Water Supply Assessment

FOR

99 Houghton, LLC

Portion of Section 7, Township 31 South, Range 28 East, MDM

Kern County, California

Job Number 06-012

Prepared for:

99 Houghton, LLC

November 2010

Prepared by:

McINTOSH & ASSOCIATES

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1.0 Introduction

1.1 Purpose

This report is prepared as a technical study in support of the Environmental Impact Report (EIR) being prepared for the 99 Houghton project (Project) under the California Environmental Quality Act (CEQA). Due to the size of the planned development, Senate Bill (SB) 610 requires a "Water Supply Assessment" (WSA) to verify that the water supply sources are available to meet the 20-year water demand of the Project.

1.2 Project Description

The proposed project is the development of Light Industrial (129.73 acres), and Service Industrial (184.58 acres). The project is generally located between Houghton Road to the south and DiGiorgio Road to the north with State Route 99 along the western edge and South Union Avenue along the eastern frontage. The site is further described as a portion of Section 7, Township 31 South, Range 28 East, M.D.M.; Kern County. The Assessor's Parcel Number (APN) for this proposed project is 185-140-06.

According to the U.S. Geological Survey (USGS) Gosford and Conner, 7.5-minute quadrangle maps along with visual inspection of the property, the site is relatively flat and approximately 333 feet above mean sea level.

A mixture of existing land uses surrounds the project area. The existing land use on the project's site is designated by the County of Kern as Resource Intensive Agriculture (R-IA). A General Plan Amendment is requested to designate 129.73 acres as Light Industrial (LI) and 184.58 acres as Service Industrial (SI) with a concurrent zone change from Exclusive Agriculture (A) to 129.73 acres of Light Industrial (M-1) and 184.58 acres of Medium Industrial (M-2). The proposed project will allow for the development of an industrial park with the maximum yield of 5,134,253 square feet on a cumulative 314.31 acres.

Table 1 - Proposed Land Use and Zoning

Existing and Proposed Land Use		
General Plan Amendment		
From	To	Acres
R-IA (Resource Intensive Agriculture)	LI (Light Industrial)	129.73
	SI (Service Industrial)	184.58
Zone Change		
From	To	Acres
A (Exclusive Agriculture)	M-1 (Light Industrial)	129.73
	M-2 (Medium Industrial)	184.58
Total:		**314.31**

2.0 Regulatory Settings

2.1 Applicability of SB 610 and SB 221

SB 610 applies to the Project pursuant to the California Water Code (CWC) provision §10912(a)(5) stating that the Project consists of an industrial site that will occupy greater than 40 acres of land and will contain more than 650,000 square feet of floor area. SB 221 does not apply because the Project is not a residential subdivision nor will there be a public water supplier.

2.2 Requirements of a SB 610 Water Supply Assessment (WSA)

There will not be a public water supplier for this Project as the potable water will be pumped and treated from onsite stations. Furthermore, the Project has not been the subject of a previous assessment.

An Urban Water Management Plan (UWMP) is required per the Urban Water Management Plan Act (Division 6 Part 2.6 of the CWC § 10610-10656) to be provided by the urban water supplier once there are 3,000 connections or if more than 3,000 acre-feet of water is supplied annually. A UWMP is not needed for the private water supplier of this project who will supply significantly less than 3,000 connections.

The water supply assessment is required to address the adequacy of supply during a 20-year projection for normal, single-dry, and multiple-dry water years across the water supplier's project per CWC §10910(c)(3). The water supplier must account for their existing and future planned uses' projected water demand, including manufacturing and agricultural uses, in a UWMP. In place of a UWMP, this WSA will demonstrate that the Houghton 99 project will have sufficient supply for a 20-year projection in normal, single-dry, and multiple-dry year scenarios for the project.

All of the water being supplied to the Project will come from groundwater pumped from the Tulare Lake Basin/Kern County Sub-basin utilizing onsite water wells. Since groundwater is to be used, the CWC provisions §10910(f)(2 through 5) apply. These provisions require that the WSA include detailed descriptions of the basin or basins from which the proposed groundwater will be extracted. The sufficiency of extracting groundwater from the basin(s) must also be analyzed. Furthermore, the WSA must contain a detailed description and analysis of the amount and location of groundwater that is projected to be pumped. Nearby water well data from private well drillers' reports, the Department of Water Resources, and Kern County Environmental Health Division is provided to meet the SB 610's requirement.

3.0 Water Demand

3.1 Existing Demand

The project site has historically been used for agricultural purposes. McIntosh & Associates prepared a Farmland Conversion Study for this Project in December 2008. Wheat, corn, grain, and alfalfa crops were grown on the site in the years 2003-2008. The information provided in Table 2, below, is a summary of crop information and established demand factors to calculate the average water demand for the project site.

Table 2 - Existing Water Demand, Agricultural Use

Agricultural Crops - 2003-2008 Portion of Section 7, Township 31S., Range 28E., M.D.M.						
Year	**Crop**	**Acres**	**Irrigation (ac in /ac)**	**Total (ac in)**	**Water Use (ac ft/yr)**	**Annual Use (MG/yr)**
2008	Wheat	65	20	1,300	108.33	35.30
	Alfalfa	150	42	6,300	525.00	171.07
	Corn /Fodder	20	48	960	80.00	26.07
	Fallow	60	0	0	0.00	0.00
	Total			**8,560**	**713.33**	**232.44**
2007	Alfalfa	120	54	6,480	540.00	175.96
	Corn /Fodder	60	44	2,640	220.00	71.69
	Grain	40	12	480	40.00	13.03
	Fallow	80	0	0	0.00	0.00
	Total			**9,600**	**800.00**	**260.68**
2006	Alfalfa	300	54	16,200	1,350.00	439.90
	Total			**16,200**	**1,350.00**	**439.90**
2005	Grain	160	12	1,920	160.00	52.14
	Alfalfa	140	54	7,560	630.00	205.29
	Total			**9,480**	**790.00**	**257.42**
2004	Grain	140	12	1,680	140.00	45.62
	Alfalfa	160	54	8,640	720.00	234.61
	Total			**10,320**	**860.00**	**280.23**
2003	Alfalfa	300	54	16,200	1,350.00	439.90
	Total			**16,200**	**1,350.00**	**439.90**

The average annual amount of water supplied for the crops over the six-year period was 977.22 acre-feet/year. The Existing water supplier for the agricultural irrigation is recognized as Kern Delta Water District (KDWD). KDWD provided agricultural-use water from a nearby irrigation ditch. The project also used an on-site agricultural well to supplement the major source coming from KDWD. The KDWD will not provide potable water to the project once the land use and zoning changes take effect.

3.0 Water Demand (continued)

3.2 Future Water Demand

Future demand for domestic water usage must provide for twenty (20) years worth of domestic water for normal, single-dry, and multiple-dry years per SB 610 of the CWC § 10910(c)(3). Table 3, below, shows projected water demand for the project. Two conservative scenarios are considered since the Project has not yet established a site plan or a schedule for tenants. The values of projected water use for the non-residential uses, in gallons per day per 1,000 square feet, is derived from Greenfield County Water District's adopted *Calculations of Single-family Residence Equivalents for Water Service* dated November 2005.

The highest demand scenario occurs with 5,134,253 square foot of industrial uses operating 365 days per year. The more conservative value of 249.33 acre-feet/year will serve as the maximum demand for the Project. This initial demand of 249.33 acre-feet/year will not increase during subsequent dry years. There may be reductions to this value of 5% for every subsequent dry year as water conservation efforts are implemented.

Table 3 – Project's Water Demand at Buildout

		Description	Land Use	Acres	Sq. Ft Industrial	Unit of Measure	Water Estimated Flow (gpd) / 1,000 sq ft	Gallons Per Day	Million Gallons Per Day	Annual Use (MG/yr)	Annual Use (AF/yr)
INDUSTRIAL - Operational 365 d/y	100% of proposed s.f.	Warehousing	LI	129.73	1,907,225	1000 s.f.	28	53,402.30	0.05	19.49	59.82
		Wholesale Outlet 10%			211,914	1000 s.f.	114	24,158.20	0.02	8.82	27.06
		Sub Total			**2,119,139**			**77,560.50**	**0.08**	**28.31**	**86.88**
		Manufacturing 10%	SI	184.58	301,511	1000 s.f.	229	69,046.02	0.07	25.20	77.34
		Warehousing			2,713,603	1000 s.f.	28	75,980.88	0.08	27.73	85.11
		Total			**5,134,253**			**222,587.40**	**0.22**	**81.24**	**249.33**
INDUSTRIAL - Operational 260 d/y	100% of proposed s.f.	Warehousing	LI	129.73	1,907,225	1000 s.f.	28	53,402.30	0.05	13.88	42.61
		Wholesale Outlet 10%			211,914	1000 s.f.	114	24,158.20	0.02	6.28	19.28
		Sub Total			**2,119,139**			**77,560.50**	**0.08**	**20.17**	**61.89**
		Manufacturing 10%	SI	184.58	301,511	1000 s.f.	229	69,046.02	0.07	17.95	55.09
		Warehousing			2,713,603	1000 s.f.	28	75,980.88	0.08	19.76	60.63
		Total			**5,134,253**			**222,587.40**	**0.22**	**57.87**	**177.60**

Table 4, below, shows the projected difference in the water usage for the Project. The Project is expected to require significantly less water than the previous agricultural uses. However, the project will require all potable water to be extracted and treated from the underlying groundwater aquifers since the majority of the previous water supply came from KDWD's irrigation ditch and canals.

Table 4 - Difference Between Existing and Proposed Water Usage

Type	Without Reclaimed Water (AFY)	With Reclaimed Water (AFY)
Avg. Existing Agricultural Use	977.22	977.22
Proposed Industrial Use	249.33	169.54
Difference	**727.89**	**807.68**

727.89 acre-feet of water per year is the estimated amount of water to be saved by changing from agricultural to industrial uses. Once the reclaimed water source is fully active, the project will save another 79.79 acre-feet from being imported or pumped as recycled water is used. An assumed value of 32% of the Industrial project's total water usage is to be used for reclaimed water to offset landscape irrigation.

4.0 Water Supply

4.1 Retail Water Supply

No public water supplier is in place to provide domestic water services to this project at time of construction or opening day. The Project will receive its domestic water from onsite, groundwater pumping and treatment facilities.

4.2 Water Entitlements, Rights, and Service Contracts

California Water Code § 10910 (d)(1)

The assessment required by this section shall include an identification of any existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and a description of the quantities of water received in prior years by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts.

The Kern Delta Water District (KDWD) was the agricultural irrigation provider for this project prior to the project's application for zone change to Industrial uses. The KDWD will not serve this project site with domestic water. KDWD's supply for the agricultural uses came from canals. There is an existing small-yield agricultural well on the project site. However, this well may be replaced or taken offline.

Kern Delta Water District provided recharge waters to the Greenfield County Water District, which is the nearest domestic water provider. The recharge waters from KDWD come from the Kern Island Main and Central Canals. Seepage serves as groundwater recharge when the water percolates through the soil and into the groundwater aquifers. Table 5, below, shows the annual seepage rates as published by KDWD (documentation can be found in Appendix F). These volumes are provided for GCWD's recharge program.

Table 5 – KDWD Annual Seepage Volumes from Canals

Year	Kern Island Main & Central Canals (AFY)
2008	2,915
2009	3,039
Average GCWD Share:	**2,977**

Note: Combined values for the canals are presented in Appendix F

The project may utilize non-potable water from KDWD transferred to onsite percolation basins to recharge the groundwater aquifer. Contracting a recharge water supplier is not a requirement per SB 610 for the Houghton 99 project since a public water supplier will not serve the Project,

4.0 Water Supply (continued)

4.3 Groundwater Supply

4.3.1 Groundwater Basin Description

The Project overlies the Kern County sub-basin of the San Joaquin Valley Groundwater basin within the Tulare Lake Hydrologic Region. Bounding the sub-basin are the Kern County Line and Tule Groundwater sub-basin to the north, Sierra Nevada foothills and Tehachapi Mountains to the south and southeast, the Temblor Range to the west, and the San Emidio Mountains to the southwest.

The Kern County sub-basin is not an adjudicated basin. Rights to the groundwater supply are not under legal restrictions. No surface water sources will be utilized for this Project except as groundwater recharge. Reclaimed water will be used to supplement landscape irrigation uses.

The groundwater basin is comprised of deposits of clay, silt, sand and gravel. The basin consists of four water-bearing formations: Olcese and Santa Margarita formations, Tulare and Kern River Formations, older Alluvium/Stream and Terrace Deposits, and younger Alluvium/Flood Basin Deposits. Further descriptions of these formations are located in the Department of Water Resources Bulletin 118 Update 2003 (B118-03). The sub-basin has a surface area of 3,047 square miles, and it receives an average precipitation of 5.72 inches annually.

4.3.2 Groundwater Production

The B118-03 update lists the average well yield to be 1,200 to 1,500 gpm with a maximum yield of up to 4,000 gpm in the Kern County Sub-basin. Greenfield County Water District currently operates five groundwater extraction wells along with the accompanying treatment facilities, storage tanks, booster pumps, and water lines. GCWD's five wells are shown below in Table 6, and they exhibit yearly withdrawal rates of between 900 gallons per minute (1,444.8 acre-feet/year) and 1,800 gallons per minute (2,900.8 acre-feet/year). Wells within the boundaries of GCWD and KDWD have not exhibited significant water level declines as shown in Chart 1.

