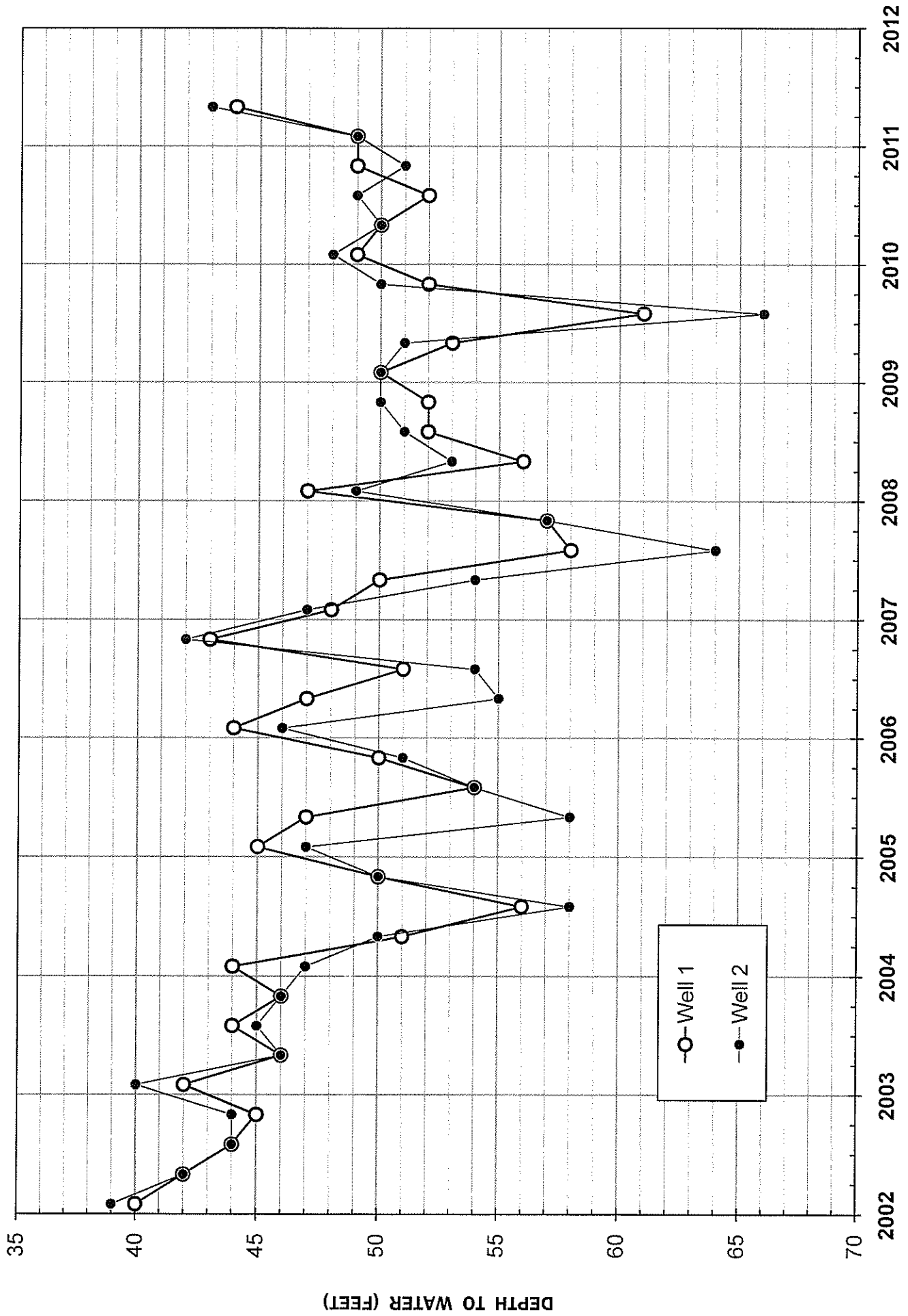


FIGURE 5 - SHORT-TERM WATER-LEVEL HYDROGRAPHS FOR CSA 10 WELLS

averaged about 80 gpm per foot of drawdown.

Sources of Recharge

The major sources of groundwater recharge in the Cumorah Knolls vicinity are seepage of streamflow from Redbank Creek and the Redbank Reservoir, and seepage from the Enterprise and Friant-Kern Canals. The Enterprise Canal passes through the southwest part of the Cumorah Knolls Ranch, and surface water supplied by the Fresno Irrigation District is available to lands south of the canal. Deep percolation from these irrigated areas has been another source of recharge.

Aquifer Characteristics

Specific capacity (pumping rate in gpm per foot of drawdown) was calculated from past tests for each well and the results are tabulated below:

	<u>Specific Capacity (gpm/ft)</u>	
	<u>CSA 10-1</u>	<u>CSA 10-2</u>
Range	64-96	28-42
Average	80	33

There were about 80 feet of saturated alluvium (125 minus 43 feet) near the two active CSA wells in 2010. Estimates of transmissivity (flow through the aquifer per unit of width) were made based on the average specific capacity of Well 1. For an unconfined aquifer, a conversion factor of 1,500 is normally

multiplied times the specific capacity to estimate the transmissivity. The estimated transmissivity was about 120,000 gallons per day (gpd) per foot.

Groundwater Flow

Darcy's Law can be used to estimate groundwater flow through the area, where

$$Q = TIL,$$

Q: groundwater flow (gpd)

T: transmissivity (gpd/ft)

I: hydraulic gradient (ft/mile)

L: width of flow (miles)

Using a transmissivity of 120,000 gpd per foot, a hydraulic gradient of 20 feet per mile, and a width of flow of half a mile, the amount of lateral groundwater flow would be: 120,000 gpd per foot x 20 ft/mile x 0.5 mile, or about 1,200,000 gpd. This is equivalent to about 1,350 acre-feet per year.

Groundwater Quality

Recent chemical analyses of water from CSA Wells 1 and 2 based on samples collected on April 18, 2011 are provided in Appendix D. The chemical quality of water from CSA 10 Wells 1 and 2 is shown in Table 1. Total dissolved solids (TDS) concentrations ranged from 310 to 320 mg/l, less than the recommended MCL of 500 mg/l. Nitrate concentrations ranged from 23 to 28

TABLE 1-CHEMICAL ANALYSES OF WATER FROM CSA WELLS

<u>Constituent (mg/l)</u>	<u>Well No. 1</u>	<u>Well No. 2</u>	<u>MCL</u>
Sulfate	13	18	250
Chloride	-	27	250
Nitrate	23	28	
pH	7.6	7.6	
Electrical Conductivity (micromhos/cm @ 25°C)	490	490	
Total Dissolved Solids (@ 180°C)	310	320	500
Fluoride	0.1	<0.1	2.0
Iron	0.07	0.08	0.3
Manganese	<0.02	<0.02	0.05
Arsenic (ppb)	2.0	1.9	10
DBCP (ppb)	<0.01	<0.01	0.2
EDB (ppb)	<0.02	<0.02	0.05
Date	04/18/11	04/18/11	

Analyses by Moore-Twining Associates. Arsenic analyses are for samples collected on March 30, 2012.

mg/l, less than the MCL of 45 mg/l. Iron, manganese, and arsenic concentrations were less than the recommended MCLs of 0.3 mg/l, 0.05 mg/l, and 10 ppb, respectively. DBCP and EDB were not detected in the samples. Concentrations of constituents in the Title 22 drinking water standards were below the respective MCLs.

POTENTIAL IMPACTS

Annual Pumpage

The annual pumpage for domestic use at the Fairmont School would not be changed from the existing condition. Rather, the location of this pumpage would be farther north from the CSA 10 wells, as opposed to at the school. The amount of increased annual pumpage (about three acre-feet per year or three percent) at CSA 10 is indicated to not be significant.

Increased Pumpage Rate

The increased pumping rate from the CSA 10 wells would be small, because water storage would be provided at the school. Then the increased pumping rate when the school is in session would be only about three percent, with a correspondingly lower pumping rate at the Fairmont School. This small increase is considered to be insignificant.

RECOMMENDED MONITORING

Pumpage to Fairmont School

A totalizing flowmeter reading in gallons would be installed at the head of the pipeline from CSA 10. The total pumpage would be recorded on a weekly basis while the school is in session and reported to CSA10 on a quarterly basis.

REFERENCES

Consultive Planners, 1973, "Environmental Impact Report, Cumorah Knolls Ranch No. 2, Tentative Subdivision Map Tract No. 2041", prepared for Fresno County, section on Groundwater by K. D. Schmidt.

Page, R. W., and R. A. LeBlanc, 1969, "Geology, Hydrology, and Water Quality in the Fresno Area", U.S. Geological Survey Open-File Report, Menlo Park, California.

APPENDIX A
WELL COMPLETION REPORTS

QUADRUPPLICATE
RETAIN THIS COPY

WATER WELL DRILLERS REPORT
(Sections 7076, 7077, 7078, Water Code)

Do Not Fill In

No. 65645

STATE OF CALIFORNIA

State Well No.

Other Well No.

(1) OWNER:

Name Fresno County Waterworks Dist. #36
Address 420 Equitable Bldg.
Fresno, Calif.

(2) LOCATION OF WELL:

County Fresno Owner's number, if any—
R. F. D. or Street No. On outlet S of tract #14356
Cameron Leslie Ranch #1
Section 10 T 13S, R 22 E
No. Greenwood Ave., Apt. 275 No. of B.
Northside Ave., Clovis, Calif.

(3) TYPE OF WORK (check):

New well Deepening Reconditioning Abandon
If abandonment, describe material and procedure in Item 11.

(4) PROPOSED USE (check):

Domestic Industrial Municipal
Irrigation Test Well Other

(5) EQUIPMENT:

Rotary
Cable
Dug Well

(6) CASING INSTALLED:

SINGLE <input checked="" type="checkbox"/> DOUBLE <input type="checkbox"/>		Gage or Wall	If gravel packed						
From	ft. to		Diam.	ft.	to ft.				
From	0	ft. to	120	ft.	24	Diam.	10		
Type and size of shoe or well ring Steel casing									
Describe joint Butt-weld									
Size of gravel:									

(7) PERFORATIONS:

Type of perforator used Home Made

Size of perforations	in.	length, by	in.
From 106	ft. to	62	ft.
		6	
		Perf. per row	3
		Rows per ft.	

(8) CONSTRUCTION:

Was a surface sanitary seal provided? Yes No To what depth _____ ft.
Were any strata sealed against pollution? Yes No If yes, note depth of strata
From _____ ft. to _____ ft.
Method of Sealing _____

(9) WATER LEVELS:

Depth at which water was first found 36 ft.
Standing level before perforating _____ ft.
Standing level after perforating _____ ft.