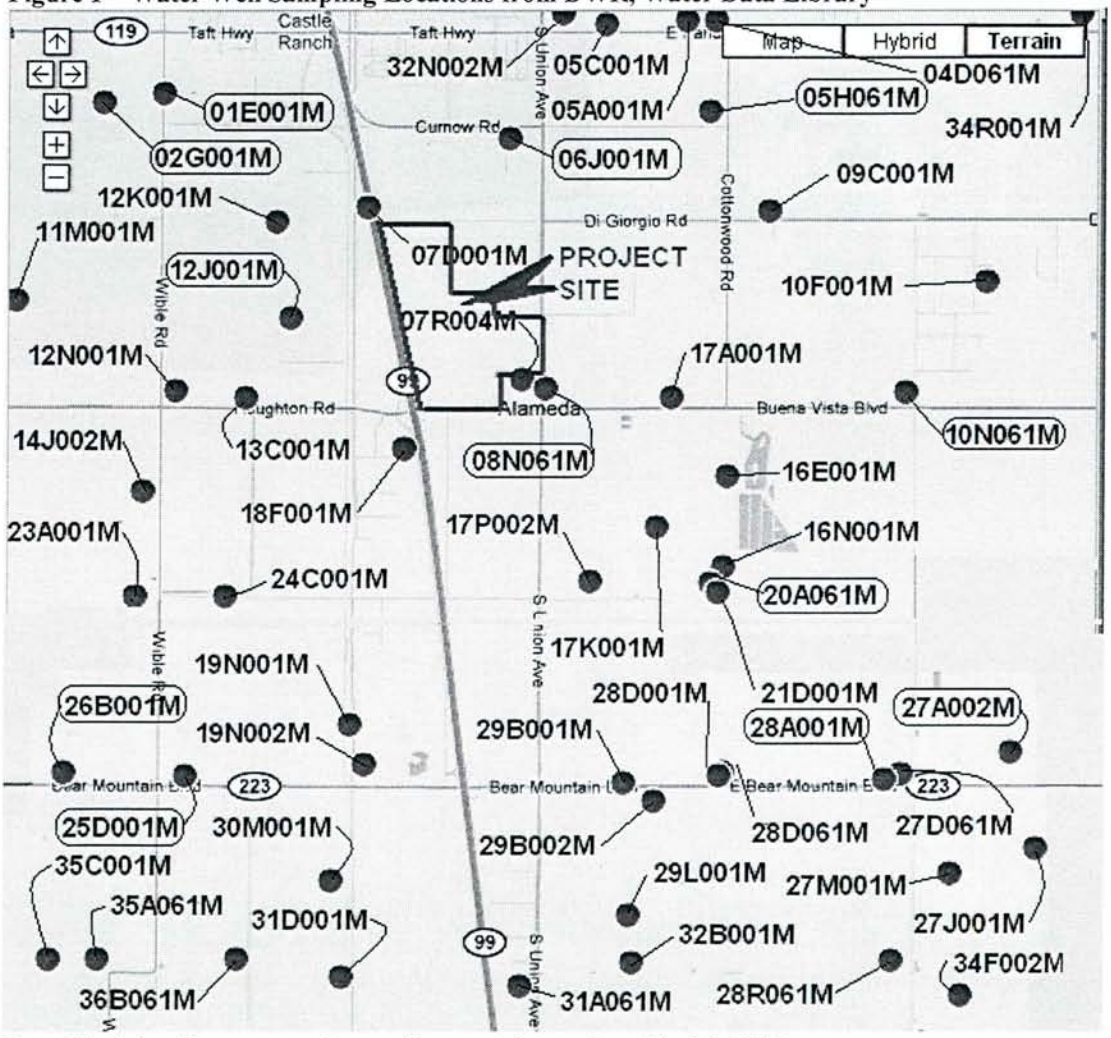
Table 6 – GCWD Existing Well Characteristics

Well Name	Approximate Distance from Project	Source Capacity (gpm)	Source Capacity (AF/Y)	Booster Capacity (gpm)	Storage Tank Size (gal)
McKee	1.5 miles	900	1,444.8	N/A	N/A
Taft	0.75 mile	1,010	1,624.0	N/A	N/A
Panama	1 mile	1,100	1,769.6	1,420	420,000
Dublin	1.75 miles	1,300	2,094.4	1,300	500,000
Berkshire	2.75 miles	1,800	2,900.8	1,900	850,000
Total:	-	**6,110**	**9,833.6**	**4,620**	**1,770,000**

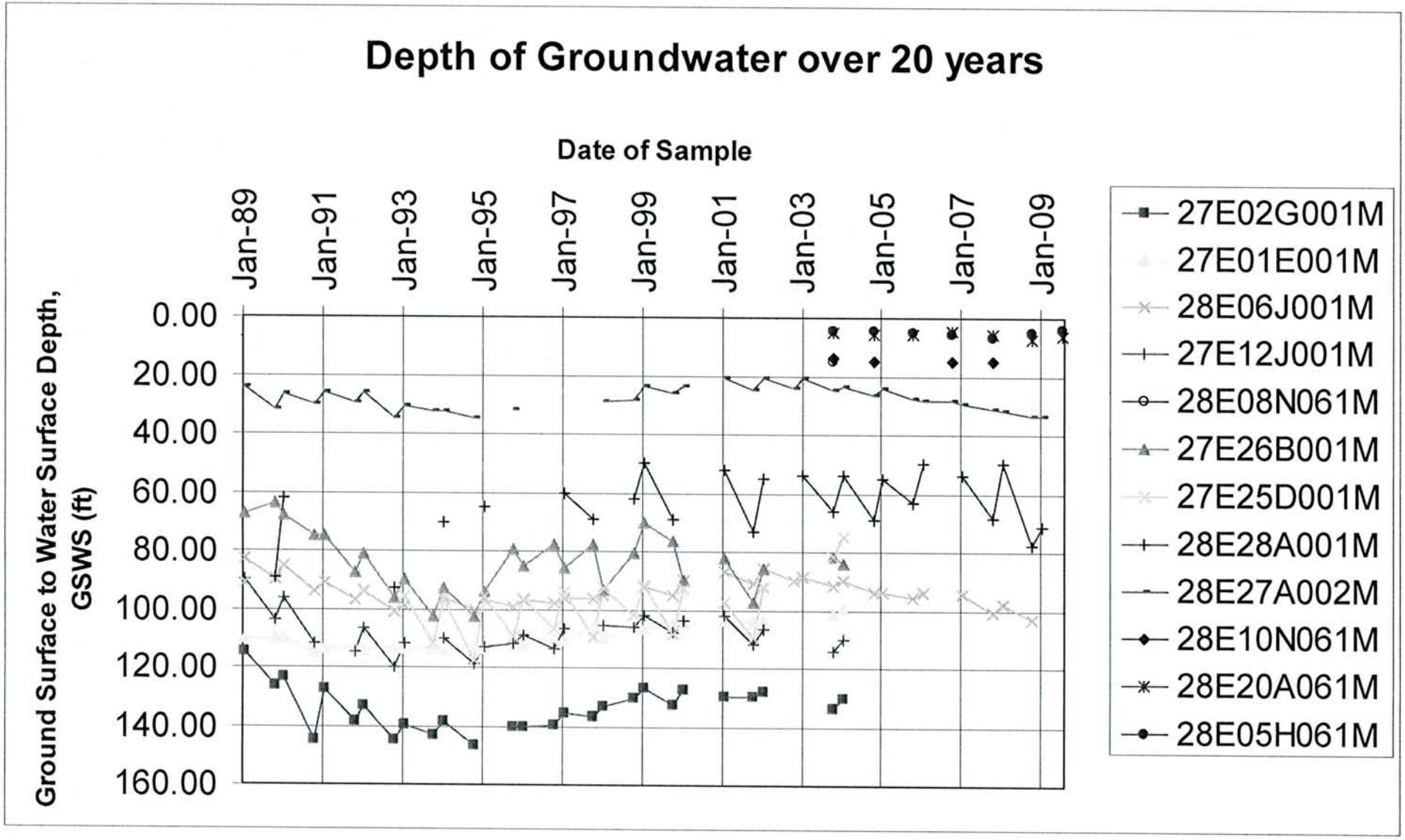
4.0 Water Supply (continued)

Figure 1, below, shows DWR water well sampling sites. The DWR maintains an extensive listing of water well sampling sites across the sub-basin. The data from these wells can be found in Appendix A. The data in Chart 1, next page, shows corresponding depths of the surface to groundwater for these wells over the past twenty years. Some wells do not have any data associated with historic water levels whereas others do not have data that is within 20 years old.

Figure 1 – Water Well Sampling Locations from DWR, Water Data Library



Note: Circled well names are those with recent data and used in this WSA.


Depth of Groundwater over 20 years
Date of Sample
Jan-89
Jan-91
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07
Jan-09
Ground Surface to Water Surface Depth, GSWS (ft)
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
160.00
27E02G001M
27E01E001M
28E06J001M
27E12J001M
28E08N061M
27E26B001M
27E25D001M
28E28A001M
28E27A002M
28E10N061M
28E20A061M
28E05H061M

4.0 Water Supply (continued)

The depths of the aquifers from grade were found by examining private Well Driller Reports and DWR published ranges. The specific yields of the aquifers are 11.8% and 12.4% for the unconfined and confined aquifers, respectively. The DWR's B118-03 shows these values come from estimated ranges put forth by the DWR's San Joaquin District office for the unconfined layer and by the DWR (1977) groundwater model of Kern County for the confined layer up to 2,900 feet beneath grade. The DWR (1977) shows evidence that areas of Kern County can reach a total depth of 2,900 feet below grade before encountering impermeable layers. Although Chart 1 shows that some wells have a Surface to Water depth of 20 feet or less, this shallow or "perched" water should not be utilized.

Table 7, below, shows the approximate groundwater quantities located beneath 314.31 acres of the Project site. The amount of immediately available groundwater will fully provide for the Project for more than 20 years regardless of wet, normal, or dry year scenarios. The well will not necessarily be drilled to the deepest reach of 2,900 feet below ground surface. It would be more economical for the well to be drilled less than 2,900 feet below ground surface but greater than 450 feet below ground surface in order to extract water from the confined aquifer. Table 7 assumes a drilled depth to 1,000 feet below grade.

Table 7 – Groundwater Aquifer Quantities Beneath Project Site

Aquifer Type & Depth Below Grade	Section Depth, feet	Specific Yield, water percentage	Water depth, feet	Water Content, acre-feet	Water Content, Million Gallons
Unconfined, 100' to 400'	300	11.8%	35.40	11,126.57	3,625.61
Confined, 450' to 1,000'	550	12.4%	68.20	21,435.94	6,984.92
Total Water Supply:			**103.60**	**32,562.52**	**10,610.53**

Notes:

1) *The specific yield of 11.8% was used for the unconfined layer, and 12.4% was used for the confined layer per DWR Bulletin 118-03.*
2) *Water should not be extracted from 400' to 450' where the Corcoran Clay layer exists.*

4.3.3 Groundwater Level Trends

According to B118-03, the average sub-basin water level was relatively unchanged between 1970 and 2000. Net water level changes in different portions of the sub-basin did change during the 30-year span with increases over 30 feet and decreases of 25 to 50 feet in other areas. Further data provided by the DWR, San Joaquin District, shows that nearby sampling wells contain data over a 40-year period and that the Ground Surface to Water Surface elevations have periods of increases and decreases over the past four decades. Refer to Chart 1, on the previous page, for DWR sampling sites and their groundwater to surface depths over the past 20 years. Appendix A contains the data from the DWR's *Water Data Library* on these wells.

4.3.4 State of Basin

The Kern County sub-basin is not an adjudicated basin. The DWR's Bulletin 118 - Update 1980 (B118-80) listed the sub-basin as subject to critical conditions of overdraft. B118-03 updated the description to show that the Kern County sub-basin is projected to continue losing 325,000 acre-feet/year due to overdraft. The Kern County Water Agency has prepared a detailed report from 1970 to 1998 showing that the sub basin loses an average of 325,000 acre-feet/year. This report was published in 2002 and included, in part, in the Groundwater Bulletin 118 – 2003.

4.0 Water Supply (continued)

The major water suppliers in Kern County recognize the importance of groundwater recharge, and programs are underway to regionally benefit the groundwater basin.

B118-03 states:

> *"The cities of Fresno, Bakersfield, and Visalia have groundwater recharge programs to ensure that groundwater will continue to be a viable water supply in the future. Extensive groundwater recharge programs are also in place in the south valley where water districts have recharged several million acre-feet for future use and transfer through water banking programs."*

4.4 Water Usage Reductions

4.4.1 Water Conservation Efforts

The groundwater basin is in a state of overdraft per Section 4.3.4, State of Basin. Reductions to water usage will be a factor that the customers and water suppliers can directly influence. This reduction in use will benefit the rate of over-drafting from the basin in conjunction with recharging the basin through groundwater banking programs.

The Project has several options to reduce water consumption during dry years. One phase of water conservation involves mandatory water reductions. The project may propose a reduction to start at 5% for a Single Dry Year and scales up by 5% per subsequent dry year. Urban water suppliers are permitted to reduce up to 50% of provided water for their customers per CWC § 10632. Although this limit is achievable over a short term, it should be reserved for disaster planning rather than drought planning as it would put the water system under extreme duress. The reductions come in the form of nighttime landscape irrigation, education on lessening water consumption, and other localized water use elimination.

Additionallly, the installation of water conservation devices and fixtures at time of construction will help alleviate the problem of excessive water use. Low-flush toilets, timed landscape irrigation, and efficient pump-delivery systems are recommended for the Project to implement upon construction. These measures have the capability to significantly reduce domestic water consumption.

Another method the project may implement to potentially reduce water demand is to monitor water usage via water meters. Individual connections can be easily monitored for their water consumption and charged for their use accordingly. Local retail water suppliers implement a sliding scale for water rates depending on how much water each customer uses. It is expected that typical customers will begin to scale back their water usage from high volume, more expensive usage, to lower volume, less expensive usage. This is very achievable with implementation of water meters and proper enforcement of rate accountability.

4.4.2 Water Reclamation

The Project is proposing to utilize reclaimed water for landscape purposes. An on-site sewage package treatment plant is proposed to be constructed in order to provide the reclaimed water suitable for landscape irrigation.

4.0 Water Supply (continued)

The State Water Resources Control Board (SWRCB) adopted Resolution 77-1 on January 6, 1997. The resolution became the agency's *Policy with Respect to Water Reclamation in California*. The Houghton 99 Project is proposing to use reclaimed water to lessen the burden of required groundwater pumping. The reclaimed water shall be used solely for non-potable uses such as irrigation of landscaping and groundwater recharge. Reclaimed water shall not be used for any other domestic purposes. The landscape requirement of the Service Industrial project is estimated to be 79.79 acre-feet per year, which will be serviced entirely by reclaimed water.

4.5 Dry Year(s) Supply and Demand

The Project will withdraw 249.33 AF of groundwater annually for normal, single dry, and multiple dry years. In the future, the project will require 169.54 AFY of domestic water (Demand less Reclamation) once the package treatment plant begins providing reclaimed water. Table 8, below, shows these volumes. Increases to the demand rate are not expected for this Industrial project, but reductions of 5% per year are achievable through methods introduced above.