(10) WELL TESTS:

Was a pump test made? Yes No If yes, by whom? Miller Pump Co.
Yield: 300 gal./min. with 120 ft. draw down after 40 hrs.
Temperature of water _____ Was a chemical analysis made? Yes No
Was electric log made of well? Yes No

(11) WELL LOG:

Total depth	130	ft.	Depth of completed well	130	ft.
Formation: Describe by color, character, size of material, and structure.					
0	ft. to	8	ft.	Top Soil, hard pan	
8	"	18	"	Clay	
18	"	22	"	Sand	
22	"	32	"	Clay	
32	"	36	"	Cobbles & Sand	
36	"	44	"	Face Sand	
44	"	56	"	Cobbles & Sand	
56	"	68	"	Tough Clay	
68	"	72	"	Cobbles & Sand	
72	"	96	"	Tough Clay	
96	"	99	"	Sand	
99	"	120	"	Tough Clay	
120	"	130	"	Decomposed Granite	

RECEIVED
MAY 7 1962
Fresno Co. Waterworks Dist.

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Herbert Schwartz & Son
Address 4419 No. Blanchette Fresno 26, Calif.

[SIGNED] _____ Well Driller
License No. 177321 Dated 5-2-62 19

QUADRUPPLICATE
RETAIN THIS COPY

WATER WELL DRILLERS REPORT
(Sections 7076, 7077, 7078, Water Code)

Well #1
Do Not Fill In
No. 65636

STATE OF CALIFORNIA

State Well No. _____
Other Well No. _____

36
N. + Shaw Ave. Enterprise Canal

(1) OWNER:

Name: ~~Chas. B. Bingham~~ Chas. B. Bingham
Address: 12428 E. Shaw 12428 E. Shaw
Clovis, Calif. Clovis, Calif.

(2) LOCATION OF WELL:

County: Fresno
R. F. D. or Street No.: North side of Shaw Ave. at Enterprise
Canal appr. 4800' West of N. Academy
Clovis, Calif.
North side of Shaw Ave. at Enterprise Canal
appr. 4800' W. of N. Academy - Clovis, Calif.

(3) TYPE OF WORK (check):

New well Deepening Reconditioning Abandon
If abandoned, describe material and procedure in Item 11.

(4) PROPOSED USE (check):

Domestic Industrial Municipal
Irrigation Test Well Other

(5) EQUIPMENT:

Rotary
Cable
Dug Well

(6) CASING INSTALLED:

SINGLE DOUBLE
From 0 ft. to 124 ft. 14 ft. 10 ft.
Diameter of Hole 10 ft.

If gravel packed

Type and size of steel or cast iron casing Steel Band
Describe joint Butt-weld Butt-weld

(7) PERFORATIONS:

Type of perforator used Home Made
Size of perforations 3/8 3/8 1/2 3/4
From 120 ft. to 100 ft. 6 ft. 3 ft.

(8) CONSTRUCTION:

Was a surface casing installed? Yes No
Was any screen installed against pollution? Yes No
From _____ ft. to _____ ft.

Method of Sealing

(9) WATER LEVELS:

Depth at which water was first found 36 ft.
Standing level before perforating 36 ft.
Standing level after perforating _____ ft.

(10) WELL TESTS:

Was a pump test made? Yes No
Yield: 2000 2000 gal./min. with 65 65 ft. draw down at 122 ft.
Temperature of water _____
Was a chemical analysis made? Yes No

(11) WELL LOG:

Total depth	191	131	ft.	Depth of completed well	131	131
0	3	3	ft.	0	3	Top Soil
3	6	6	ft.	3	6	Hard Pan
6	24	24	ft.	6	24	Clay
24	30	30	ft.	24	30	Pack Sand
30	50	50	ft.	30	50	Clay
50	54	54	ft.	50	54	Course Sand & Gravel
54	58	58	ft.	54	58	Hard Clay
58	67	67	ft.	58	67	Clay
67	70	70	ft.	67	70	Course Sand & Gravel
70	72	72	ft.	70	72	Gravel, Sand & Cobble Stone
72	84	84	ft.	72	84	Clay
84	90	90	ft.	84	90	Sand
90	104	104	ft.	90	104	Clay
104	108	108	ft.	104	108	Sand
108	112	112	ft.	108	112	Clay
112	120	120	ft.	112	120	Sand & Few Cobbles
120	122	122	ft.	120	122	Hard Clay
122	131	131	ft.	122	131	Decomposed Granite

0	3	3	ft.	0	3	Top Soil
3	6	6	ft.	3	6	Hard Pan
6	24	24	ft.	6	24	Clay
24	30	30	ft.	24	30	Pack Sand
30	50	50	ft.	30	50	Clay
50	54	54	ft.	50	54	Course Sand & Gravel
54	58	58	ft.	54	58	Hard Clay
58	67	67	ft.	58	67	Clay
67	70	70	ft.	67	70	Course Sand & Gravel
70	72	72	ft.	70	72	Gravel, Sand & Cobble Stone
72	84	84	ft.	72	84	Clay
84	90	90	ft.	84	90	Sand
90	104	104	ft.	90	104	Clay
104	108	108	ft.	104	108	Sand
108	112	112	ft.	108	112	Clay
112	120	120	ft.	112	120	Sand & Few Cobbles
120	122	122	ft.	120	122	Hard Clay
122	131	131	ft.	122	131	Decomposed Granite

Work started 2-23-62 Completed 3-8-62
7-25-62

WELL DRILLER'S STATEMENT:

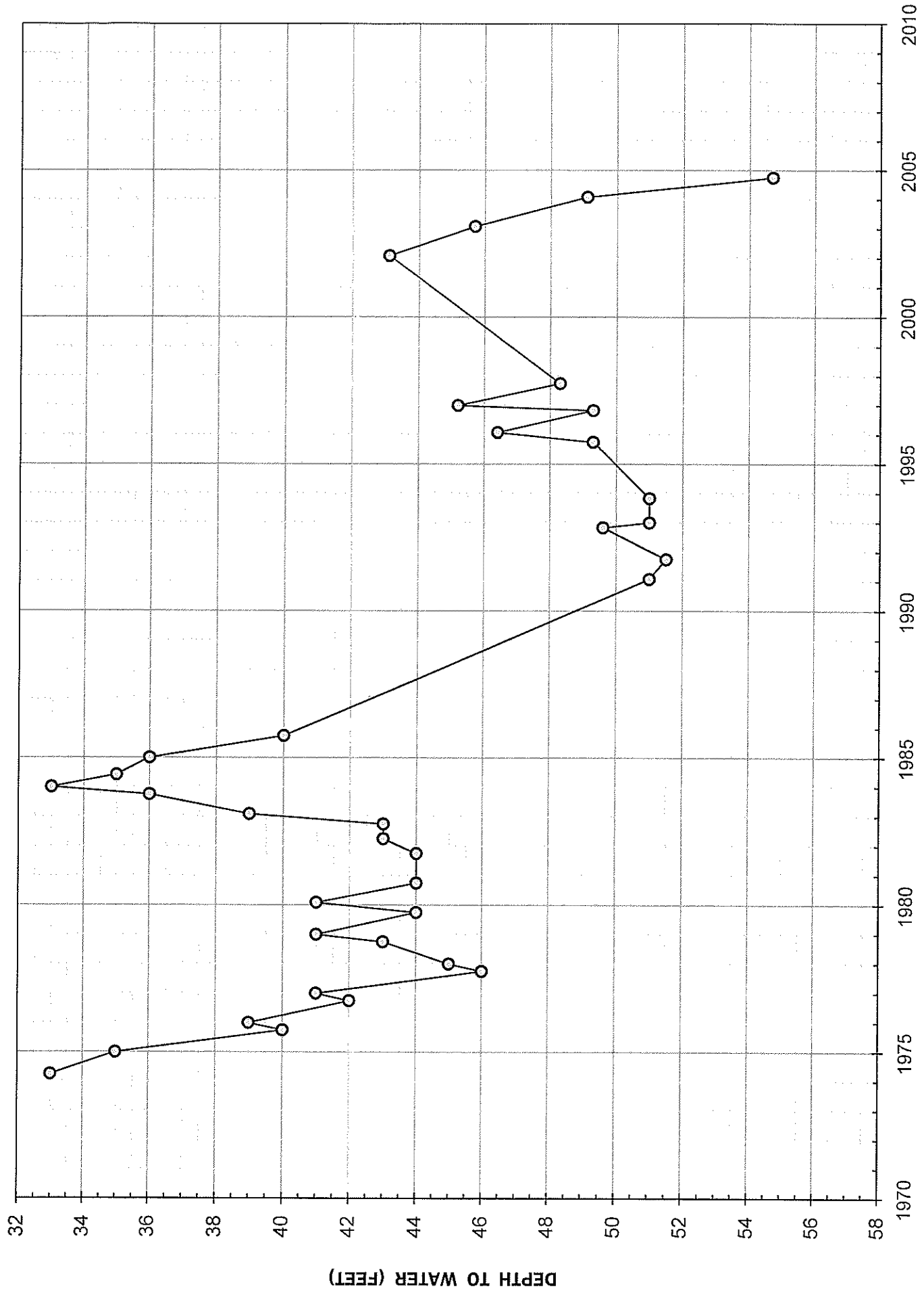
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Herbert Schwartz & Son

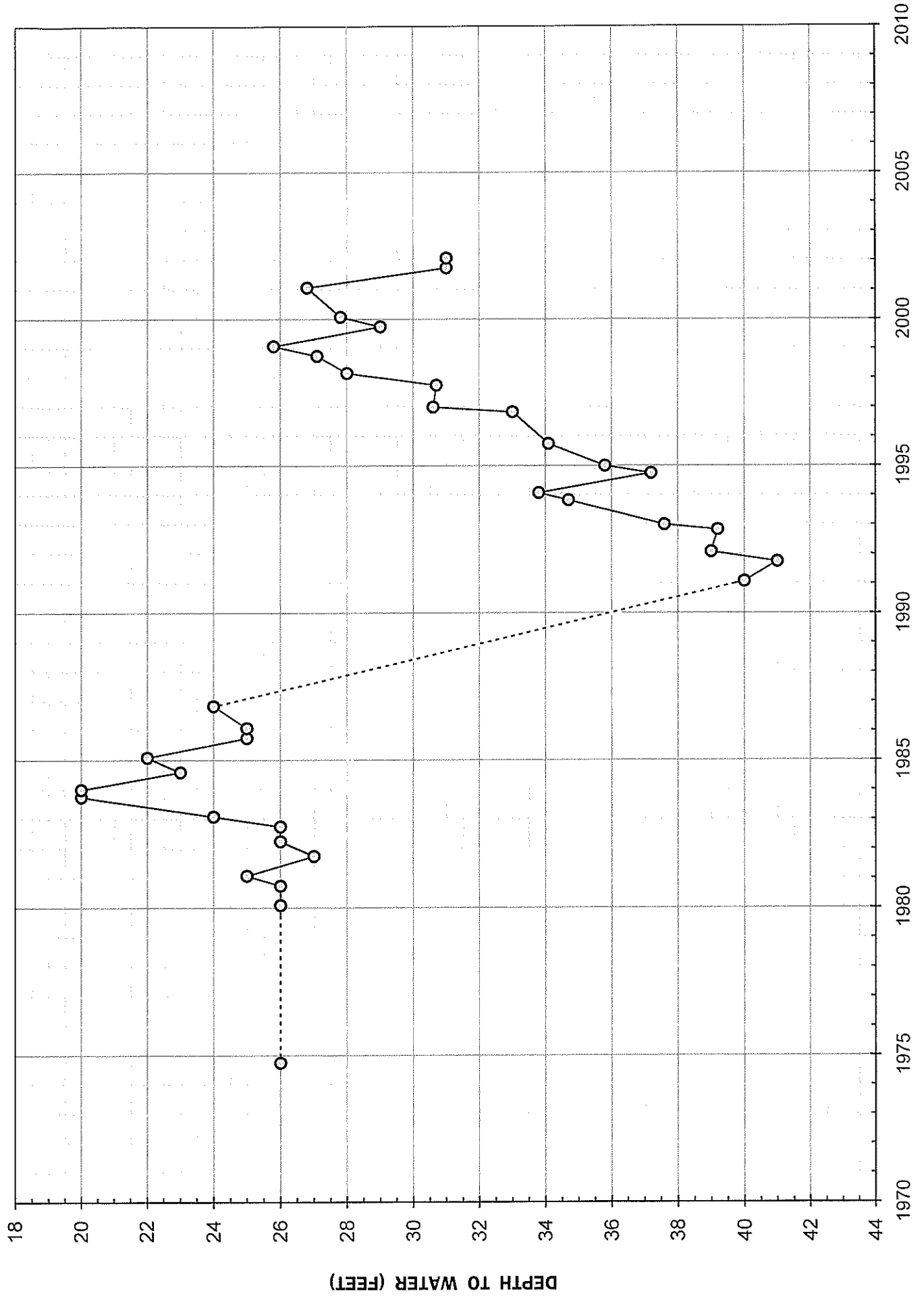
Address 4819 N. Blackstone 4819 N. Blackstone
Fresno 26, Calif. Fresno 26, Calif.

License No. 17751 177351 3-12-62

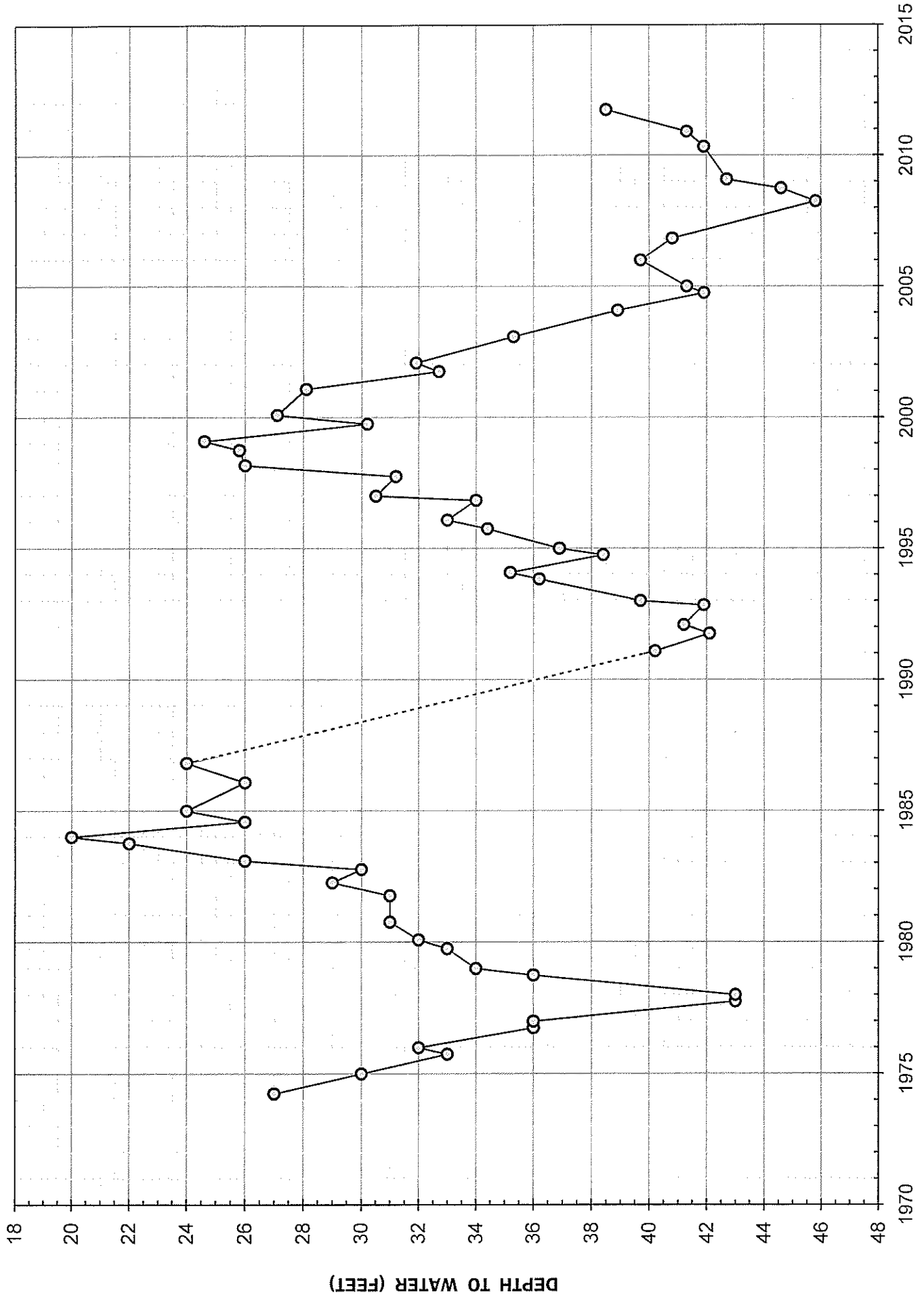
APPENDIX B
WATER-LEVEL HYDROGRAPHS



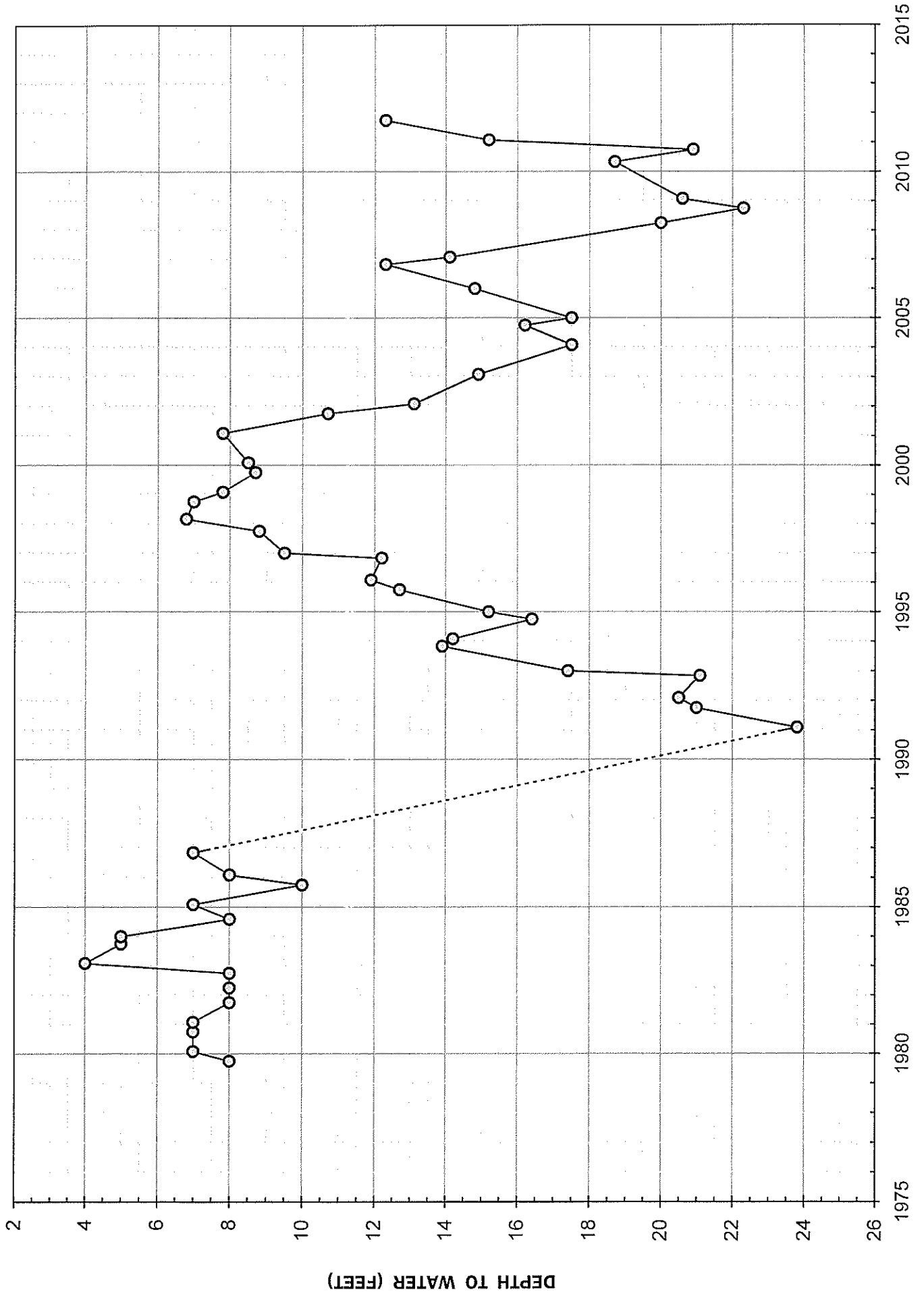
WATER-LEVEL HYDROGRAPH FOR WELL T.13S./R.22E.-08A1



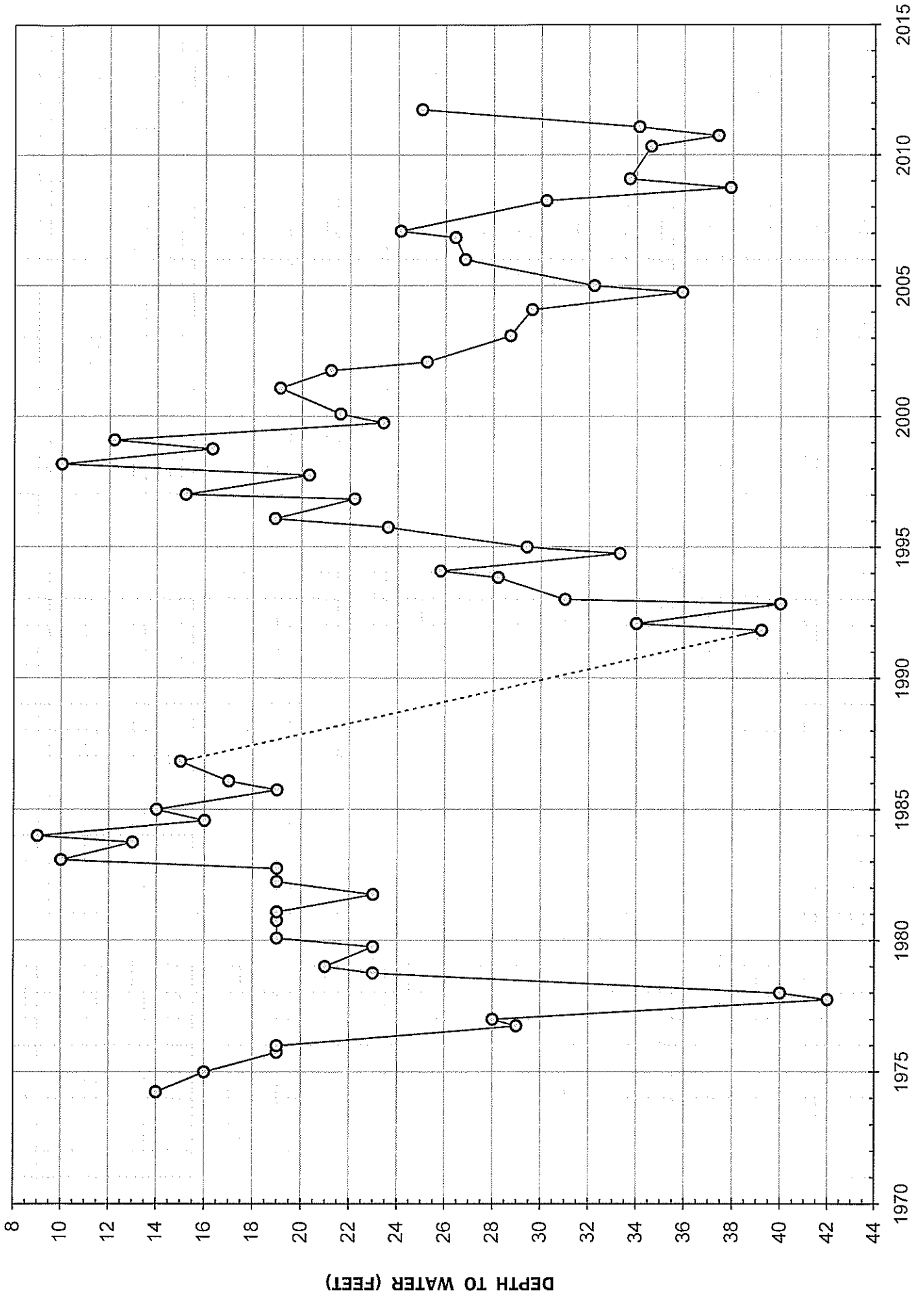
WATER-LEVEL HYDROGRAPH FOR WELL T.13S./R.22E.-09N1



WATER-LEVEL HYDROGRAPH FOR WELL T.13S./R.22E.-15R1



WATER-LEVEL HYDROGRAPH FOR WELL T.13S./R.22E.-20A1



WATER-LEVEL HYDROGRAPH FOR WELL T.13S./R.22E.-22R1

Static Water Level for Well No. 1

<u>Date</u>	<u>Depth to Water (feet)</u>
7/3/1962	48.5
7/18/1962	47.5
8/10/1962	47.7
1/9/1964	40.5
12/21/1964	43.5
11/28/1966	41.1
12/19/1967	36.4
12/9/1968	36.6
12/10/1969	29.3
12/14/1971	30.0
1/2/1973	32.0
11/30/1973	31.0
11/20/1974	31.0
1/10/1977	40.5
1/25/1978	43.9
2/1/1980	33.5
5/21/1985	31.9
3/6/1986	26.5
8/30/1990	54.1
5/22/1991	44.5
2/1/2002	40
5/1/2002	42
8/1/2002	44
11/1/2002	45
2/1/2003	42
5/1/2003	46
8/1/2003	44
11/1/2003	46
2/1/2004	44
5/1/2004	51
8/1/2004	56
11/1/2004	50

Continued:

Static Water Level for Well No. 1
(continued:)

<u>Date</u>	<u>Depth to Water (feet)</u>
2/1/2005	45
5/1/2005	47
8/1/2005	54
11/1/2005	50
2/1/2006	44
5/1/2006	47
8/1/2006	51
11/1/2006	43
2/1/2007	48
5/1/2007	50
8/1/2007	58
11/1/2007	57
2/1/2008	47
5/1/2008	56
8/1/2008	52
11/1/2008	52
2/1/2009	50
5/1/2009	53
8/1/2009	61
11/1/2009	52
2/1/2010	49
5/1/2010	50
8/1/2010	52
11/1/2010	49
2/1/2011	49
5/1/2011	44

Static Water Level for Well No. 2

<u>Date</u>	<u>Depth to Water (feet)</u>
12/6/1965	41.5
11/28/1966	44.6
12/19/1967	36.7
12/9/1968	36.9
12/10/1969	30.6
10/5/1970	39.0
12/14/1971	31.3
1/2/1973	33.4
11/30/1973	34.0
11/22/1974	34.8
1/17/1977	38.1
1/26/1978	45.8
2/1/1980	36.9
2/19/1981	36.0
1/12/1983	32.0
5/21/1985	35.0
3/6/1986	29.7
2/1/2002	39.0
5/1/2002	42.0
8/1/2002	44.0
11/1/2002	44
2/1/2003	40
5/1/2003	46
8/1/2003	45
11/1/2003	46
2/1/2004	47
5/1/2004	50
8/1/2004	58
11/1/2004	50
2/1/2005	47
5/1/2005	58
8/1/2005	54

Continued:

Static Water Level for Well No. 2
(continued:)

<u>Date</u>	<u>Depth to Water (feet)</u>
11/1/2005	51
2/1/2006	46
5/1/2006	55
8/1/2006	54
11/1/2006	42
2/1/2007	47
5/1/2007	54
8/1/2007	64
11/1/2007	57
2/1/2008	49
5/1/2008	53
8/1/2008	51
11/1/2008	50
2/1/2009	50
5/1/2009	51
8/1/2009	66
11/1/2009	50
2/1/2010	48
5/1/2010	50
8/1/2010	49
11/1/2010	51
2/1/2011	49
5/1/2011	43

APPENDIX C
PUMPAGE RECORDS

Fresno County Waterworks District 10 water use

2010 USE SUMMARY

Month	Well # 1	Well # 2	Total All Wells
January	33,300	654,100	687,400
February	22,100	748,300	770,400
March	40,700	966,900	1,007,600
April	12,700	1,590,500	1,603,200
May	13,300	4,724,800	4,738,100
June	3,700	6,231,200	6,234,900
July	67,900	7,210,200	7,278,100
August	139,800	7,679,800	7,819,600
September	62,100	5,470,800	5,532,900
October	17,000	2,197,100	2,214,100
November	9,000	1,744,700	1,753,700
December	9,100	783,600	792,700
Year Total	430,700	40,002,000	40,432,700

	SYSTEM Avg. Daily Use	Per House Avg. Daily Use
January	22,174	370
February	27,514	459
March	32,503	542
April	53,440	891
May	152,842	2,547
June	207,830	3,464
July	234,777	3,913
August	252,245	4,204
September	184,430	3,074
October	71,423	1,190
November	58,457	974
December	25,571	426