Table 8 – Net Supply and Demand, Acre-Feet/year

	Normal		Single Dry		Multiple Dry - 2		Multiple Dry - 3	
	2011	2031	2011	2031	2011	2031	2011	2031
Project Demand [1]	-249.33	-249.33	-249.33	-249.33	-249.33	-249.33	-249.33	-249.33
Project's Sustainable Groundwater Withdrawal [2]	325.63	325.63	325.63	325.63	325.63	325.63	325.63	325.63
Project's Usage Reduction if Implemented [3]	0	0	12.47	12.47	24.93	24.93	37.40	37.40
Project Site's Precipitation-Infiltration [4]	80.90	80.90	76.86	76.86	72.81	72.81	68.77	68.77
Project's Reclaimed Water Use	0	79.79	0	79.79	0	79.79	0	79.79
Surplus or (Deficiency)	**157.20**	**236.99**	**165.62**	**245.41**	**174.04**	**253.83**	**182.46**	**262.25**

Notes:

1) Table 3 shows the maximum domestic water demand.
2) Sustainable groundwater withdrawal assumes that over a 100-year period the project could withdraw from the aquifer that exists in a prism beneath the project's boundaries and reach full depletion by that time if no recharge exists (See Table 7 for volume to 1,000 feet below grade).
3) Usage Reduction volumes are proposed to start at 5% reduction in the first dry year and incrementally increase by 5% per dry year for multiple dry years. These will be achievable through implementation of water conservation methods such as metering the water usage, installing efficient plumbing, and imposing mandatory reductions to water usage. Sub-meters should be installed to monitor landscape irrigation and track the rate at which reclaimed water shall be applied.
4) Annual precipitation (ft) x Total Acreage x Runoff Coefficient, 0.80 x 90% remaining after evaporation x 75% reaches sump.
5) Supply/ Reductions are Positive values, and Demands are Negative values. The value for Surplus or Deficiency comes from the summation of Demand, Recharge, Reductions, Infiltration, and Reclamation.

4.0 Water Supply (continued)

The net surplus, per year, shall be carried over to the following year to provide the adequate groundwater withdrawal. Table 8 shows that the Project will have sufficient supplies of available water for future years with respect to various dry year scenarios. The Project's strain on the ground-water sub basin will be lessened as natural precipitation and supplemental reclaimed water are used to replenish the aquifers. If additional reclaimed water is collected it can also be banked into the aquifer. Reclaimed water volume is dependent on the amount of sewage that can be collected and processed. There is currently a low-supply, agricultural well located on-site that supplemented KDWD's agricultural water volumes.

4.6 Groundwater Quality

Water quality of the local underlying aquifer has been tested and verified by Greenfield County Water District. The safety of domestic water is of utmost concern to GCWD and its customers. The California Domestic Water Quality and Monitoring Regulations, Title 22 of California Code of Regulations, states that there is a requirement of domestic water suppliers to provide each customer an annual report of the quality of the drinking water. The United States Environmental Protection Agency and the California Department of Health Services have set drinking water standards to comply with the Safe Drinking Water Act. The primary standards set maximum contaminant levels for aspects of drinking water that directly affect the health and safety of the community. Secondary standards cover aspects related to aesthetics of the water, including odor, taste, turbidity, and some metals.

Greenfield County Water District's water supply currently meets all EPA and California Department of Health Services primary standards. The primary standards are show in Table 9, below. The secondary standards are shown in Table 10, next page. It should be noted that GCWD will not be the domestic water supplier for this project, but their water quality monitoring provides a local sampling of the groundwater quality in the vicinity.

Table 9 – Primary Drinking Water Standards

Chemical or Constituent (and reporting units)	Average Level Detected	Detection Range	Maximum Contaminant Level	Status
Aluminum (ppb)	27.5	0-110	1000	Satisfactory
Arsenic (ppb)	3.3	2-7	10	Satisfactory
Barium (ppb)	100.5	53.7-138	1000	Satisfactory
Chromium (ppb)	3-25	1-5	50	Satisfactory
Fluoride (ppm)	0.2	0.2	2	Satisfactory
Nitrate (ppm)	11.85	2.1-21.8	45	Satisfactory
Selenium (ppb)	2	0-4	50	Satisfactory
Gross Alpha Activity (pCi/L)	5.12	0.28-13.7	15	Satisfactory

4.0 Water Supply (continued)

Table 10 – Secondary Drinking Water Standards

Chemical or Constituent (and reporting units)	Average Level Detected	Detection Range	Maximum Contaminant Level	Status
Aluminum (ppb)	25	0-100	200	Satisfactory
Iron (ppb)	50	0-100	300	Satisfactory
Total Dissolved Solids (ppm)	307.5	170-400	1000	Satisfactory
Turbidity (Units)	0.52	0-1.6	5 units	Satisfactory
Specific Conductance (micromhos)	446	262-587	1600	Satisfactory
Chloride (ppm)	24.75	9.50	500	Satisfactory
Sulfate (ppm)	36.5	17-56	500	Satisfactory

5.0 Conclusion

5.1 Findings

The Water Supply Assessment for 99 Houghton, LLC shows that SB 610 requires the Assessment and that it shows an adequate supply of water over a 20-year period with use of groundwater sources. SB 610 applies to this Project since there will be a development of an Industrial project on a site that exceeds 40 acres and with the potential of exceeding 650,000 square feet of building floor area. Hence, a Water Supply Assessment is required.

The groundwater basin is not adjudicated, nor is there an existing Urban Water Management Plan for this project's proposed domestic water supplier. The existing water purveyor, who provides irrigation water solely for agricultural purposes, will not service the Project with domestic water. Instead, the domestic water will be provided by an on-site private well with water treatment and distribution facilities

A total of 249.33 acre-feet of domestic water will be required annually, regardless of single or sequential dry years. In the future, the Project will require 169.54 acre-feet per year to be provided since there will be a reduction of 79.79 acre-feet of water that will be recycled and applied to landscape irrigation once the reclamation package-treatment plant is operational. The groundwater sub-basin will not be affected by the project primarily due to a large reduction of water required between existing uses and proposed uses. Also, natural precipitation and potentially reclaimed water sources will be used to limit the use of local groundwater aquifers. The water balance of supply-and-demand was shown in Table 8 to incorporate recharge and water reduction measures to offset a portion of groundwater withdrawals. Ultimately, the project sits atop a large quantity of water and will be able to access these quantities over a 20-year period.

The Houghton 99 project, with proposed Industrial uses, will have enough water to supply for a 20-year period through normal and multiple dry years.

6.0 Resources

State of California – Department of Water Resources

- Bulletin 118-80 Ground Water Basins in California – January 1980
- Bulletin 118 Update 2003 California's Groundwater – October 2003
- Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001
- Water Data Library - Water Well Data, Groundwater Depths

State of California

- California Water Code § 10631, 10910, 10912, and 13752

United States Geological Survey

- Topographic Quadrangle Map - Conner, CA
- Topographic Quadrangle Map - Gosford, CA

Greenfield County Water District

- Consumer Confidence Report for Calendar Year 2008, dated July 2009
- Tables 5, 6, 9, and 10,
- Adopted *Calculations of Single-family Residence Equivalents for Water Service*, dated November 2005

United States, Environmental Protection Agency

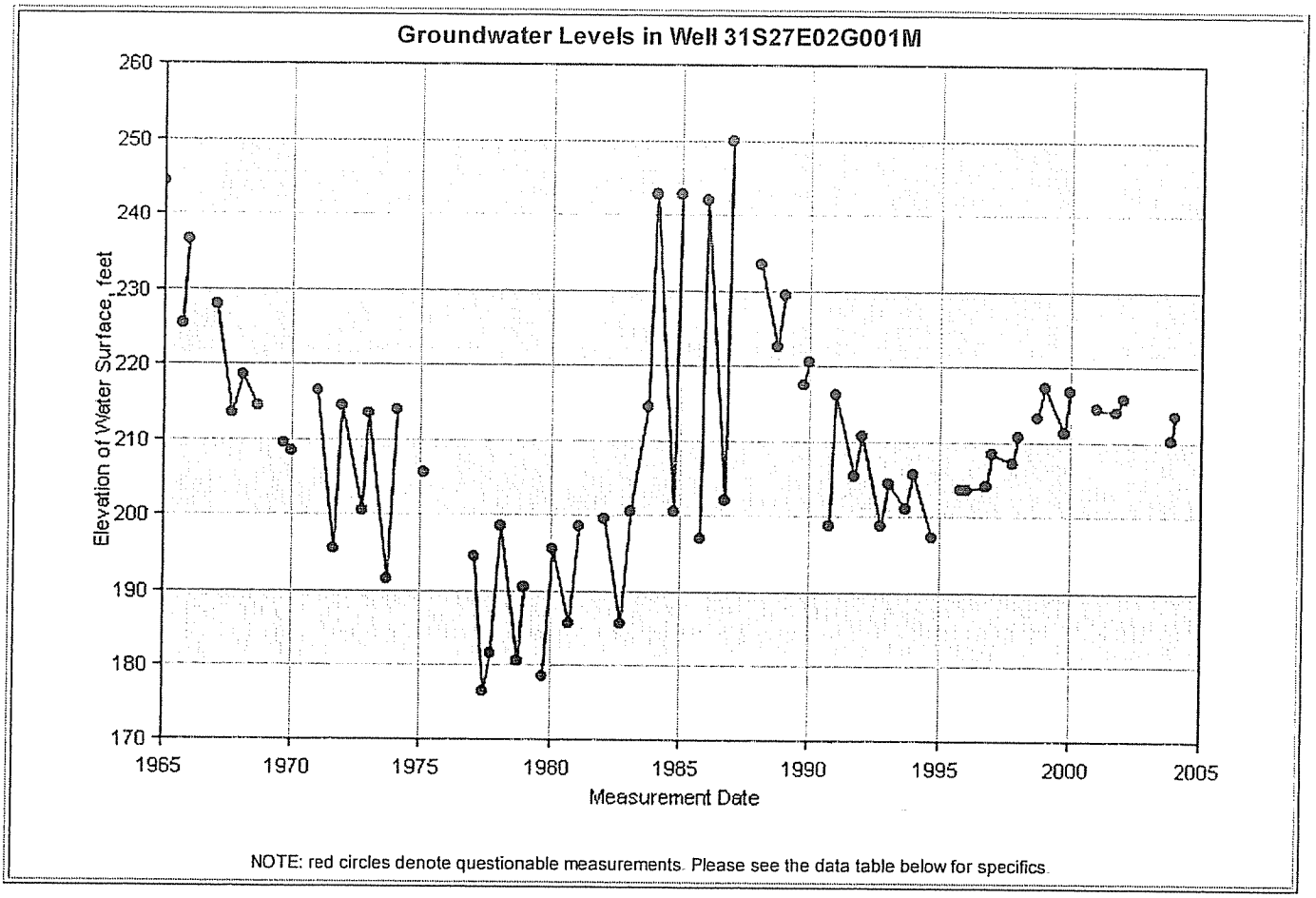
- Resolution No. 77-1, Policy With Respect to Water Reclamation in California

Appendix A

Department of Water Resources
Water Well Sampling Data

Groundwater Level Data for Well 31S27E02G001M

Your selection returned a total of **75** records. Wells in the Department of Water Resources monitoring network are identified by a State Well Number, which is based on the Public Land Grid System. The table headings and records contain several codes and abbreviations. Press the ***New Search*** or ***Nearby Search*** buttons or at the bottom of the page to begin a new data retrieval. Data for this well can also be downloaded in MS Excel or text delimited format.



NOTE: red circles denote questionable measurements. Please see the data table below for specifics.

Groundwater Level Readings

Meas. Date	R.P. Elev.	G.S. Elev.	RPWS	WSE	GSWS	QM Code	NM Code	Agency	Comment
01-28-1965	344.5	344.0	100.0	244.5	99.5			5050	
10-15-1965	344.5	344.0	119.2	225.3	118.7			5050	
01-27-1966	344.5	344.0	108.0	236.5	107.5			5050	
02-02-1967	344.5	344.0	116.5	228.0	116.0			5050	
09-27-1967	344.5	344.0	131.0	213.5	130.5			5050	
02-01-1968	344.5	344.0	126.0	218.5	125.5			5050	
09-25-1968	344.5	344.0	130.0	214.5	129.5	3		5050	
01-21-1969	344.5	344.0					1	5133	
09-18-1969	344.5	344.0	135.0	209.5	134.5			5133	
01-20-1970	344.5	344.0	136.0	208.5	135.5			5133	
01-20-1971	344.5	344.0	128.0	216.5	127.5			5133	
09-16-1971	344.5	344.0	149.0	195.5	148.5			5133	
01-27-1972	344.5	344.0	130.0	214.5	129.5			5133	