Total Acre Feet 2010

124

Fresno County Waterworks District 10 water use

2009 USE SUMMARY

Month	Well # 1	Well # 2	Total All Wells
January	400	1,220,400	1,220,800
February	1,800	931,100	932,900
March	3,200	2,380,500	2,383,700
April	326,200	3,102,700	3,428,900
May	776,500	4,268,100	5,044,600
June	95,700	5,474,800	5,570,500
July	295	7,889,700	7,889,995
August	1,766,900	5,710,300	7,477,200
September	695,400	4,587,000	5,282,400
October	4,600	2,684,000	2,688,600
November	283,000	1,659,200	1,942,200
December	3,500	774,100	777,600
Year Total	3,957,495	40,681,900	44,639,395

	SYSTEM Avg. Daily Use	Per House Avg. Daily Use
January	39,381	656
February	33,318	555
March	76,894	1,282
April	114,297	1,905
May	162,729	2,712
June	185,683	3,095
July	254,516	4,242
August	241,200	4,020
September	176,080	2,935
October	86,729	1,445
November	64,740	1,079
December	25,084	418

Total Acre Feet 2009

137

Fresno County Waterworks District 10 water use

2008 USE SUMMARY

Month	Well # 1	Well # 2	Total All Wells
January	1,400	550,000	551,400
February	600	697,200	697,800
March	0	1,741,800	1,741,800
April	500	3,751,000	3,751,500
May	822,600	976,000	1,798,600
June	1,149,000	4,024,000	5,173,000
July	5,121,000	5,238,000	10,359,000
August	941,400	5,059,000	6,000,400
September	74,300	3,000,000	3,074,300
October	145,900	2,500,000	2,645,900
November	6,400	1,284,200	1,290,600
December	1,000	1,131,200	1,132,200
Year Total	8,264,100	29,952,400	38,216,500

	SYSTEM Avg. Daily Use	Per House Avg. Daily Use
January	17,787	296
February	24,921	415
March	56,187	936
April	125,050	2,084
May	58,019	967
June	172,433	2,874
July	334,161	5,569
August	193,561	3,226
September	102,477	1,708
October	85,352	1,423
November	43,020	717
December	36,523	609

Total Acre Feet 2008

117

Fresno County Waterworks District 10 water use

2007 USE SUMMARY

Month	Well # 1	Well # 2	Total All Wells
January	275,200	54,200	329,400
February	6,300	679,900	686,200
March	181,900	1,779,000	1,960,900
April	190,000	2,728,000	2,918,000
May	2,421,500	2,857,000	5,278,500
June	74,200	5,639,000	5,713,200
July	177,900	8,492,000	8,669,900
August	88,000	7,419,000	7,507,000
September	513,600	5,376,000	5,889,600
October	181,000	3,247,000	3,428,000
November	12,100	2,334,000	2,346,100
December	600	1,142,000	1,142,600
Year Total	4,122,300	41,747,100	45,869,400

	SYSTEM Avg. Daily Use	Per House Avg. Daily Use
January	10,626	177
February	24,507	408
March	63,255	1,054
April	97,267	1,621
May	170,274	2,838
June	190,440	3,174
July	279,674	4,661
August	242,161	4,036
September	196,320	3,272
October	110,581	1,843
November	78,203	1,303
December	36,858	614

Total Acre Feet 2007

141

Fresno County Waterworks District 10 water use

2006 USE SUMMARY

Month	Well # 1	Well # 2	Total All Wells
January	7,800	676,000	683,800
February	245,000	655,000	900,000
March	60,000	580,000	640,000
April	110,500	528,000	638,500
May	867,500	2,789,000	3,656,500
June	195,800	4,419,000	4,614,800
July	1,580,800	9,017,000	10,597,800
August	485,200	5,696,000	6,181,200
September	163,600	7,254,000	7,417,600
October	5,700	370,300	376,000
November	690,700	115,200	805,900
December	180,000	82,700	262,700
Year Total	4,592,600	32,182,200	36,774,800

	SYSTEM Avg. Daily Use	Per House Avg. Daily Use
January	22,058	368
February	32,143	536
March	20,645	344
April	21,283	355
May	117,952	1,966
June	153,827	2,564
July	341,865	5,698
August	199,394	3,323
September	247,253	4,121
October	12,129	202
November	26,863	448
December	8,474	141

Total Acre Feet 2006

113

Fresno County Waterworks District 10 water use

2005 USE SUMMARY

Month	Well # 1	Well # 2	Total All Wells
January	0	455,000	455,000
February	1,000	670,000	671,000
March	5,000	824,000	829,000
April	288,200	1,487,000	1,775,200
May	12,400	2,923,000	2,935,400
June	1,767,300	4,504,000	6,271,300
July	5,510,900	2,707,000	8,217,900
August	2,006,900	4,557,000	6,563,900
September	180,500	5,980,000	6,160,500
October	37,200	3,901,000	3,938,200
November	1,100	2,307,000	2,308,100
December	700	1,021,000	1,021,700
Year Total	9,811,200	31,336,000	41,147,200

	SYSTEM Avg. Daily Use	Per House Avg. Daily Use
January	14,677	245
February	23,964	399
March	26,742	446
April	59,173	986
May	94,690	1,578
June	209,043	3,484
July	265,094	4,418
August	211,739	3,529
September	205,350	3,423
October	127,039	2,117
November	76,937	1,282
December	32,958	549

Total Acre Feet 2005

126

FRESNO COUNTY

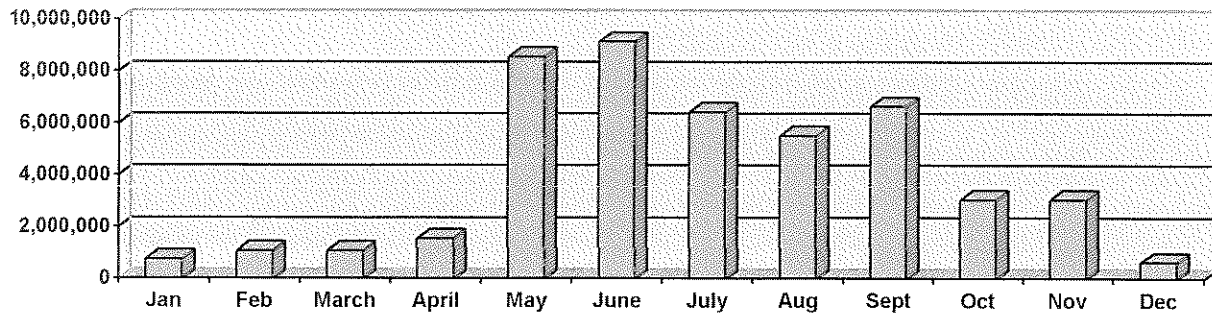
District # 10

Water Usage

2004

	Total	Well # 1	Well # 2
	Gallons	Gallons	Gallons
Jan	751,000	0	751,000
Feb	1,070,900	1400	1,069,500
March	1,069,500	0	1,069,500
April	1,536,000	0	1,536,000
May	8,555,000	0	8,555,000
June	9,132,000	0	9,132,000
July	6,422,200	82,200	6,340,000
Aug	5,505,200	612,200	4,893,000
Sept	6,619,200	1,726,200	4,893,000
Oct	3,043,500	0	3,043,500
Nov	3,043,500	0	3,043,500
Dec	640,000	0	640,000
TOTAL	47,388,000	2,422,000	44,966,000

USAGE IN GALLONS



Service Connections = 47
 Persons per Service = 2.5
 Gallons per day per Person = 1105
 Gallons per day per Service = 2762

FRESNO COUNTY

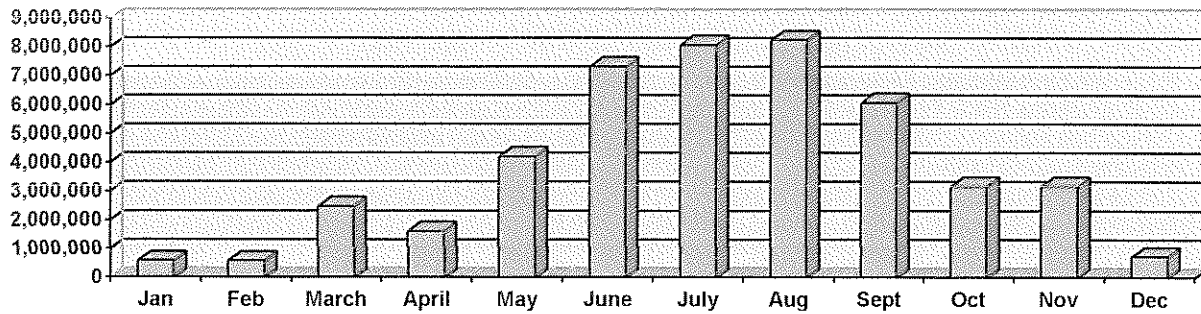
District # 10

Water Usage

2003

	Total	Well # 1	Well # 2
	Gallons	Gallons	Gallons
Jan	579,300	300	579,000
Feb	579,000	0	579,000
March	2,473,000	0	2,473,000
April	1,613,800	16,800	1,597,000
May	4,197,600	112,600	4,085,000
June	7,323,900	31,400	7,292,500
July	8,081,300	789,300	7,292,000
Aug	8,239,000	0	8,239,000
Sept	6,059,000	0	6,059,000
Oct	3,166,500	0	3,166,500
Nov	3,166,500	0	3,166,500
Dec	736,500	2500	734,000
TOTAL	46,215,900	952,900	45,263,000

USAGE IN GALLONS

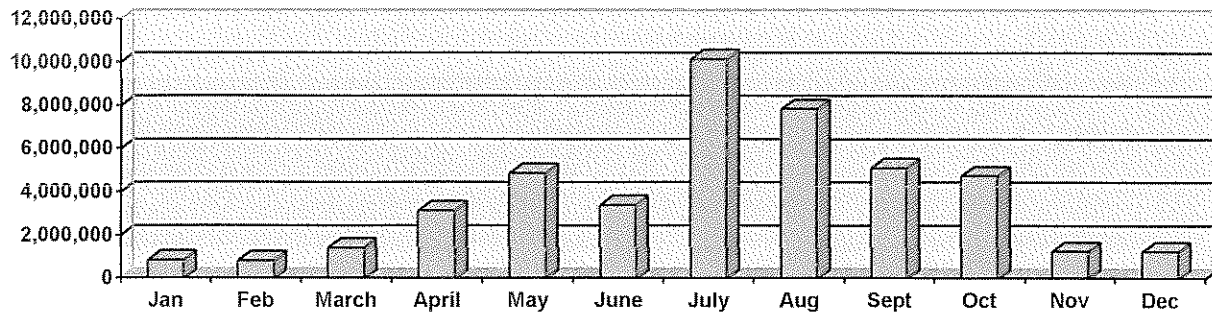


Service Connections = 47
 Persons per Service = 2.5
 Gallons per day per Person = 1078
 Gallons per day per Service = 2694

FRESNO COUNTY
District # 10
Water Usage
2002

	Total	Well # 1	Well # 2
	Gallons	Gallons	Gallons
Jan	843,000	0	843,000
Feb	816,000	0	816,000
March	1,415,700	3700	1,412,000
April	3,121,200	1200	3,120,000
May	4,861,000	0	4,861,000
June	3,378,000	0	3,378,000
July	10,146,200	3,565,200	6,581,000
Aug	7,831,400	3,028,400	4,803,000
Sept	5,096,900	398,400	4,698,500
Oct	4,724,700	26,200	4,698,500
Nov	1,240,500	0	1,240,500
Dec	1,240,500	0	1,240,500
TOTAL	44,715,100	7,023,100	37,692,000

USAGE IN GALLONS

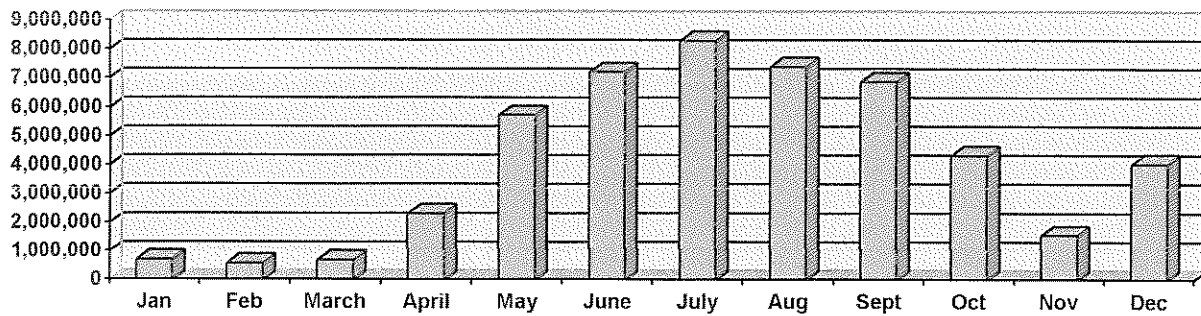


Service Connections = 47
 Persons per Service = 2.5
 Gallons per day per Person = 1043
 Gallons per day per Service = 2607

FRESNO COUNTY
District # 10
Water Usage
2001

	Total	Well # 1	Well # 2
	Gallons	Gallons	Gallons
Jan	696,800	800	696,000
Feb	574,000	0	574,000
March	685,400	400	685,000
April	2,294,900	33,900	2,261,000
May	5,718,100	3100	5,715,000
June	7,198,700	700	7,198,000
July	8,301,900	900	8,301,000
Aug	7,387,000	0	7,387,000
Sept	6,869,000	0	6,869,000
Oct	4,317,000	0	4,317,000
Nov	1,555,000	0	1,555,000
Dec	4,029,600	2100	4,027,500
TOTAL	49,627,400	41,900	49,585,500

USAGE IN GALLONS

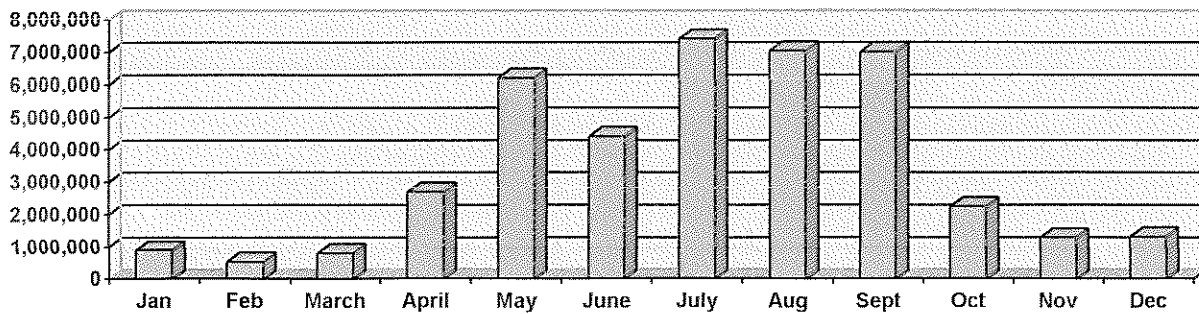


Service Connections = 47
 Persons per Service = 2.5
 Gallons per day per Person = 1157
 Gallons per day per Service = 2893

**FRESNO COUNTY
District # 10
Water Usage
2000**

	Total	Well # 1	Well # 2
	Gallons	Gallons	Gallons
Jan	886,400	174,400	712,000
Feb	521,100	100	521,000
March	798,400	400	798,000
April	2,702,800	800	2,702,000
May	6,197,000	15,000	6,182,000
June	4,406,000	464,000	3,942,000
July	7,405,100	662,500	6,742,600
Aug	7,035,000	0	7,035,000
Sept	7,000,300	6300	6,994,000
Oct	2,248,000	0	2,248,000
Nov	1,285,000	0	1,285,000
Dec	1,314,000	0	1,314,000
TOTAL	41,799,100	1,323,500	40,475,600

USAGE IN GALLONS



Service Connections = 47
 Persons per Service = 2.5
 Gallons per day per Person = 975
 Gallons per day per Service = 2437

APPENDIX D
CHEMICAL ANALYSES

GENERAL MINERAL & PHYSICAL & INORGANIC ANALYSIS (9/99)

Date of Report: 11/05/06

Sample ID No. 1D18012-01

Laboratory

Signature Lab

Name: MOORE TWINING ASSOCIATES, INC.