10-03-1972	344.5	344.0	144.0	200.5	143.5			5133	
01-29-1973	344.5	344.0	131.0	213.5	130.5			5133	
10-08-1973	344.5	344.0	153.0	191.5	152.5			5133	
02-11-1974	344.5	344.0	130.5	214.0	130.0			5133	
10-01-1974	344.5	344.0					1	5133	
02-04-1975	344.5	344.0	139.0	205.5	138.5			5133	
09-30-1975	344.5	344.0					8	5133	
02-06-1976	344.5	344.0					9	5133	
10-13-1976	344.5	344.0					1	5133	
02-10-1977	344.5	344.0	150.0	194.5	149.5			5133	
06-10-1977	344.5	344.0	168.0	176.5	167.5			5133	
10-14-1977	344.5	344.0	163.0	181.5	162.5			5133	
02-23-1978	344.5	344.0	146.0	198.5	145.5			5133	
10-12-1978	344.5	344.0	164.0	180.5	163.5			5133	
01-25-1979	344.5	344.0	154.0	190.5	153.5			5133	
10-05-1979	344.5	344.0	166.0	178.5	165.5			5133	
02-13-1980	344.5	344.0	149.0	195.5	148.5			5133	
10-06-1980	344.5	344.0	159.0	185.5	158.5			5133	
02-10-1981	344.5	344.0	146.0	198.5	145.5			5133	
10-02-1981	344.5	344.0					1	5001	
02-05-1982	344.5	344.0	145.0	199.5	144.5			5001	
10-12-1982	344.5	344.0	159.0	185.5	158.5			5133	
02-07-1983	344.5	344.0	144.0	200.5	143.5			5133	
10-06-1983	344.5	344.0	130.0	214.5	129.5			5001	
01-26-1984	344.5	344.0	101.5	243.0	101.0			5001	
10-10-1984	344.5	344.0	144.0	200.5	143.5			5001	
01-24-1985	344.5	344.0	101.5	243.0	101.0			5001	
10-12-1985	344.5	344.0	147.5	197.0	147.0			5001	
01-30-1986	344.5	344.0	102.5	242.0	102.0			5001	
10-09-1986	344.5	344.0	142.5	202.0	142.0			5001	
01-28-1987	344.5	344.0	94.5	250.0	94.0			5133	
10-14-1987	344.5	344.0					4	5133	
02-03-1988	344.5	344.0	111.0	233.5	110.5			5133	
10-04-1988	344.5	344.0	122.0	222.5	121.5			5133	
01-23-1989	344.5	344.0	115.0	229.5	114.5			5133	
10-03-1989	344.5	344.0	127.0	217.5	126.5			5133	
01-23-1990	344.5	344.0	124.0	220.5	123.5			5133	
10-04-1990	344.5	344.0	145.7	198.8	145.2			5133	
01-23-1991	344.5	344.0	128.3	216.2	127.8			5133	
10-02-1991	344.5	344.0	139.2	205.3	138.7			5133	
01-29-1992	344.5	344.0	133.7	210.8	133.2			5133	
10-07-1992	344.5	344.0	145.6	198.9	145.1			5133	
01-27-1993	344.5	344.0	140.1	204.4	139.6			5133	
09-29-1993	344.5	344.0	143.5	201.0	143.0			5133	
01-26-1994	344.5	344.0	139.0	205.5	138.5			5133	
10-18-1994	344.5	344.0	147.2	197.3	146.7			5133	
03-08-1995	344.5	344.0					1	5133	
11-20-1995	344.5	344.0	141.0	203.5	140.5			5133	
01-17-1996	344.5	344.0	140.8	203.7	140.3			5133	

10-15-1996	344.5	344.0	140.3	204.2	139.8			5133	
01-09-1997	344.5	344.0	136.2	208.3	135.7			5121	
10-01-1997	344.5	344.0	137.3	207.2	136.8			5121	
01-26-1998	344.5	344.0	133.9	210.6	133.4			5133	
10-20-1998	344.5	344.0	131.2	213.3	130.7			5133	
01-20-1999	344.5	344.0	127.3	217.2	126.8			5133	
10-04-1999	344.5	344.0	133.3	211.2	132.8			5133	
01-05-2000	344.5	344.0	127.8	216.7	127.3			5133	
01-08-2001	344.5	344.0	130.1	214.4	129.6			5133	
10-22-2001	344.5	344.0	130.4	214.1	129.9			5133	
01-11-2002	344.5	344.0	128.7	215.8	128.2			5133	
11-13-2003	344.5	344.0	134.3	210.2	133.8			5133	
01-16-2004	344.5	344.0	131.0	213.5	130.5			5133	

Well Coordinates

Projection	Datum	Easting	Northing	Units	Zone
UTM	NAD27	314117	3903623	metres	11
LL	NAD27	119.0433	35.2603	decimal degrees	

Well Use: Undetermined

For more information contact:
Department of Water Resources, San Joaquin District
Water Management Section
3374 East Shields Avenue
Fresno, CA 93726

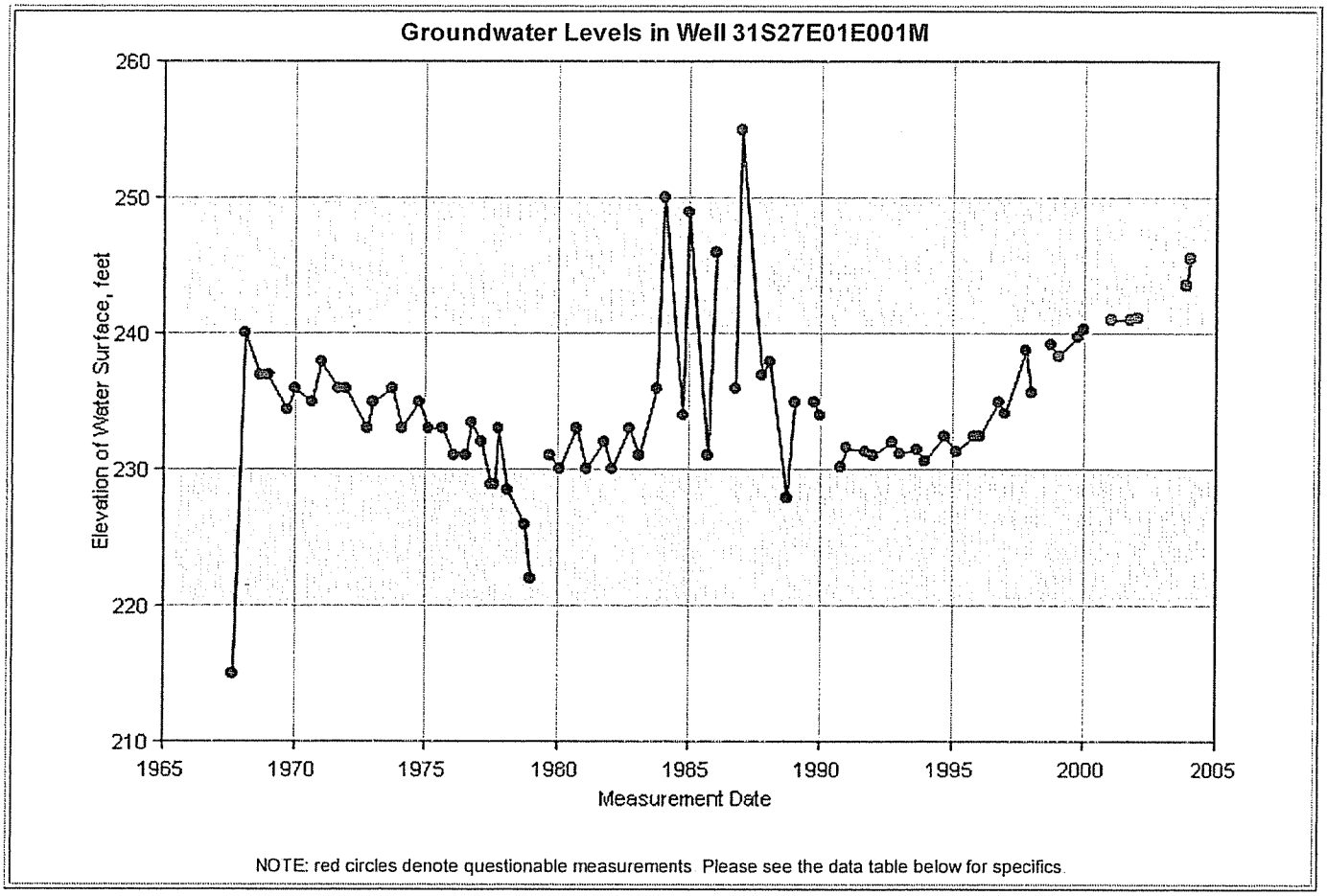
Phone: 559-230-3326
Fax: 559-230-3301

New Search

Search for wells within 0.5 mile radius. Nearby Search

Groundwater Level Data for Well 31S27E01E001M

Your selection returned a total of **74** records. Wells in the Department of Water Resources monitoring network are identified by a State Well Number, which is based on the Public Land Grid System. The table headings and records contain several codes and abbreviations. Press the ***New Search*** or ***Nearby Search*** buttons or at the bottom of the page to begin a new data retrieval. Data for this well can also be downloaded in MS Excel or text delimited format.



NOTE: red circles denote questionable measurements. Please see the data table below for specifics.

Groundwater Level Readings

Meas. Date	R.P. Elev.	G.S. Elev.	RPWS	WSE	GSWS	QM Code	NM Code	Agency	Comment
09-27-1967	345.0	345.0	130.0	215.0	130.0			5050	
02-01-1968	345.0	345.0	105.0	240.0	105.0			5050	
09-25-1968	345.0	345.0	108.0	237.0	108.0			5050	
01-20-1969	345.0	345.0	108.0	237.0	108.0			5133	
09-18-1969	345.0	345.0	110.5	234.5	110.5			5133	
01-20-1970	345.0	345.0	109.0	236.0	109.0			5133	
09-14-1970	345.0	345.0	110.0	235.0	110.0			5133	
01-20-1971	345.0	345.0	107.0	238.0	107.0			5133	
09-16-1971	345.0	345.0	109.0	236.0	109.0			5133	
01-27-1972	345.0	345.0	109.0	236.0	109.0			5133	
10-03-1972	345.0	345.0	112.0	233.0	112.0			5133	
01-29-1973	345.0	345.0	110.0	235.0	110.0			5133	
10-08-1973	345.0	345.0	109.0	236.0	109.0			5133	

02-11-1974	345.0	345.0	112.0	233.0	112.0			5133	
10-01-1974	345.0	345.0	110.0	235.0	110.0			5133	
02-04-1975	345.0	345.0	112.0	233.0	112.0			5133	
09-30-1975	345.0	345.0	112.0	233.0	112.0			5133	
02-06-1976	345.0	345.0	114.0	231.0	114.0			5133	
07-23-1976	345.0	345.0	114.0	231.0	114.0			5133	
10-13-1976	345.0	345.0	111.5	233.5	111.5			5133	
02-10-1977	345.0	345.0	113.0	232.0	113.0			5133	
06-10-1977	345.0	345.0	116.0	229.0	116.0			5133	
08-23-1977	345.0	345.0	116.0	229.0	116.0			5133	
10-14-1977	345.0	345.0	112.0	233.0	112.0			5133	
02-23-1978	345.0	345.0	116.5	228.5	116.5			5133	
10-12-1978	345.0	345.0	119.0	226.0	119.0			5133	
01-25-1979	345.0	345.0	123.0	222.0	123.0			5133	
10-05-1979	345.0	345.0	114.0	231.0	114.0			5133	
02-13-1980	345.0	345.0	115.0	230.0	115.0			5133	
10-06-1980	345.0	345.0	112.0	233.0	112.0			5133	
02-10-1981	345.0	345.0	115.0	230.0	115.0			5133	
10-02-1981	345.0	345.0	113.0	232.0	113.0			5001	
02-05-1982	345.0	345.0	115.0	230.0	115.0			5001	
10-12-1982	345.0	345.0	112.0	233.0	112.0			5133	
02-07-1983	345.0	345.0	114.0	231.0	114.0			5133	
10-06-1983	345.0	345.0	109.0	236.0	109.0			5001	
01-26-1984	345.0	345.0	95.0	250.0	95.0			5001	
10-10-1984	345.0	345.0	111.0	234.0	111.0			5001	
01-24-1985	345.0	345.0	96.0	249.0	96.0			5001	
10-02-1985	345.0	345.0	114.0	231.0	114.0			5001	
01-30-1986	345.0	345.0	99.0	246.0	99.0			5001	
10-04-1986	345.0	345.0	109.0	236.0	109.0			5001	
01-28-1987	345.0	345.0	90.0	255.0	90.0			5133	
10-14-1987	345.0	345.0	108.0	237.0	108.0			5133	
02-03-1988	345.0	345.0	107.0	238.0	107.0			5133	
10-04-1988	345.0	345.0	117.0	228.0	117.0		3	5133	
01-23-1989	345.0	345.0	110.0	235.0	110.0			5133	
10-03-1989	345.0	345.0	110.0	235.0	110.0			5133	
01-23-1990	345.0	345.0	111.0	234.0	111.0			5133	
10-04-1990	345.0	345.0	114.8	230.2	114.8			5133	
01-25-1991	345.0	345.0	113.4	231.6	113.4			5133	
10-02-1991	345.0	345.0	113.7	231.3	113.7			5133	
01-29-1992	345.0	345.0	114.0	231.0	114.0			5133	
10-07-1992	345.0	345.0	112.9	232.1	112.9			5133	
01-27-1993	345.0	345.0	113.8	231.2	113.8			5133	
09-29-1993	345.0	345.0	113.5	231.5	113.5			5133	
01-26-1994	345.0	345.0	114.4	230.6	114.4			5133	
10-18-1994	345.0	345.0	112.6	232.4	112.6			5133	
03-08-1995	345.0	345.0	113.6	231.4	113.6			5133	
11-20-1995	345.0	345.0	112.5	232.5	112.5			5133	
01-17-1996	345.0	345.0	112.6	232.4	112.6			5133	
10-15-1996	345.0	345.0	110.0	235.0	110.0			5133	

01-09-1997	345.0	345.0	110.8	234.2	110.8			5121	
10-01-1997	345.0	345.0	106.2	238.8	106.2			5121	
01-26-1998	345.0	345.0	109.3	235.7	109.3			5133	
10-20-1998	345.0	345.0	105.8	239.2	105.8			5133	
01-20-1999	345.0	345.0	106.6	238.4	106.6	6		5133	
10-04-1999	345.0	345.0	105.2	239.8	105.2			5133	
01-05-2000	345.0	345.0	104.6	240.4	104.6			5133	
01-08-2001	345.0	345.0	104.0	241.0	104.0	6		5133	
10-22-2001	345.0	345.0	103.9	241.1	103.9	6		5133	D
01-11-2002	345.0	345.0	103.8	241.2	103.8	6		5133	
11-13-2003	345.0	345.0	101.4	243.6	101.4	6		5133	
01-16-2004	345.0	345.0	99.5	245.5	99.5	6		5133	D

Well Coordinates

Projection	Datum	Easting	Northing	Units	Zone
UTM	NAD27	314559	3903896	metres	11
LL	NAD27	119.0376	35.2611	decimal degrees	

Well Use: Undetermined

For more information contact:
Department of Water Resources, San Joaquin District
Water Management Section
3374 East Shields Avenue
Fresno, CA 93726