Director: *Juliane Ad*

Name of Sampler: Tom Storey

Employed By:

Date/Time Sample

Date/Time Sample

Date Analyses

Collected: 11/04/18/1020

Received @ Lab: 11/04/18/1422

Completed: 11/04/26

System

System

Name: FCSEA #10/CUMORAH KNOLLS

Number: 1000039

Name or Number of Sample Source: WELL 01

* User ID: CYA

Station Number: 1000039-001

* Date/Time of Sample: |11|04|18|1020|

Laboratory Code: 5802

* YY MM DD TTTT

YY MM DD

* Date Analysis completed: |11|04|26|

* Submitted by: _____ Phone #: _____

MCL	REPORTING	CHEMICAL	ENTRY	ANALYSES	DLR
	UNITS		#	RESULTS	
	mg/L	Total Hardness (as CaCO3) (mg/L)	00900		
	mg/L	Calcium (Ca) (mg/L)	00916		
	mg/L	Magnesium (Mg) (mg/L)	00927		
	mg/L	Sodium (NA) (mg/L)	00929		
	mg/L	Potassium (K) (mg/L)	00937		

| Total Cations Meq/L Value: |

	mg/L	Total Alkalinity (AS CaCO3) (mg/L)	00410		
	mg/L	Hydroxide (OH) (mg/L)	71830		
	mg/L	Carbonate (CO3) (mg/L)	00445		
	mg/L	Bicarbonate (HCO3) (mg/L)	00440		
*	mg/L+	Sulfate (SO4) (mg/L)	00945	13	.5
*	mg/L+	Chloride (Cl) (mg/L)	00940		
45	mg/L	Nitrate (as NO3) (mg/L)	71850	23	2.0
2	mg/L	Fluoride (F) (Natural-Source)	00951	ND	.1

| Total Anions Meq/L Value: |

	Std.Units+	PH (Laboratory) (Std.Units)	00403	7.6	
***	umho/cm+	Specific Conductance (E.C.) (umhos/cm)	00095	490	
****	mg/L+	Total Filterable Residue@180C (TDS) (mg/L)	70300	310	
15	Units	Apparent Color (Unfiltered) (Units)	00081		
3	TON	Odor Threshold at 60 C (TON)	00086		1.
5	NTU	Lab Turbidity (NTU)	82079		
0.5	mg/L+	MBAS (mg/L)	38260		

* 250-500-600 ** 0.6-1.7 *** 900-1600-2200 **** 500-1000-1500

MCL	REPORTING UNITS	CHEMICAL	ENTRY #	ANALYSES RESULTS	DLR
1000	ug/L	Aluminum (Al) (ug/L)	01105	ND	50.0
6	ug/L	Antimony (ug/L)	01097	ND	6.0
1000	ug/L	Barium (Ba) (ug/L)	01007	63	100.0
4	ug/L	Beryllium (ug/L)	01012	ND	1.0
5	ug/L	Cadmium (Cd) (ug/L)	01027	ND	1.0
50	ug/L	Chromium (Total Cr) (ug/L)	01034	2.3	10.0
300	ug/L+	Iron (Fe) (ug/L)	01045	65	100.0
50	ug/L+	Manganese (Mn) (ug/L)	01055	ND	20.0
2	ug/L	Mercury (Hg) (ug/L)	71900	ND	1.0
100	ug/L	Nickel (ug/L)	01067	ND	10.0
50	ug/L	Selenium (Se) (ug/L)	01147	ND	5.0
100	ug/L+	Silver (Ag) (ug/L)	01077	ND	10.0
2	ug/L	Thallium (ug/L)	01059	ND	1.0

+ Indicates Secondary Drinking Water Standards

ORGANIC CHEMICAL ANALYSIS (9/99)

Date of Report: 11/05/06

Sample ID No 1D18012-01

Laboratory

Signature Lab

Name: MOORE TWINING ASSOCIATES, INC.

Director

Name of Sampler: Tom Storey

Employed By:

Date/Time Sample

Date/Time Sample

Date Analyses

Collected: 11/04/18/1020

Received @ Lab: 11/04/18/1422

Completed: 11/04/30

System

System

Name: ECSA #10/CUMORAH KNOLLS

Number: 1000039

Name or Number of Sample Source: WELL 01

* User ID: CYA

Station Number: 1000039-001

* Date/Time of Sample: |11|04|18|1020|

Laboratory Code: 5802

* YY MM DD TTTT

YY MM DD

*

Date Analysis completed: |11|04|30|

* Submitted by: _____

Phone #: _____

Page 1 of 1

REGULATED ORGANIC CHEMICALS

TEST	CHEMICAL	ENTRY	ANALYSES	MCL	DLR
METHOD	ALL CHEMICALS REPORTED ug/L	#	RESULTS	ug/L	ug/L
504.1	Dibromochloropropane (DBCP)	38761	ND	.2	.01
504.1	Ethylene Dibromide (EDB)	77651	ND	.05	.02



2527 Fresno Street
 Fresno, CA 93721
 (559) 268-7021 Phone
 (559) 268-0740 Fax

California ELAP Certificate #1371

Fresno County - Special Districts	Project: CSA - District 10, Cumorah Knolls	Reported:
2220 Tulare St. 6th Floor	Project Number: 962-4776	05/05/2011
Fresno CA, 93721	Project Manager: Joe Prado	

Analytical Report for Work Order 1D18012

Analyte	Qual.	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Well #1									
Sampled: 04/18/11 10:20 1D18012-01 (Drinking Water)									
Fluoride		ND	0.10	mg/L	1	T1D1907	04/19/11	04/19/11	EPA 300.0
Nitrate as NO3		23	2.0	mg/L	1	T1D1907	04/19/11	04/19/11	EPA 300.0
Sulfate as SO4		13	2.0	mg/L	1	T1D1907	04/19/11	04/19/11	EPA 300.0
Total Dissolved Solids		310	10	mg/L	1	T1D2005	04/20/11	04/22/11	SM 2540C
Specific Conductance (EC)		490	1.0	µS/cm	1	T1D1910	04/18/11	04/18/11	SM2510B
pH		7.6	0.10	pH Units	1	T1D1911	04/18/11	04/18/11	SM4500-H B
Aluminum		ND	4.0	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
Antimony		ND	1.0	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
Barium		63	1.0	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
Beryllium		ND	1.0	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
Cadmium		ND	0.20	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
Chromium		2.3	1.0	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
Iron		65	20	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
Manganese		ND	1.0	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
Mercury		ND	0.10	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
Nickel		ND	1.0	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
Selenium		ND	1.0	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
Silver		ND	1.0	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
Thallium		ND	1.0	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
1,2-Dibromo-3-chloropropane (DBCP)		ND	0.010	µg/L	1	T1D2813	04/29/11	04/30/11	EPA 504.1
1,2-Dibromoethane (EDB)		ND	0.020	µg/L	1	T1D2813	04/29/11	04/30/11	EPA 504.1

Moore Twining Associates, Inc.
 Juliane Adams, Director of Analytical Chemistry

The results in this report apply to the samples analyzed in accordance with the chain custody document. This analytical report must be reproduced in its entirety.



Date of Report: 11/04/26
Laboratory Name: Weck Laboratories, Inc
Name of Sampler: Client

Sample ID No.: 1D20022-01
Signature Lab Director: *Alfred P. ...*

Date/Time Sample Collected: 11/04/18 1020 Date/Time Sample Received @ Lab: 11/04/20 1000 Date Analyses Completed: 11/04/21

System Name: FCSA #10/CUMORAH KNOLLS System Number: 1000039

Name or Number of Sample Source: WELL 01

User ID: CYA Station Number: 1000039-001
Date/Time of Sample: 11|04|18|10|20 Laboratory Code: 9588
YY MM DD TT TT Date of Analyses Completed: 11|04|21|
YY MM DD
Submitted By: Weck Laboratories, Inc Phone #: (626) 336-2139

TEST METHOD	CHEMICAL	Units	ENTRY #	ANALYSES RESULTS	MCL	DLR
	Perchlorate (ug/L)	ug/L	A-031	ND	6	4

Laboratory Comments and Description of Additional Components Found (Comments in this section are for Client Information only and will **NOT** be transmitted to CDPH via EDT):

Well #1, 1D18012-01 :



Certificate of Analysis

Report Date: Tuesday, April 26, 2011
Received Date: Wednesday, April 20, 2011
Received Time: 10:00 am
Turnaround Time: Normal

Client: Moore Twining Associates, Inc.
2527 Fresno Street
Fresno, CA. 93721

Phones: (559) 268-7021
Fax: (559) 268-0740

Attn: Julio Morales
Project: 1D18012

P.O. #:

Lab Sample ID: 1D20022-01	Sample ID: Well #1, 1D18012-01	Matrix: Water								
Sampled by: Client	Sampled: 04/18/11 10:20									
Analyte	Result	MDL	MRL	Units	Dil	Method	Prepared	Analyzed	Batch	Qualifier
Perchlorate	ND	0.64	2.0	ug/l	1x1	EPA 314.0	4/21/11	4/21/11 16:51	W1D0820	

ANALYTICAL CHEMISTRY DIVISION
CALIFORNIA ELAP CERTIFICATION # 1371

WORK ORDER #:

PAGE 1 OF 5

LD 18012

ATTENTION: Joe Prado	ATTENTION: Please Fax results to State 447-3304	<input type="checkbox"/> STANDARD FORMAT <input type="checkbox"/> WRITE-ON (STATE FORM) <input type="checkbox"/> GEOTRACKER/COELT (LUFT) <input type="checkbox"/> PDF <input type="checkbox"/> SPREADSHEET <input type="checkbox"/> County DHS : _____ <input type="checkbox"/> Environmental Health Agency : _____ <input type="checkbox"/> OTHER: _____
NAME: Fresno County Special Districts	NAME:	
ADDRESS: 2220 Tulare Street, 6th Floor	ADDRESS:	
Fresno, CA 93721	E-mail tstorey@co.fresno.ca.us	
PHONE: 559-262-4259	PHONE: In the event of a positive bacti please contact 994-4465 Tom Storey immediately	
FAX: 559-262-4286	FAX: 447-3304	

SAMPLE INFORMATION		SAMPLE TYPES:	PROJECT INFORMATION	
SAMPLED BY (PRINT): Tom Storey		SOLID: BS - BIOSOLID CR - CERAMIC SL - SOIL/SOLID	CONTRACT/P.O. NO.: 885-3876	
SIGNATURE: <i>Tom Storey</i>		LIQUID: DW - DRINKING WATER GW - GROUND WATER OL - OIL SF - SURFACE WATER ST - STORM WATER WW - WASTE WATER	PROJECT: District#: 10	
<input type="checkbox"/> PUBLIC SYSTEM <input type="checkbox"/> ROUTINE <input type="checkbox"/> PRIVATE WELL <input type="checkbox"/> REPEAT <input type="checkbox"/> OTHER <input type="checkbox"/> REPLACEMENT			PROJECT NUMBER: 1000039	
TURN AROUND TIME: <input type="checkbox"/> RUSH, DUE ON: _____			PROJECT MANAGER: _____	
<input type="checkbox"/> STANDARD _____			ANALYSIS REQUESTED	

LAB USE	NOTES ON RECEIVED CONDITION:	CLIENT SAMPLE ID	DATE	TIME	TYPE	Pres./Abs. (P/A)	1x10 Total Coliform w/confirmation	Other
	<input type="checkbox"/> CUSTODY SEAL(S) BROKEN <input type="checkbox"/> SAMPLE(S) DAMAGED <input type="checkbox"/> ON ICE <input type="checkbox"/> AMBIENT TEMP. <input type="checkbox"/> INCORRECT PRESERVATION	WELL #1	4-18-11	10:20	DW			2x 1LPO, 260PES 260P11AV03, 3x100A Hydro

REPORT TO: _____ INVOICE TO: _____ REPORT COPY TO: _____ REPORTING: _____

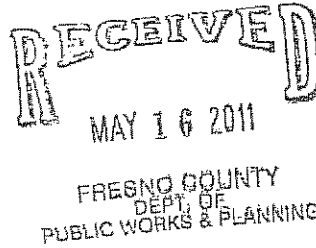
COMMENTS/ADDITIONAL INSTRUCTIONS:

RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY
<i>Tom Storey</i>	FCSD	04/18/11	1422	<i>[Signature]</i>	M710



California ELAP Certificate #1371

May 05, 2011



2527 Fresno Street
Fresno, CA 93721
(559) 268-7021 Phone
(559) 268-0740 Fax

Work Order #: 1D18012

Joe Prado
Fresno County - Special Districts
2220 Tulare St. 6th Floor
Fresno, CA 93721

RE: CSA - District 10, Cumorah Knolls

Enclosed are the analytical results for samples received by our laboratory on 04/18/11 . For your reference, these analyses have been assigned laboratory work order number 1D18012.

All analyses have been performed according to our laboratory's quality assurance program. All results are intended to be considered in their entirety, Moore Twining Associates, Inc. (MTA) is not responsible for use of less than complete reports. Results apply only to samples analyzed.

If you have any questions, please feel free to contact us at the number listed above.

Sincerely,

Moore Twining Associates, Inc.

Juliane Adams
Director of Analytical Chemistry



2527 Fresno Street
 Fresno, CA 93721
 (559) 268-7021 Phone
 (559) 268-0740 Fax

California ELAP Certificate #1371

Fresno County - Special Districts	Project: CSA - District 10, Cumerah Knolls	
2220 Tulare St. 6th Floor	Project Number: 962-4776	Reported:
Fresno CA. 93721	Project Manager: Joe Prado	05/05/2011

Analytical Report for the Following Samples

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Well #1	1D18012-01	Drinking Wa	04/18/11 10:20	04/18/11 14:22

Moore Twining Associates, Inc.
 Juliane Adams, Director of Analytical Chemistry

The results in this report apply to the samples analyzed in accordance with the chain custody document. This analytical report must be reproduced in its entirety.



2527 Fresno Street
 Fresno, CA 93721
 (559) 268-7021 Phone
 (559) 268-0740 Fax

California ELAP Certificate #1371

Fresno County - Special Districts
 2220 Tulare St. 6th Floor
 Fresno CA. 93721

Project: CSA - District 10, Cumorah Knolls
 Project Number: 962-4776
 Project Manager: Joe Prado

Reported:
 04/13/12 18:34

Well #1

2C30005-01 (Water)

Sampled:03/30/12 09:00

Analyte	Notes	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method
		Result	Limit						
Inorganics									
Nitrate as NO3		25	2.0	mg/L	1	T2C3011	03/30/12	03/30/12	EPA 300.0
Nitrite as N		ND	0.30	mg/L	1	T2C3011	03/30/12	03/30/12	EPA 300.0
Metals - Totals									
Arsenic		2.0	1.0	µg/L	1	T2D0513	04/05/12	04/11/12	EPA 200.8

Notes and Definitions

- ug/L micrograms per liter (parts per billion concentration units)
 - mg/kg milligrams per kilogram (parts per million concentration units)
 - mg/L milligrams per liter (parts per million concentration units)
 - ND Analyte NOT DETECTED at or above the reporting limit
 - RPD Relative Percent Difference
- Analysis of pH, filtration, and residual chlorine is to take place immediately after sampling in the field
 If the test was performed in the laboratory, the hold time was exceeded

Moore Twining Associates, Inc.
 Juliane Adams, Director of Analytical Chemistry

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

GENERAL MINERAL & PHYSICAL & INORGANIC ANALYSIS (9/99)

Date of Report: 11/05/06

Sample ID No. 1D18014-01

Laboratory

Signature Lab

Name: MOORE TWINING ASSOCIATES, INC.

Director: *Juliana Adams*

Name of Sampler: Tom Storey

Employed By:

Date/Time Sample

Date/Time Sample

Date Analyses

Collected: 11/04/18/1050

Received @ Lab: 11/04/18/1425

Completed: 11/04/26

System

System

Name: FCSA #10/CUMORAH KNOLLS

Number: 1000039

Name or Number of Sample Source: WELL 02

* User ID: CYA Station Number: 1000039-002 *

* Date/Time of Sample: |11|04|18|1050| Laboratory Code: 5802 *

* YY MM DD TTTT YY MM DD *

* Date Analysis completed: |11|04|26| *

* Submitted by: _____ Phone #: _____ *

MCL	REPORTING	CHEMICAL	ENTRY	ANALYSES	DLR
	UNITS		#	RESULTS	
	mg/L	Total Hardness (as CaCO3) (mg/L)	00900		
	mg/L	Calcium (Ca) (mg/L)	00916		
	mg/L	Magnesium (Mg) (mg/L)	00927		
	mg/L	Sodium (NA) (mg/L)	00929		
	mg/L	Potassium (K) (mg/L)	00937		
Total Cations		Meq/L Value:			
	mg/L	Total Alkalinity (AS CaCO3) (mg/L)	00410		
	mg/L	Hydroxide (OH) (mg/L)	71830		
	mg/L	Carbonate (CO3) (mg/L)	00445		
	mg/L	Bicarbonate (HCO3) (mg/L)	00440		
*	mg/L+	Sulfate (SO4) (mg/L)	00945	18	.5
*	mg/L+	Chloride (CL) (mg/L)	00940	27	
45	mg/L	Nitrate (as NO3) (mg/L)	71850	28	2.0
2	mg/L	Fluoride (F) (Natural-Source)	00951	ND	.1
Total Anions		Meq/L Value:			
	Std.Units+	PH (Laboratory) (Std.Units)	00403	7.6	
***	umho/cm+	Specific Conductance (E.C.) (umhos/cm)	00095	490	
****	mg/L+	Total Filterable Residue@180C (TDS) (mg/L)	70300	320	
15	Units	Apparent Color (Unfiltered) (Units)	00081		
3	TON	Odor Threshold at 60 C (TON)	00086		1.
5	NTU	Lab Turbidity (NTU)	82079		
0.5	mg/L+	MBAS (mg/L)	38260	ND	
* 250-500-600 ** 0.6-1.7 *** 900-1600-2200 **** 500-1000-1500					

MCL	REPORTING UNITS	CHEMICAL	ENTRY #	ANALYSES RESULTS	DLR
1000	ug/L	Aluminum (Al) (ug/L)	01105	ND	50.0
6	ug/L	Antimony (ug/L)	01097	ND	6.0
1000	ug/L	Barium (Ba) (ug/L)	01007	58	100.0
4	ug/L	Beryllium (ug/L)	01012	ND	1.0
5	ug/L	Cadmium (Cd) (ug/L)	01027	ND	1.0
1000	ug/L+	Copper (Cu) (ug/L)	01042	ND	50.0
300	ug/L+	Iron (Fe) (ug/L)	01045	79	100.0
	ug/L	Lead (Pb) (ug/L)	01051	ND	5.0
50	ug/L+	Manganese (Mn) (ug/L)	01055	ND	20.0
2	ug/L	Mercury (Hg) (ug/L)	71900	ND	1.0
100	ug/L	Nickel (ug/L)	01067	ND	10.0
50	ug/L	Selenium (Se) (ug/L)	01147	ND	5.0
100	ug/L+	Silver (Ag) (ug/L)	01077	ND	10.0
2	ug/L	Thallium (ug/L)	01059	ND	1.0

+ Indicates Secondary Drinking Water Standards

ORGANIC CHEMICAL ANALYSIS (9/99)

Date of Report: 11/05/06

Sample ID No. 1D18014-01

Laboratory

Signature Lab

Name: MOORE TWINING ASSOCIATES, INC.