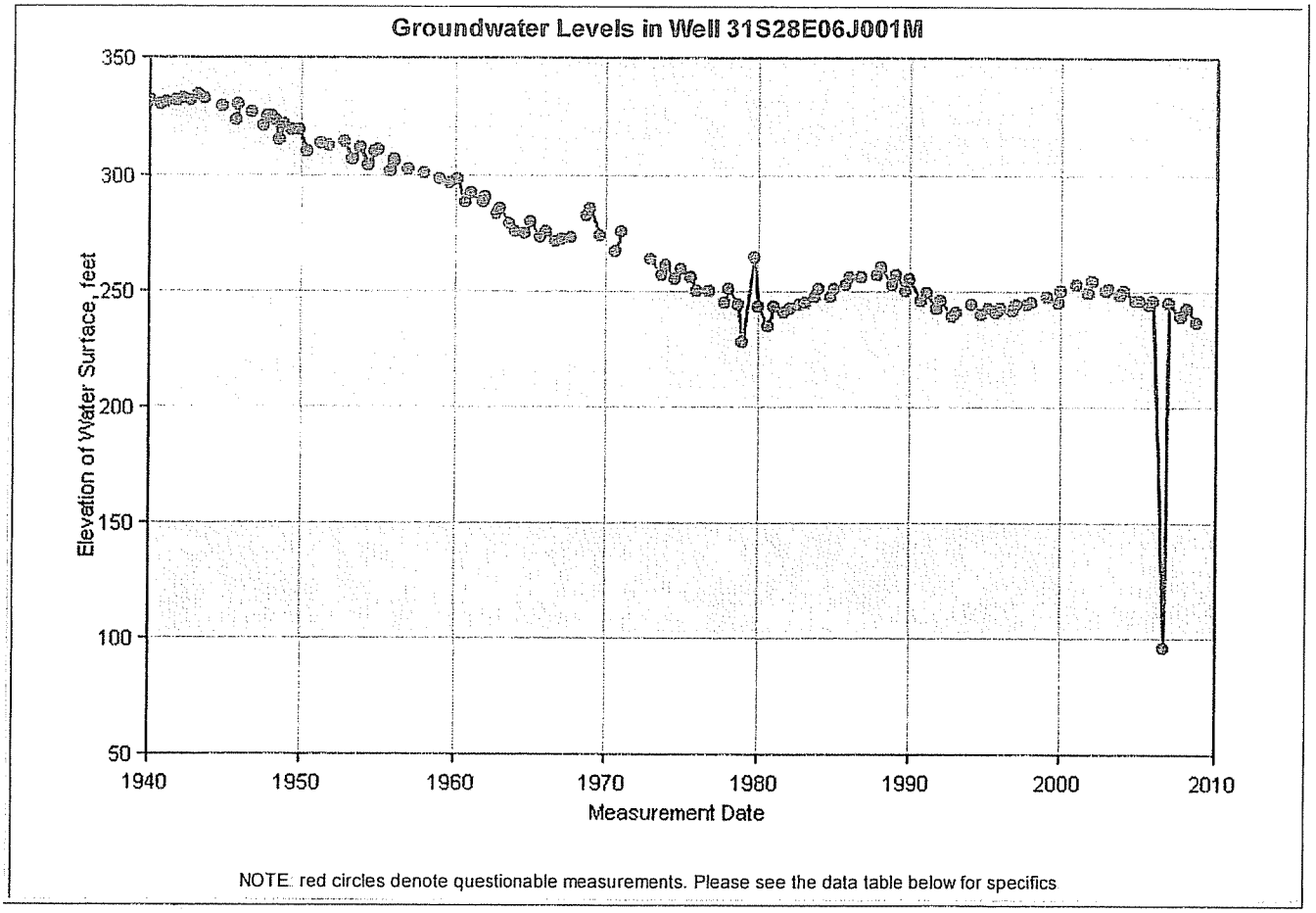
Phone: 559-230-3326
Fax: 559-230-3301

New Search

Search for wells within 0.5 mile radius. Nearby Search

Groundwater Level Data for Well 31S28E06J001M

Your selection returned a total of 134 records. Wells in the Department of Water Resources monitoring network are identified by a State Well Number, which is based on the Public Land Grid System. The table headings and records contain several codes and abbreviations. Press the ***New Search*** or ***Nearby Search*** buttons or at the bottom of the page to begin a new data retrieval. Data for this well can also be downloaded in MS Excel or text delimited format.



NOTE: red circles denote questionable measurements. Please see the data table below for specifics

Groundwater Level Readings

Meas. Date	R.P. Elev.	G.S. Elev.	RPWS	WSE	GSWS	QM Code	NM Code	Agency	Comment
02-06-1940	339.8	339.6	8.9	330.9	8.7			5700	
04-29-1940	339.8	339.6	8.2	331.6	8.0			5700	
11-26-1940	339.8	339.6	9.7	330.1	9.5			5700	
03-27-1941	339.8	339.6	8.6	331.2	8.4			5700	
11-25-1941	339.8	339.6	8.0	331.8	7.8			5700	
01-29-1942	339.8	339.6	7.7	332.1	7.5			5700	
05-28-1942	339.8	339.6	7.0	332.8	6.8			5700	
11-29-1942	339.8	339.6	7.9	331.9	7.7			5700	
05-26-1943	339.8	339.6	5.6	334.2	5.4			5700	
11-29-1943	339.8	339.6	7.5	332.3	7.3			5700	
12-04-1944	339.8	339.6	10.5	329.3	10.3			5700	
11-08-1945	339.8	339.6	16.2	323.6	16.0			5700	
12-06-1945	339.8	339.6	9.9	329.9	9.7			5700	

11-15-1946	339.8	339.6	13.1	326.7	12.9			5700	
09-29-1947	339.8	339.6	19.3	320.5	19.1			5700	
12-01-1947	339.8	339.6	15.0	324.8	14.8			5700	
02-18-1948	339.8	339.6	14.8	325.0	14.6			5700	
06-08-1948	339.8	339.6	16.0	323.8	15.8			5700	
09-15-1948	339.8	339.6	24.5	315.3	24.3			5700	
11-30-1948	339.8	339.6	17.8	322.0	17.6			5700	
06-02-1949	339.8	339.6	20.7	319.1	20.5			5700	
12-07-1949	339.8	339.6	20.3	319.5	20.1			5700	
06-07-1950	339.8	339.6	29.8	310.0	29.6			5700	
05-31-1951	339.8	339.6	26.2	313.6	26.0			5700	
11-27-1951	339.8	339.6	27.0	312.8	26.8			5700	
12-01-1952	339.8	339.6	25.8	314.0	25.6			5700	
05-26-1953	339.8	339.6	33.4	306.4	33.2			5700	
11-25-1953	339.8	339.6	28.2	311.6	28.0			5700	
05-24-1954	339.8	339.6	35.8	304.0	35.6			5700	
11-22-1954	339.8	339.6	30.3	309.5	30.1			5700	
01-24-1955	339.8	339.6	28.7	311.1	28.5			5700	
10-15-1955	339.8	339.6	38.0	301.8	37.8			5700	
01-26-1956	339.8	339.6	34.1	305.7	33.9			5700	
02-07-1956	339.8	339.6	33.6	306.2	33.4			5700	
01-28-1957	339.8	339.6	37.6	302.2	37.4			5700	
01-31-1958	339.8	339.6	39.1	300.7	38.9			5700	
01-30-1959	339.8	339.6	42.0	297.8	41.8			5700	
09-22-1959	339.8	339.6	43.2	296.6	43.0			5700	
02-04-1960	339.8	339.6	42.0	297.8	41.8			5700	
09-26-1960	339.8	339.6	51.7	288.1	51.5			5050	
02-01-1961	339.8	339.6	48.0	291.8	47.8			5700	
10-02-1961	339.8	339.6	51.6	288.2	51.4			5001	
01-29-1962	339.8	339.6	49.2	290.6	49.0			5001	
10-02-1962	339.8	339.6	57.0	282.8	56.8			5001	
01-29-1963	339.8	339.6	54.5	285.3	54.3			5001	
09-16-1963	339.8	339.6	61.2	278.6	61.0			5001	
01-27-1964	339.8	339.6	64.2	275.6	64.0			5001	
09-21-1964	339.8	339.6	65.5	274.3	65.3			5001	
01-28-1965	339.8	339.6	60.0	279.8	59.8			5001	
09-29-1965	339.8	339.6	66.9	272.9	66.7			5001	
01-26-1966	339.8	339.6	64.7	275.1	64.5			5001	
09-28-1966	339.8	339.6	68.6	271.2	68.4			5001	
02-01-1967	339.8	339.6	68.2	271.6	68.0			5001	
09-27-1967	339.8	339.6	67.1	272.7	66.9			5001	
01-31-1968	339.8	339.6					1	5001	
09-25-1968	339.8	339.6	58.1	281.7	57.9			5001	
01-29-1969	339.8	339.6	54.2	285.6	54.0			5001	
09-23-1969	339.8	339.6	66.4	273.4	66.2			5001	
09-22-1970	339.8	339.6	72.9	266.9	72.7			5001	
01-26-1971	339.8	339.6	64.4	275.4	64.2			5001	
09-22-1971	339.8	339.6					1	5001	
01-26-1972	339.8	339.6					8	5001	

09-26-1972	339.8	339.6					1	5001	
01-31-1973	339.8	339.6	76.2	263.6	76.0			5001	
09-28-1973	339.8	339.6	83.3	256.5	83.1			5001	
01-30-1974	339.8	339.6	79.2	260.6	79.0			5001	
09-25-1974	339.8	339.6	85.2	254.6	85.0			5001	
01-21-1975	339.8	339.6	80.6	259.2	80.4			5001	
09-29-1975	339.8	339.6	84.0	255.8	83.8			5001	
01-19-1976	339.8	339.6	90.2	249.6	90.0	4		5001	
10-07-1976	339.8	339.6	89.8	250.0	89.6	4		5001	
01-18-1977	339.8	339.6					1	5001	
10-05-1977	339.8	339.6	94.8	245.0	94.6	4		5001	
01-26-1978	339.8	339.6	89.0	250.8	88.8			5001	
10-02-1978	339.8	339.6	96.2	243.6	96.0			5001	
01-17-1979	339.8	339.6	111.5	228.3	111.3			5001	
09-25-1979	339.8	339.6	75.4	264.4	75.2			5001	
01-21-1980	339.8	339.6	97.0	242.8	96.8			5001	
09-25-1980	339.8	339.6	105.0	234.8	104.8			5001	
01-28-1981	339.8	339.6	97.0	242.8	96.8			5001	
09-23-1981	339.8	339.6	99.2	240.6	99.0			5001	
01-26-1982	339.8	339.6	97.2	242.6	97.0			5001	
09-28-1982	339.8	339.6	96.0	243.8	95.8			5001	
01-26-1983	339.8	339.6	95.0	244.8	94.8	9		5001	
09-27-1983	339.8	339.6	92.2	247.6	92.0	9		5001	
01-31-1984	339.8	339.6	89.2	250.6	89.0			5001	
10-03-1984	339.8	339.6	92.2	247.6	92.0	9		5001	
01-28-1985	339.8	339.6	89.2	250.6	89.0	9		5001	
10-04-1985	339.8	339.6	87.2	252.6	87.0	9		5001	
01-30-1986	339.8	339.6	84.2	255.6	84.0	9		5001	
10-03-1986	339.8	339.6	84.2	255.6	84.0	9		5001	
10-09-1987	339.8	339.6	83.2	256.6	83.0	9		5001	
01-29-1988	339.8	339.6	80.2	259.6	80.0	9		5001	
10-07-1988	339.8	339.6	87.2	252.6	87.0	9		5001	
01-27-1989	339.8	339.6	83.2	256.6	83.0	9		5001	
10-06-1989	339.8	339.6	90.2	249.6	90.0	9		5001	
01-26-1990	339.8	339.6	85.2	254.6	85.0	9		5001	
10-05-1990	339.8	339.6	94.2	245.6	94.0	9		5001	
02-01-1991	339.8	339.6	91.2	248.6	91.0	9		5001	
10-04-1991	339.8	339.6	97.2	242.6	97.0	9		5001	
01-31-1992	339.8	339.6	94.2	245.6	94.0	9		5001	
10-09-1992	339.8	339.6	101.2	238.6	101.0	9		5001	
01-29-1993	339.8	339.6	99.2	240.6	99.0	9		5001	
10-08-1993	339.8	339.6					7	5001	
01-25-1994	339.8	339.6	96.2	243.6	96.0			5001	
10-13-1994	339.8	339.6	100.2	239.6	100.0	3		5001	
04-05-1995	339.8	339.6	97.2	242.6	97.0	3		5001	
10-06-1995	339.8	339.6	99.2	240.6	99.0	9		5001	
01-12-1996	339.8	339.6	97.2	242.6	97.0	9		5001	
10-11-1996	339.8	339.6	98.2	241.6	98.0	9		5001	
01-08-1997	339.8	339.6	96.2	243.6	96.0	9		5001	

10-10-1997	339.8	339.6	96.2	243.6	96.0			5001	
01-21-1998	339.8	339.6	95.2	244.6	95.0			5050	
10-09-1998	339.8	339.6					1	5050	
01-08-1999	339.8	339.6	92.2	247.6	92.0	9		5050	
10-08-1999	339.8	339.6	95.2	244.6	95.0	9		5050	
01-06-2000	339.8	339.6	90.2	249.6	90.0	9		5050	
01-26-2001	339.8	339.6	87.0	252.8	86.8	9		5050	
10-04-2001	339.8	339.6	91.0	248.8	90.8	9		5050	
01-09-2002	339.8	339.6	86.0	253.8	85.8	9		5050	
11-08-2002	339.8	339.6	90.0	249.8	89.8	9		5050	
01-30-2003	339.8	339.6	89.0	250.8	88.8	9		5050	
10-29-2003	339.8	339.6	92.0	247.8	91.8	9		5050	
01-30-2004	339.8	339.6	90.0	249.8	89.8			5050	
10-18-2004	339.8	339.6	94.0	245.8	93.8	9		5050	
01-27-2005	339.8	339.6	94.0	245.8	93.8	9		5050	
10-21-2005	339.8	339.6	96.1	243.7	95.9			5050	
01-18-2006	339.8	339.6	94.1	245.7	93.9			5050	
10-29-2006	339.8	339.6	243.8	96.0	243.6			5050	
01-12-2007	339.8	339.6	94.8	245.0	94.6			5050	
10-19-2007	339.8	339.6	101.1	238.7	100.9			5050	
02-07-2008	339.8	339.6	97.9	241.9	97.7			5050	
10-10-2008	339.8	339.6	103.6	236.2	103.4			5050	
01-20-2009	339.8	339.6					2	5050	

Well Coordinates

Projection	Datum	Easting	Northing	Units	Zone
UTM	NAD27	317534	3903435	metres	11
LL	NAD27	119.0048	35.2575	decimal degrees	

Well Use: Undetermined

For more information contact:

Department of Water Resources, San Joaquin District
Water Management Section
3374 East Shields Avenue
Fresno, CA 93726

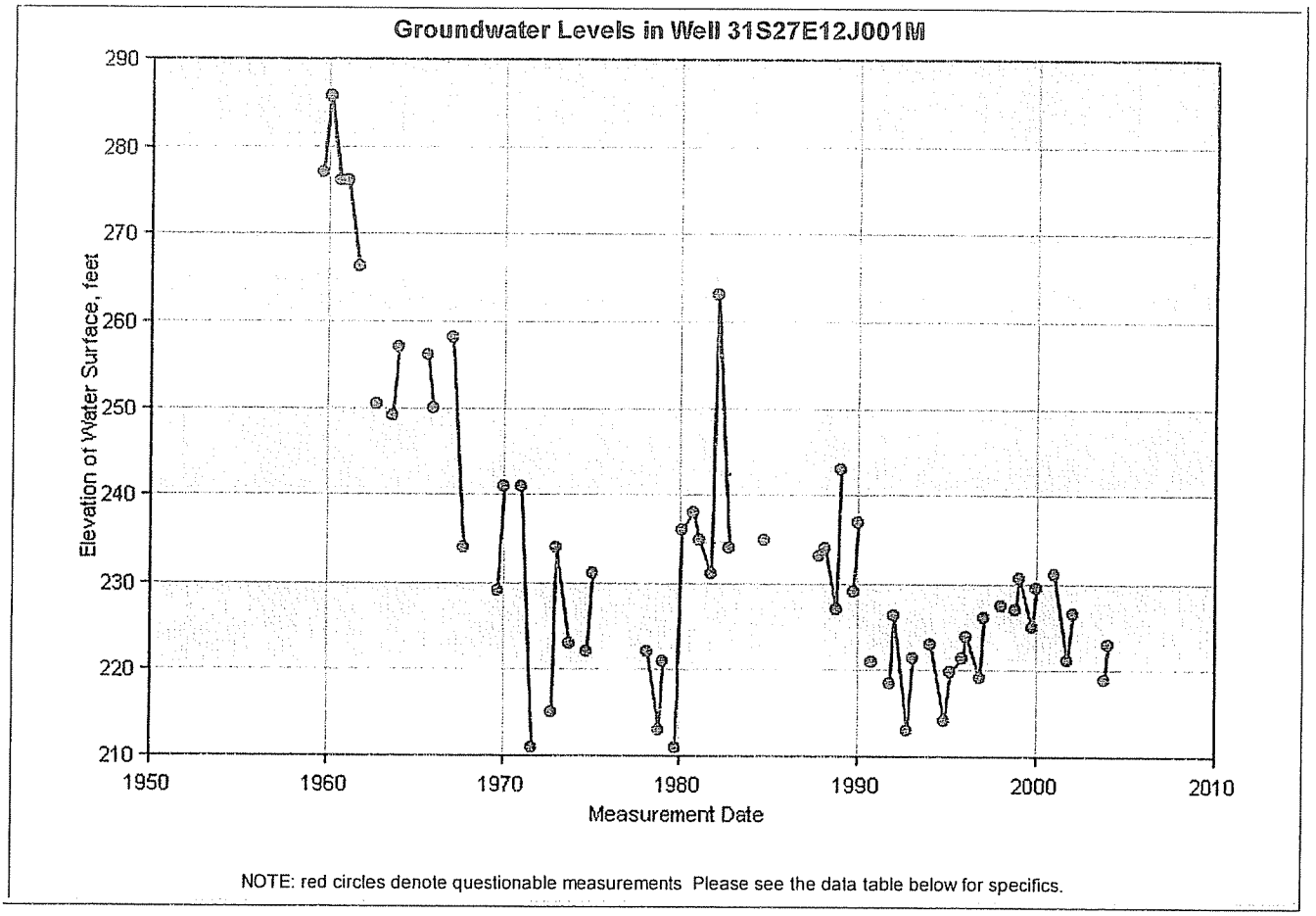
Phone: 559-230-3326
Fax: 559-230-3301

New Search

Search for wells within 0.5 mile radius. Nearby Search

Groundwater Level Data for Well 31S27E12J001M

Your selection returned a total of **85** records. Wells in the Department of Water Resources monitoring network are identified by a State Well Number, which is based on the Public Land Grid System. The table headings and records contain several codes and abbreviations. Press the ***New Search*** or ***Nearby Search*** buttons or at the bottom of the page to begin a new data retrieval. Data for this well can also be downloaded in MS Excel or text delimited format.



NOTE: red circles denote questionable measurements Please see the data table below for specifics.

Groundwater Level Readings

Meas. Date	R.P. Elev.	G.S. Elev.	RPWS	WSE	GSWS	QM Code	NM Code	Agency	Comment
09-10-1959	333.0	333.0	56.0	277.0	56.0			5050	
02-05-1960	333.0	333.0	47.1	285.9	47.1			5050	
09-29-1960	333.0	333.0	56.9	276.1	56.9			5620	
02-02-1961	333.0	333.0	56.8	276.2	56.8			5620	
10-06-1961	333.0	333.0	66.7	266.3	66.7			5133	
02-01-1962	333.0	333.0					1	5133	
10-03-1962	333.0	333.0	82.5	250.5	82.5			5133	
01-30-1963	333.0	333.0					1	5133	
09-18-1963	333.0	333.0	84.0	249.0	84.0			5133	
01-22-1964	333.0	333.0	76.0	257.0	76.0			5133	
09-18-1964	333.0	333.0					1	5133	
01-28-1965	333.0	333.0					1	5133	
09-24-1965	333.0	333.0	77.0	256.0	77.0			5133	

01-24-1966	333.0	333.0	83.0	250.0	83.0			5133	
09-22-1966	333.0	333.0					4	5133	
01-26-1967	333.0	333.0	75.0	258.0	75.0			5133	
09-19-1967	333.0	333.0	99.0	234.0	99.0			5133	
01-24-1968	333.0	333.0					3	5133	
09-20-1968	333.0	333.0					1	5133	
01-20-1969	333.0	333.0					3	5133	
09-18-1969	333.0	333.0	104.0	229.0	104.0			5133	
01-20-1970	333.0	333.0	92.0	241.0	92.0			5133	
01-20-1971	333.0	333.0	92.0	241.0	92.0			5133	
09-16-1971	333.0	333.0	122.0	211.0	122.0			5133	
01-27-1972	333.0	333.0					3	5133	
10-03-1972	333.0	333.0	118.0	215.0	118.0			5133	
01-29-1973	333.0	333.0	99.0	234.0	99.0			5133	
10-08-1973	333.0	333.0	110.0	223.0	110.0			5133	
02-11-1974	333.0	333.0					1	5133	
10-01-1974	333.0	333.0	111.0	222.0	111.0			5050	
02-04-1975	333.0	333.0	102.0	231.0	102.0			5133	
09-30-1975	333.0	333.0					9	5133	
02-06-1976	333.0	333.0					9	5133	
10-13-1976	333.0	333.0					1	5133	
02-10-1977	333.0	333.0					1	5133	
10-14-1977	333.0	333.0					1	5133	
02-23-1978	333.0	333.0	111.0	222.0	111.0			5133	
10-11-1978	333.0	333.0	120.0	213.0	120.0			5133	
01-25-1979	333.0	333.0	112.0	221.0	112.0			5133	
10-05-1979	333.0	333.0	122.0	211.0	122.0			5133	
02-13-1980	333.0	333.0	97.0	236.0	97.0			5133	
10-06-1980	333.0	333.0	95.0	238.0	95.0			5133	
02-10-1981	333.0	333.0	98.0	235.0	98.0			5133	
10-02-1981	333.0	333.0	102.0	231.0	102.0			5001	
02-05-1982	333.0	333.0	70.0	263.0	70.0			5001	
10-12-1982	333.0	333.0	99.0	234.0	99.0			5133	
02-07-1983	333.0	333.0					1	5001	
10-06-1983	333.0	333.0					4	5001	
01-26-1984	333.0	333.0					4	5001	
10-10-1984	333.0	333.0	98.0	235.0	98.0			5001	
01-23-1985	333.0	333.0					1	5001	
10-02-1985	333.0	333.0					1	5001	
01-30-1986	333.0	333.0					1	5001	
10-09-1986	333.0	333.0					1	5001	
01-28-1987	333.0	333.0					1	5133	
10-14-1987	333.0	333.0	100.0	233.0	100.0			5133	
-1988	333.0	333.0	99.0	234.0	99.0			5133	
4-1988	333.0	333.0	106.0	227.0	106.0			5133	
3-1989	333.0	333.0	90.0	243.0	90.0			5133	
10-03-1989	333.0	333.0	104.0	229.0	104.0			5133	
01-23-1990	333.0	333.0	96.0	237.0	96.0			5133	
10-04-1990	333.0	333.0	112.0	221.0	112.0			5133	

10-02-1991	333.0	333.0	114.5	218.5	114.5			5133	
01-29-1992	333.0	333.0	106.7	226.3	106.7			5133	
10-07-1992	333.0	333.0	120.0	213.0	120.0			5133	
01-27-1993	333.0	333.0	111.7	221.3	111.7			5133	
09-29-1993	333.0	333.0					1	5133	
01-26-1994	333.0	333.0	110.0	223.0	110.0			5133	
10-18-1994	333.0	333.0	118.9	214.1	118.9			5133	
03-08-1995	333.0	333.0	113.1	219.9	113.1			5133	
11-20-1995	333.0	333.0	111.6	221.4	111.6			5133	
01-17-1996	333.0	333.0	109.2	223.8	109.2			5133	
10-15-1996	333.0	333.0	113.9	219.1	113.9			5121	
01-09-1997	333.0	333.0	106.8	226.2	106.8			5121	
10-01-1997	333.0	333.0					1	5121	
01-26-1998	333.0	333.0	105.6	227.4	105.6			5133	
10-20-1998	333.0	333.0	105.9	227.1	105.9			5133	
01-20-1999	333.0	333.0	102.3	230.7	102.3			5133	
10-04-1999	333.0	333.0	108.0	225.0	108.0			5133	
01-05-2000	333.0	333.0	103.5	229.5	103.5			5133	
01-08-2001	333.0	333.0	102.0	231.0	102.0			5133	
10-22-2001	333.0	333.0	111.8	221.2	111.8			5133	
01-11-2002	333.0	333.0	106.5	226.5	106.5			5133	
11-13-2003	333.0	333.0	114.2	218.8	114.2			5133	
01-16-2004	333.0	333.0	110.0	223.0	110.0			5133	

Well Coordinates

Projection	Datum	Easting	Northing	Units	Zone
UTM	NAD27	315632	3901932	metres	11
LL	NAD27	119.0254	35.2436	decimal degrees	

Well Use: Undetermined

For more information contact:
Department of Water Resources, San Joaquin District
Water Management Section
3374 East Shields Avenue
Fresno, CA 93726

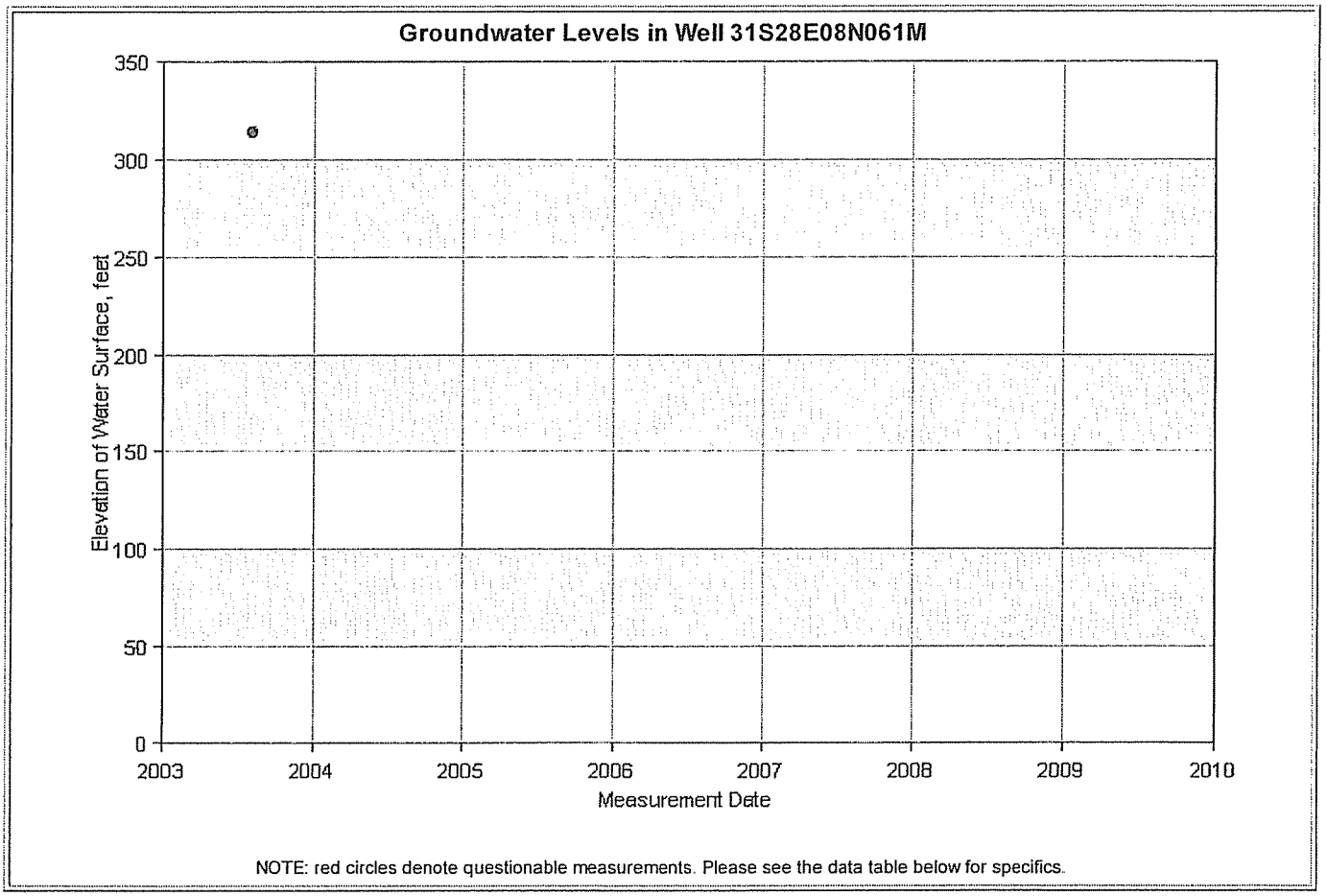
Phone: 559-230-3326
Fax: 559-230-3301

New Search

Search for wells within 0.5 mile radius. Nearby Search

Groundwater Level Data for Well 31S28E08N061M

Your selection returned a total of **7** records. Wells in the Department of Water Resources monitoring network are identified by a State Well Number, which is based on the Public Land Grid System. The table headings and records contain several codes and abbreviations. Press the ***New Search*** or ***Nearby Search*** buttons or at the bottom of the page to begin a new data retrieval. Data for this well can also be downloaded in MS Excel or text delimited format.