Director: *Julian Lee*

Name of Sampler: Tom Storey

Employed By:

Date/Time Sample

Date/Time Sample

Date Analyses

Collected: 11/04/18/1050

Received @ Lab: 11/04/18/1425

Completed: 11/04/30

System

System

Name: FCSA #10/CUMORAH KNOLLS

Number: 1000039

Name or Number of Sample Source: WELL 02

* User ID: CYA

Station Number: 1000039-002

* Date/Time of Sample: |11|04|18|1050|

Laboratory Code: 5802 *

* YY MM DD TTTT

YY MM DD *

* Date Analysis completed: |11|04|30| *

* Submitted by: _____ Phone #: _____ *

Page 1 of 1

REGULATED ORGANIC CHEMICALS

TEST	CHEMICAL	ENTRY	ANALYSES	MCL	DLR
METHOD	ALL CHEMICALS REPORTED ug/L	#	RESULTS	ug/L	ug/L
504.1	Dibromochloropropane (DBCP)	38761	ND	.2	.01
504.1	Ethylene Dibromide (EDB)	77651	ND	.05	.02



2527 Fresno Street
 Fresno, CA 93721
 (559) 268-7021 Phone
 (559) 268-0740 Fax

California ELAP Certificate #1371

Fresno County - Special Districts	Project: CSA - District 10, Cumorah Knolls	Reported:
2220 Tulare St. 6th Floor	Project Number: 962-4776	05/05/2011
Fresno CA, 93721	Project Manager: Joe Prado	

Analytical Report for Work Order 1D18014

Analyte	Qual.	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Well #2						Sampled: 04/18/11 10:50 1D18014-01 (Drinking Water)			
Fluoride		ND	0.10	mg/L	1	T1D1907	04/19/11	04/19/11	EPA 300.0
Chloride		27	2.0	mg/L	1	T1D1907	04/19/11	04/19/11	EPA 300.0
Nitrate as NO3		28	2.0	mg/L	1	T1D1907	04/19/11	04/19/11	EPA 300.0
Sulfate as SO4		18	2.0	mg/L	1	T1D1907	04/19/11	04/19/11	EPA 300.0
Total Dissolved Solids		320	10	mg/L	1	T1D2005	04/20/11	04/22/11	SM 2540C
Specific Conductance (EC)		490	1.0	µS/cm	1	T1D1910	04/18/11	04/18/11	SM2510B
pH		7.6	0.10	pH Units	1	T1D1911	04/18/11	04/18/11	SM4500-H B
Methylene Blue Active Substances		ND	0.050	mg/L	1	T1D1306	04/20/11	04/21/11	SM5540C
Aluminum		ND	4.0	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
Antimony		ND	1.0	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
Barium		58	1.0	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
Beryllium		ND	1.0	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
Cadmium		ND	0.20	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
Copper		ND	2.0	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
Iron		79	20	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
Lead		ND	0.50	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
Manganese		ND	1.0	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
Mercury		ND	0.10	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
Nickel		ND	1.0	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
Selenium		ND	1.0	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
Silver		ND	1.0	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
Thallium		ND	1.0	µg/L	1	T1D2515	04/25/11	04/26/11	EPA 200.8
1,2-Dibromo-3-chloropropane (DBCP)		ND	0.010	µg/L	1	T1D2813	04/29/11	04/30/11	EPA 504.1
1,2-Dibromoethane (EDB)		ND	0.020	µg/L	1	T1D2813	04/29/11	04/30/11	EPA 504.1

Moore Twining Associates, Inc.
 Juliane Adams, Director of Analytical Chemistry

The results in this report apply to the samples analyzed in accordance with the chain custody document. This analytical report must be reproduced in its entirety.



ANALYTICAL CHEMISTRY DIVISION
CALIFORNIA ELAP CERTIFICATION # 1371

WORK ORDER #:

PAGE 1 OF 7

1018014

ATTENTION: Joe Prado	ATTENTION: Please Fax results to State 447-3304	<input type="checkbox"/> STANDARD FORMAT <input type="checkbox"/> WRITE-ON (STATE FORM) <input type="checkbox"/> GEOTRACKER/COELT (LUFT) <input type="checkbox"/> PDF <input type="checkbox"/> SPREADSHEET <input type="checkbox"/> County DHS : <input type="checkbox"/> Environmental Health Agency : <input type="checkbox"/> OTHER:
NAME: Fresno County Special Districts	NAME:	
ADDRESS: 2220 Tulare Street, 6 th Floor	ADDRESS:	
Fresno, CA 93721	E-mail tstorey@co.fresno.ca.us	
PHONE: 559-262-4259	PHONE: In the event of a positive bacti please contact 994-4465 Tom Storey immediately	
FAX: 559-262-4286	FAX: 447-3304	

SAMPLE INFORMATION		SAMPLE TYPES:	PROJECT INFORMATION	
SAMPLED BY (PRINT): Tom Storey	SIGNATURE: <i>Tom Storey</i>	SOLID: BS - BIOSOLID CR - CERAMIC SL - SOIL/SOLID LIQUID: DW - DRINKING WATER GW - GROUND WATER OL - OIL SF - SURFACE WATER ST - STORM WATER WW - WASTE WATER	CONTRACT/P.O. NO.: 885-3876	PROJECT: District#: 10
<input type="checkbox"/> PUBLIC SYSTEM <input type="checkbox"/> ROUTINE <input type="checkbox"/> PRIVATE WELL <input type="checkbox"/> REPEAT <input type="checkbox"/> OTHER <input type="checkbox"/> REPLACEMENT	TURN AROUND TIME: <input type="checkbox"/> RUSH, DUE ON:		PROJECT NUMBER: 1000039	PROJECT MANAGER:
<input type="checkbox"/> STANDARD			ANALYSIS REQUESTED	

LAB USE	NOTES ON RECEIVED CONDITION:				Pres./Abs. (P/A)	1x10 Total Coliform w/confirmation	SOLID DELIVERED	2x1000, 2x1000 2x1000, 2x1000
	<input type="checkbox"/> CUSTODY SEAL(S) BROKEN <input type="checkbox"/> SAMPLE(S) DAMAGED <input type="checkbox"/> ON ICE <input type="checkbox"/> AMBIENT TEMP. <input type="checkbox"/> INCORRECT PRESERVATION							
	CLIENT SAMPLE ID	DATE	TIME	TYPE				
	WELL #2	4-18-11	10:50	DW				

REPORT TO:	<input type="checkbox"/> INVOICE TO:	<input type="checkbox"/> REPORT COPY TO:	REPORTING:
COMMENTS/ADDITIONAL INSTRUCTIONS:			
RELINQUISHED BY: <i>Jan</i>	COMPANY: FCSD	DATE: 4/18/11	TIME: 1425
RECEIVED BY: <i>[Signature]</i>		COMPANY: MTA	



California ELAP Certificate #1371

RECEIVED
MAY 16 2011

FRESNO COUNTY
DEPT. OF
PUBLIC WORKS & PLANNING

2527 Fresno Street
Fresno, CA 93721
(559) 268-7021 Phone
(559) 268-0740 Fax

May 05, 2011

Work Order #: 1D18014

Joe Prado
Fresno County - Special Districts
2220 Tulare St. 6th Floor
Fresno, CA 93721

RE: CSA - District 10, Cumorah Knolls

Enclosed are the analytical results for samples received by our laboratory on 04/18/11 . For your reference, these analyses have been assigned laboratory work order number 1D18014.

All analyses have been performed according to our laboratory's quality assurance program. All results are intended to be considered in their entirety, Moore Twining Associates, Inc. (MTA) is not responsible for use of less than complete reports. Results apply only to samples analyzed.

If you have any questions, please feel free to contact us at the number listed above.

Sincerely,

Moore Twining Associates, Inc.

Juliane Adams
Director of Analytical Chemistry



2527 Fresno Street
 Fresno, CA 93721
 (559) 268-7021 Phone
 (559) 268-0740 Fax

California ELAP Certificate #1371

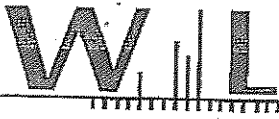
Fresno County - Special Districts	Project: CSA - District 10, Cumorah Knolls	Reported:
2220 Tulare St. 6th Floor	Project Number: 962-4776	05/05/2011
Fresno CA, 93721	Project Manager: Joe Prado	

Analytical Report for the Following Samples

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Well #2	ID18014-01	Drinking Wa	04/18/11 10:50	04/18/11 14:25

Moore Twining Associates, Inc.
 Juliane Adams, Director of Analytical Chemistry

The results in this report apply to the samples analyzed in accordance with the chain custody document. This analytical report must be reproduced in its entirety.



Certificate of Analysis

Report Date: Tuesday, April 26, 2011
Received Date: Wednesday, April 20, 2011
Received Time: 10:00 am
Turnaround Time: Normal

Client: Moore Twining Associates, Inc.
2527 Fresno Street
Fresno, CA, 93721

Phones: (559) 268-7021
Fax: (559) 268-0740

Attn: Julio Morales
Project: 1D18014

P.O. #:

Lab Sample ID: 1D20020-01	Sample ID: Well #2, 1D18014-01	Matrix: Water								
Sampled by: Client	Sampled: 04/18/11 10:50									
Analyte	Result	MDL	MRL	Units	Dil	Method	Prepared	Analyzed	Batch	Qualifier
Perchlorate	ND	0.64	2.0	ug/l	1x1	EPA 314.0	4/21/11	4/21/11 16:20	W1D0820	



Date of Report: 11/04/26
Laboratory Name: Weck Laboratories, Inc
Name of Sampler: Client

Sample ID No.: 1D20020-01
Signature Lab Director: [Signature]

Date/Time Sample Collected: 11/04/18 1050
Date/Time Sample Received @ Lab: 11/04/20 1000
Date Analyses Completed: 11/04/21

System Name: FCSA #10/CUMORAH KNOLLS
System Number: 1000039

Name or Number of Sample Source: WELL 02

User ID: CYA
Station Number: 1000039-002
Date/Time of Sample: 11/04/18 10/50
Laboratory Code: 9588
Date of Analyses Completed: 11/04/21
Submitted By: Weck Laboratories, Inc
Phone #: (626) 336-2139

Table with 7 columns: TEST METHOD, CHEMICAL, Units, ENTRY #, ANALYSES RESULTS, MCL, DLR. Row 1: Perchlorate (ug/L), ug/L, A-031, ND, 6, 4

Laboratory Comments and Description of Additional Components Found (Comments in this section are for Client Information only and will NOT be transmitted to CDPH via EDT):

Well #2, 1D18014-01:



2527 Fresno Street
 Fresno, CA 93721
 (559) 268-7021 Phone
 (559) 268-0740 Fax

California FLAP Certificate #1371

Fresno County - Special Districts
 2220 Tulare St. 6th Floor
 Fresno CA, 93721

Project: CSA - District 10, Cumorah Knolls
 Project Number: 962-4776
 Project Manager: Joe Prado

Reported:
 04/13/12 18:35

Well #2

2C30006-01 (Water)

Sampled:03/30/12 08:50

Analyte	Notes	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Inorganics									
Nitrate as NO3		23	2.0	mg/L	1	T2C3011	03/30/12	03/30/12	EPA 300.0
Nitrite as N		ND	0.30	mg/L	1	T2C3011	03/30/12	03/30/12	EPA 300.0
Metals - Totals									
Arsenic		1.9	1.0	µg/L	1	T2D0513	04/05/12	04/11/12	EPA 200.8

Notes and Definitions

- µg/L micrograms per liter (parts per billion concentration units)
 - mg/kg milligrams per kilogram (parts per million concentration units)
 - mg/L milligrams per Liter (parts per million concentration units)
 - ND Analyte NOT DETECTED at or above the reporting limit
 - RPD Relative Percent Difference
- Analysis of pH, filtration, and residual chlorine is to take place immediately after sampling in the field
 If the test was performed in the laboratory, the hold time was exceeded