NOTE: red circles denote questionable measurements. Please see the data table below for specifics.

Groundwater Level Readings

Meas. Date	R.P. Elev.	G.S. Elev.	RPWS	WSE	GSWS	QM Code	NM Code	Agency	Comment
08-01-2003	329.0	329.0	15.2	313.8	15.2			5133	
08-01-2004	329.0	329.0					D	5133	
08-01-2005	329.0	329.0					D	5133	
08-01-2006	329.0	329.0					D	5133	
07-01-2007	329.0	329.0					D	5133	
08-14-2008	329.0	329.0					D	5133	
07-28-2009	329.0	329.0					D	5133	

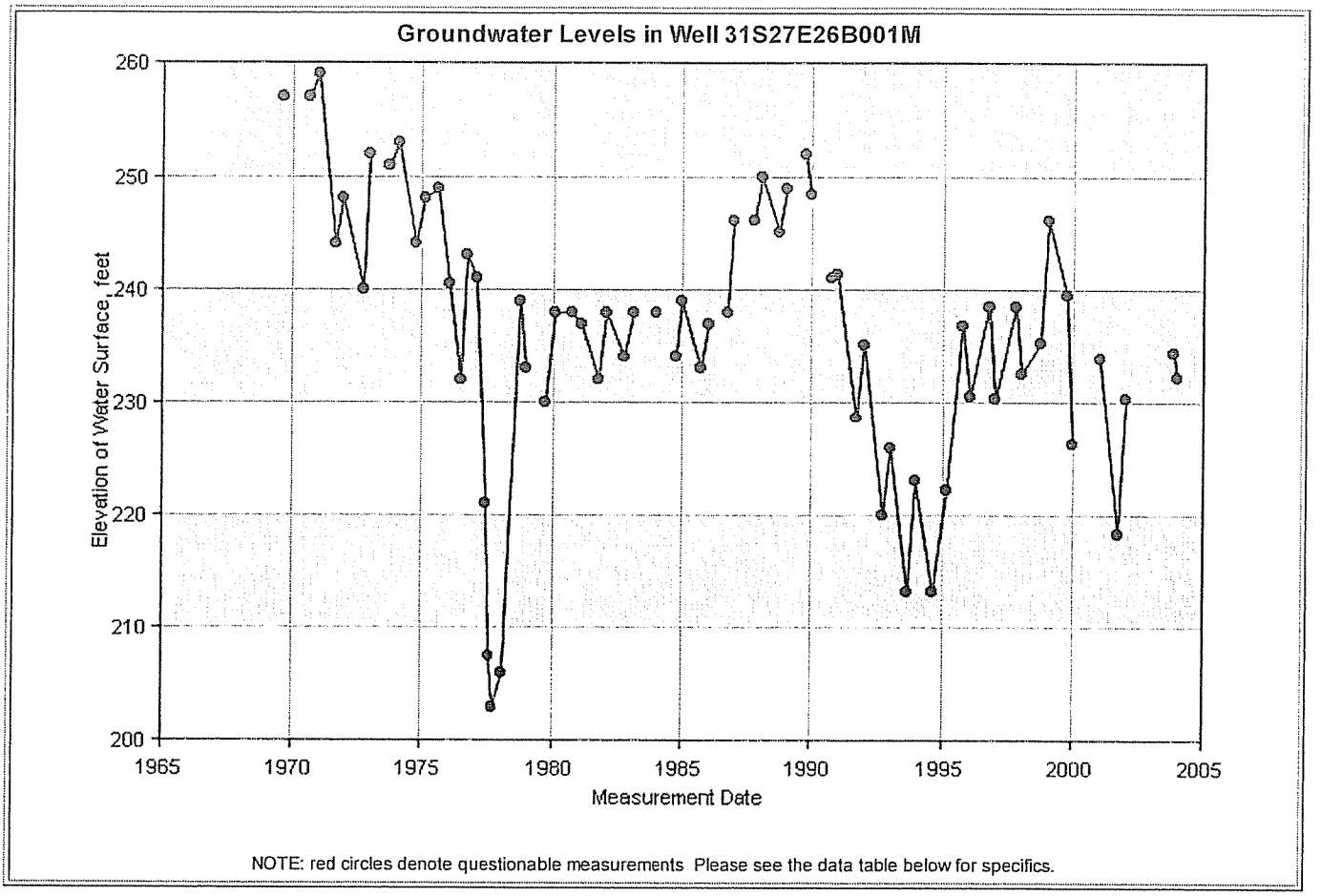
Well Coordinates

Projection	Datum	Easting	Northing	Units	Zone
LL	NAD27	119.0013	35.2382	decimal degrees	

Well Use: Observation

Groundwater Level Data for Well 31S27E26B001M

Your selection returned a total of **69** records. Wells in the Department of Water Resources monitoring network are identified by a State Well Number, which is based on the Public Land Grid System. The table headings and records contain several codes and abbreviations. Press the ***New Search*** or ***Nearby Search*** buttons or at the bottom of the page to begin a new data retrieval. Data for this well can also be downloaded in MS Excel or text delimited format.



NOTE: red circles denote questionable measurements. Please see the data table below for specifics.

Groundwater Level Readings

Meas. Date	R.P. Elev.	G.S. Elev.	RPWS	WSE	GSWS	QM Code	NM Code	Agency	Comment
09-17-1969	316.0	316.0	59.0	257.0	59.0			5050	
09-14-1970	316.0	316.0	59.0	257.0	59.0			5133	
01-20-1971	316.0	316.0	57.0	259.0	57.0			5133	
09-16-1971	316.0	316.0	72.0	244.0	72.0			5133	
01-27-1972	316.0	316.0	68.0	248.0	68.0			5133	
10-03-1972	316.0	316.0	76.0	240.0	76.0			5133	
01-29-1973	316.0	316.0	64.0	252.0	64.0			5133	
10-04-1973	316.0	316.0	65.0	251.0	65.0			5133	
02-08-1974	316.0	316.0	63.0	253.0	63.0			5133	
10-01-1974	316.0	316.0	72.0	244.0	72.0			5133	
02-04-1975	316.0	316.0	68.0	248.0	68.0			5133	
09-30-1975	316.0	316.0	67.0	249.0	67.0			5133	
02-05-1976	316.0	316.0	75.5	240.5	75.5			5133	

07-23-1976	316.0	316.0	84.0	232.0	84.0			5133	
10-13-1976	316.0	316.0	73.0	243.0	73.0			5133	
02-10-1977	316.0	316.0	75.0	241.0	75.0			5133	
06-10-1977	316.0	316.0	95.0	221.0	95.0			5133	
08-24-1977	316.0	316.0	108.5	207.5	108.5			5133	
10-14-1977	316.0	316.0	113.0	203.0	113.0			5133	
02-23-1978	316.0	316.0	110.0	206.0	110.0			5133	
10-11-1978	316.0	316.0	77.0	239.0	77.0			5133	
01-25-1979	316.0	316.0	83.0	233.0	83.0			5133	
10-05-1979	316.0	316.0	86.0	230.0	86.0			5133	
02-13-1980	316.0	316.0	78.0	238.0	78.0			5133	
10-06-1980	316.0	316.0	78.0	238.0	78.0			5133	
02-10-1981	316.0	316.0	79.0	237.0	79.0			5133	
10-02-1981	316.0	316.0	84.0	232.0	84.0			5001	
02-05-1982	316.0	316.0	78.0	238.0	78.0			5001	
10-12-1982	316.0	316.0	82.0	234.0	82.0			5133	
02-07-1983	316.0	316.0	78.0	238.0	78.0			5133	
09-30-1983	316.0	316.0					4	5001	
01-30-1984	316.0	316.0	78.0	238.0	78.0			5001	
10-10-1984	316.0	316.0	82.0	234.0	82.0			5001	
01-23-1985	316.0	316.0	77.0	239.0	77.0			5001	
10-01-1985	316.0	316.0	83.0	233.0	83.0			5001	
01-29-1986	316.0	316.0	79.0	237.0	79.0			5001	
10-09-1986	316.0	316.0	78.0	238.0	78.0			5001	
01-27-1987	316.0	316.0	70.0	246.0	70.0			5133	
10-14-1987	316.0	316.0	70.0	246.0	70.0			5133	
02-08-1988	316.0	316.0	66.0	250.0	66.0			5133	
10-04-1988	316.0	316.0	71.0	245.0	71.0			5133	
01-23-1989	316.0	316.0	67.0	249.0	67.0			5133	
10-03-1989	316.0	316.0	64.0	252.0	64.0			5133	
01-23-1990	316.0	316.0	67.6	248.4	67.6			5133	
10-04-1990	316.0	316.0	75.0	241.0	75.0			5133	
01-23-1991	316.0	316.0	74.7	241.3	74.7			5133	
10-02-1991	316.0	316.0	87.4	228.6	87.4			5133	
01-29-1992	316.0	316.0	81.0	235.0	81.0			5133	
10-07-1992	316.0	316.0	96.0	220.0	96.0			5133	
01-27-1993	316.0	316.0	90.0	226.0	90.0			5133	
09-29-1993	316.0	316.0	102.7	213.3	102.7			5133	
01-26-1994	316.0	316.0	93.0	223.0	93.0			5133	
09-27-1994	316.0	316.0	102.7	213.3	102.7			5133	
03-08-1995	316.0	316.0	93.7	222.3	93.7			5133	
10-09-1995	316.0	316.0	79.3	236.7	79.3			5133	
01-16-1996	316.0	316.0	85.5	230.5	85.5			5133	
10-15-1996	316.0	316.0	77.5	238.5	77.5			5121	
01-09-1997	316.0	316.0	85.7	230.3	85.7			5121	
10-01-1997	316.0	316.0	77.5	238.5	77.5			5121	
01-26-1998	316.0	316.0	83.5	232.5	83.5			5133	
10-19-1998	316.0	316.0	80.8	235.2	80.8			5133	
01-20-1999	316.0	316.0	69.9	246.1	69.9			5133	

10-04-1999	316.0	316.0	76.6	239.4	76.6			5133	
01-05-2000	316.0	316.0	89.8	226.2	89.8			5133	
01-08-2001	316.0	316.0	82.1	233.9	82.1			5133	
10-22-2001	316.0	316.0	97.6	218.4	97.6			5133	
01-10-2002	316.0	316.0	85.7	230.3	85.7			5133	
11-13-2003	316.0	316.0	81.6	234.4	81.6			5133	
01-16-2004	316.0	316.0	83.8	232.2	83.8			5133	

Well Coordinates

Projection	Datum	Easting	Northing	Units	Zone
UTM	NAD27	313670	3897899	metres	11
LL	NAD27	119.0469	35.2086	decimal degrees	

Well Use: Undetermined

For more information contact:
Department of Water Resources, San Joaquin District
Water Management Section
3374 East Shields Avenue
Fresno, CA 93726

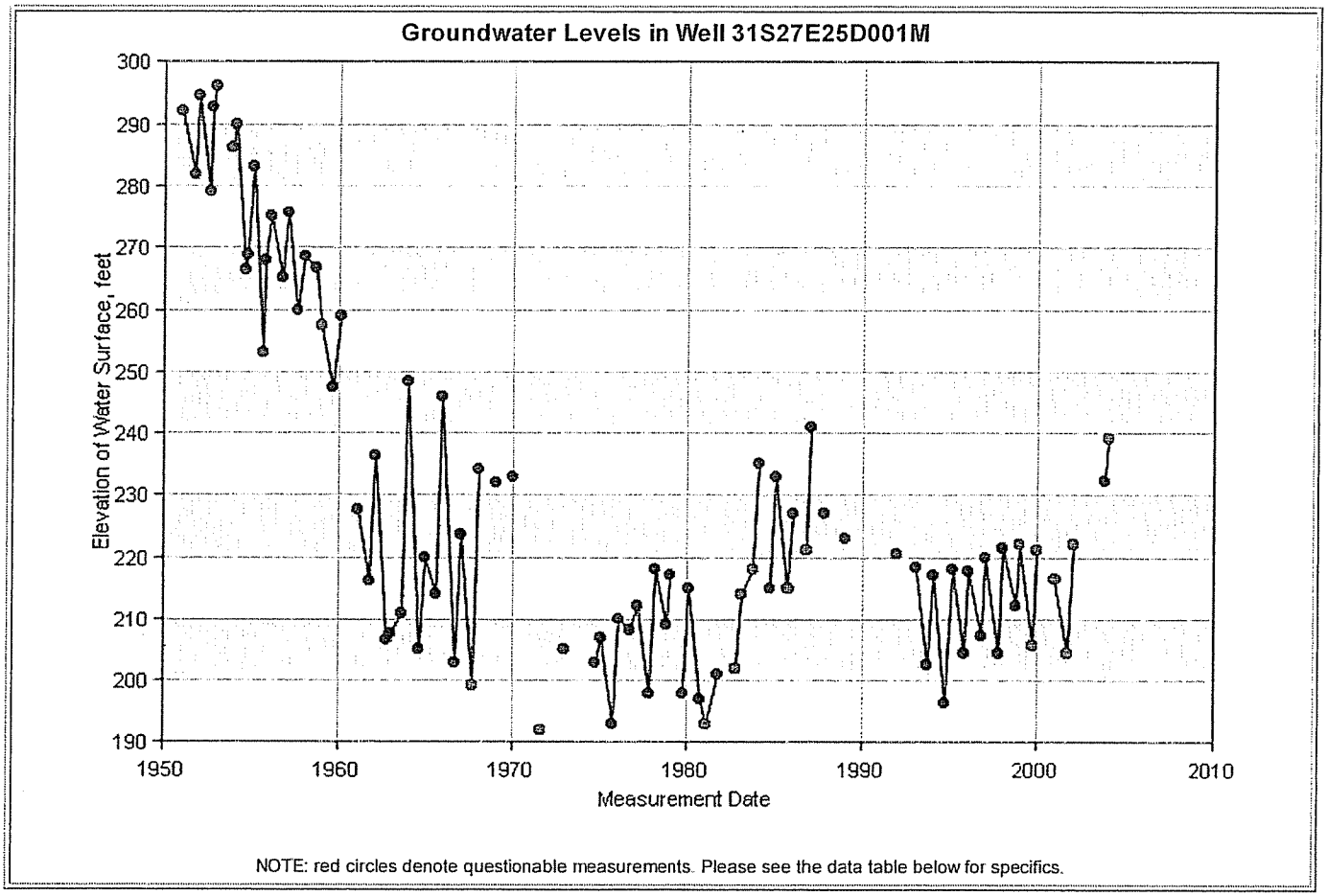
Phone: 559-230-3326
Fax: 559-230-3301

New Search

Search for wells within 0.5 mile radius. Nearby Search

Groundwater Level Data for Well 31S27E25D001M

Your selection returned a total of **103** records. Wells in the Department of Water Resources monitoring network are identified by a State Well Number, which is based on the Public Land Grid System. The table headings and records contain several codes and abbreviations. Press the ***New Search*** or ***Nearby Search*** buttons or at the bottom of the page to begin a new data retrieval. Data for this well can also be downloaded in MS Excel or text delimited format.



NOTE: red circles denote questionable measurements. Please see the data table below for specifics.

Groundwater Level Readings

Meas. Date	R.P. Elev.	G.S. Elev.	RPWS	WSE	GSWS	QM Code	NM Code	Agency	Comment
01-19-1951	315.0	314.0	23.0	292.0	22.0			5001	
10-03-1951	315.0	314.0	33.0	282.0	32.0			5001	
01-14-1952	315.0	314.0	20.5	294.5	19.5			5001	
09-18-1952	315.0	314.0	36.0	279.0	35.0			5001	
11-26-1952	315.0	314.0	22.2	292.8	21.2			5001	
01-21-1953	315.0	314.0	18.8	296.2	17.8			5001	
12-18-1953	315.0	314.0	28.8	286.2	27.8			5001	
02-02-1954	315.0	314.0	25.0	290.0	24.0			5001	
09-13-1954	315.0	314.0	48.7	266.3	47.7			5001	
10-31-1954	315.0	314.0	46.0	269.0	45.0			5001	
02-08-1955	315.0	314.0	32.0	283.0	31.0			5001	
09-12-1955	315.0	314.0	62.0	253.0	61.0			5001	
10-12-1955	315.0	314.0	47.0	268.0	46.0			5001	

02-07-1956	315.0	314.0	39.8	275.2	38.8			5001	
10-03-1956	315.0	314.0	50.0	265.0	49.0			5001	
02-04-1957	315.0	314.0	39.4	275.6	38.4			5001	
09-23-1957	315.0	314.0	55.0	260.0	54.0			5001	
02-04-1958	315.0	314.0	46.3	268.7	45.3			5001	
09-22-1958	315.0	314.0	48.4	266.6	47.4			5001	
02-02-1959	315.0	314.0	57.5	257.5	56.5	4		5001	
09-21-1959	315.0	314.0	67.4	247.6	66.4			5001	
02-05-1960	315.0	314.0	56.1	258.9	55.1			5620	
09-29-1960	315.0	314.0					1	5620	
02-02-1961	315.0	314.0	87.2	227.8	86.2			5620	
10-06-1961	315.0	314.0	98.7	216.3	97.7			5133	
02-01-1962	315.0	314.0	78.8	236.2	77.8			5133	
10-03-1962	315.0	314.0	108.5	206.5	107.5			5133	
01-30-1963	315.0	314.0	107.5	207.5	106.5			5133	
09-18-1963	315.0	314.0	104.0	211.0	103.0			5133	
01-22-1964	315.0	314.0	66.5	248.5	65.5			5133	
09-18-1964	315.0	314.0	110.0	205.0	109.0			5133	
01-28-1965	315.0	314.0	95.0	220.0	94.0			5133	
09-24-1965	315.0	314.0	101.0	214.0	100.0			5133	
01-24-1966	315.0	314.0	69.0	246.0	68.0			5133	
09-22-1966	315.0	314.0	112.0	203.0	111.0			5133	
01-23-1967	315.0	314.0	91.5	223.5	90.5			5133	
09-19-1967	315.0	314.0	116.0	199.0	115.0	8		5133	
01-24-1968	315.0	314.0	81.0	234.0	80.0			5133	
09-17-1968	315.0	314.0					1	5133	
01-20-1969	315.0	314.0	83.0	232.0	82.0			5133	
01-20-1970	315.0	314.0	82.0	233.0	81.0			5133	
09-16-1971	315.0	314.0	123.0	192.0	122.0	8		5133	
01-27-1972	315.0	314.0					1	5133	
10-03-1972	315.0	314.0					1	5133	
01-29-1973	315.0	314.0	110.0	205.0	109.0			5133	
02-08-1974	315.0	314.0					1	5133	
10-01-1974	315.0	314.0	112.0	203.0	111.0			5133	
02-04-1975	315.0	314.0	108.0	207.0	107.0			5133	
09-30-1975	315.0	314.0	122.0	193.0	121.0			5133	
02-05-1976	315.0	314.0	105.0	210.0	104.0			5133	
10-13-1976	315.0	314.0	107.0	208.0	106.0			5133	
02-10-1977	315.0	314.0	103.0	212.0	102.0			5133	
10-14-1977	315.0	314.0	117.0	198.0	116.0			5133	
02-23-1978	315.0	314.0	97.0	218.0	96.0			5133	
10-11-1978	315.0	314.0	106.0	209.0	105.0			5133	
01-25-1979	315.0	314.0	98.0	217.0	97.0			5133	
10-05-1979	315.0	314.0	117.0	198.0	116.0			5133	
02-13-1980	315.0	314.0	100.0	215.0	99.0			5133	
10-06-1980	315.0	314.0	118.0	197.0	117.0			5133	
02-10-1981	315.0	314.0	122.0	193.0	121.0	8		5133	
10-02-1981	315.0	314.0	114.0	201.0	113.0			5001	
02-05-1982	315.0	314.0					1	5001	

10-12-1982	315.0	314.0	113.0	202.0	112.0	8		5133	
02-07-1983	315.0	314.0	101.0	214.0	100.0	8		5133	
09-30-1983	315.0	314.0	97.0	218.0	96.0	8		5001	
01-30-1984	315.0	314.0	80.0	235.0	79.0			5001	
10-10-1984	315.0	314.0	100.0	215.0	99.0			5001	
01-23-1985	315.0	314.0	82.0	233.0	81.0			5001	
10-01-1985	315.0	314.0	100.0	215.0	99.0	8		5001	
01-29-1986	315.0	314.0	88.0	227.0	87.0			5001	
10-10-1986	315.0	314.0	94.0	221.0	93.0	8		5001	
01-27-1987	315.0	314.0	74.0	241.0	73.0			5133	
10-14-1987	315.0	314.0	88.0	227.0	87.0			5133	
02-08-1988	315.0	314.0					1	5133	
10-04-1988	315.0	314.0					4	5133	
01-23-1989	315.0	314.0	92.0	223.0	91.0			5133	
10-03-1989	315.0	314.0					1	5133	
01-23-1990	315.0	314.0					1	5133	
10-04-1990	315.0	314.0					1	5133	
01-23-1991	315.0	314.0					1	5133	
10-02-1991	315.0	314.0					1	5133	
01-29-1992	315.0	314.0	94.4	220.6	93.4			5133	
10-07-1992	315.0	314.0					7	5133	
01-27-1993	315.0	314.0	96.8	218.2	95.8			5133	
09-29-1993	315.0	314.0	112.6	202.4	111.6			5133	
01-26-1994	315.0	314.0	97.8	217.2	96.8			5133	
09-27-1994	315.0	314.0	118.7	196.3	117.7			5133	
03-08-1995	315.0	314.0	96.9	218.1	95.9			5133	
10-09-1995	315.0	314.0	110.5	204.5	109.5			5133	
01-16-1996	315.0	314.0	97.2	217.8	96.2			5133	
10-15-1996	315.0	314.0	107.9	207.1	106.9			5121	
01-09-1997	315.0	314.0	95.1	219.9	94.1			5121	
10-01-1997	315.0	314.0	110.6	204.4	109.6			5121	
01-26-1998	315.0	314.0	93.6	221.4	92.6			5133	
10-19-1998	315.0	314.0	103.0	212.0	102.0			5133	
01-20-1999	315.0	314.0	92.8	222.2	91.8	8		5133	
10-04-1999	315.0	314.0	109.5	205.5	108.5	8		5133	
01-05-2000	315.0	314.0	94.0	221.0	93.0	8		5133	
01-08-2001	315.0	314.0	98.6	216.4	97.6	8		5133	
10-22-2001	315.0	314.0	110.7	204.3	109.7	8		5133	
01-10-2002	315.0	314.0	93.0	222.0	92.0	8		5133	
11-13-2003	315.0	314.0	82.7	232.3	81.7			5133	
01-16-2004	315.0	314.0	76.0	239.0	75.0	6		5133	

Well Coordinates

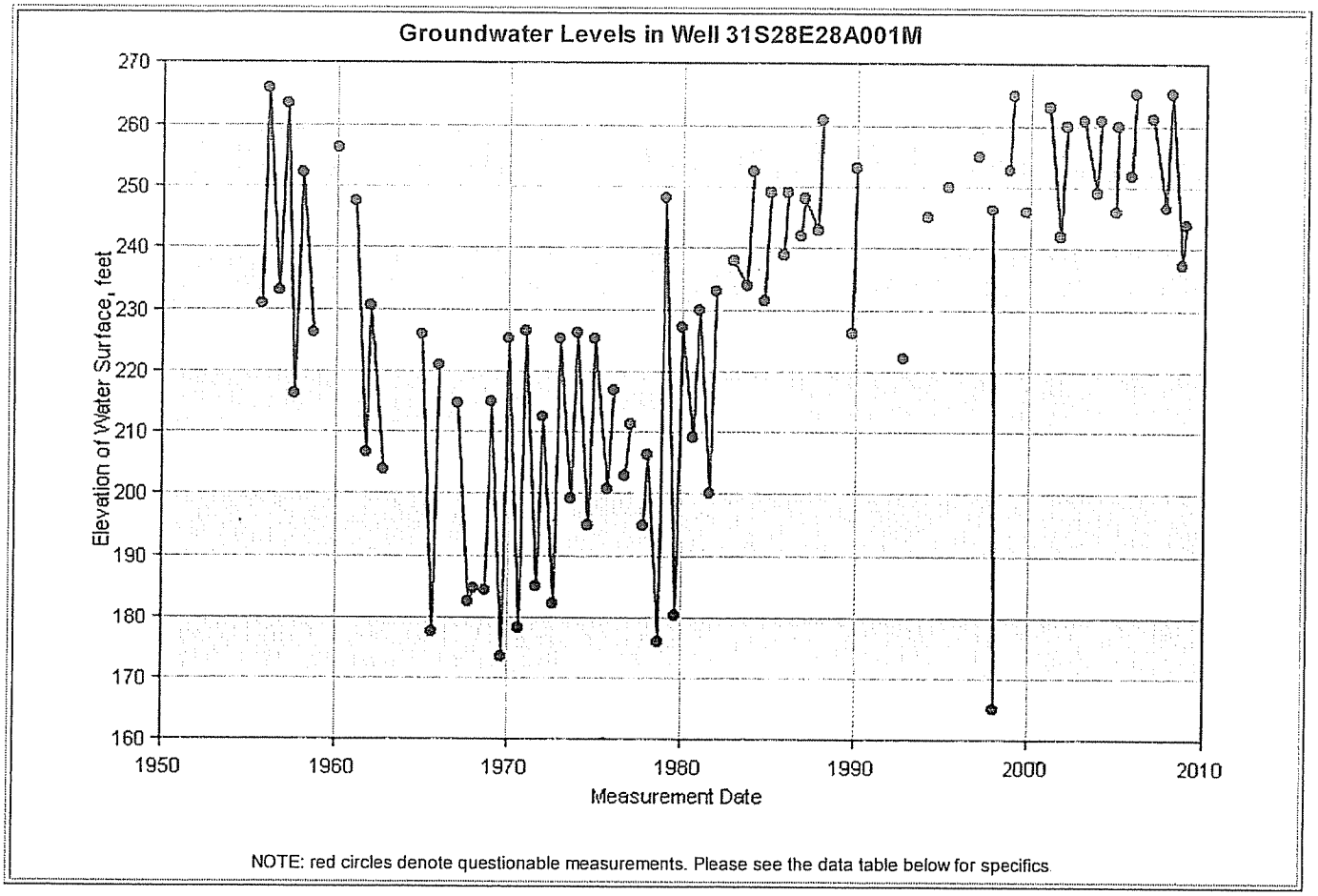
Projection	Datum	Easting	Northing	Units	Zone
UTM	NAD27	314732	3897846	metres	11
LL	NAD27	119.0353	35.2083	decimal degrees	

Well Use: Undetermined

For more information contact:

Groundwater Level Data for Well 31S28E28A001M

Your selection returned a total of **107** records. Wells in the Department of Water Resources monitoring network are identified by a State Well Number, which is based on the Public Land Grid System. The table headings and records contain several codes and abbreviations. Press the ***New Search*** or ***Nearby Search*** buttons or at the bottom of the page to begin a new data retrieval. Data for this well can also be downloaded in MS Excel or text delimited format.



NOTE: red circles denote questionable measurements. Please see the data table below for specifics.

Groundwater Level Readings

Meas. Date	R.P. Elev.	G.S. Elev.	RPWS	WSE	GSWS	QM Code	NM Code	Agency	Comment
10-17-1955	316.0	315.0	85.2	230.8	84.2			5000	
02-07-1956	316.0	315.0	50.2	265.8	49.2			5000	
10-03-1956	316.0	315.0	83.0	233.0	82.0			5000	
03-05-1957	316.0	315.0	52.7	263.3	51.7			5000	
09-24-1957	316.0	315.0	99.8	216.2	98.8			5000	
01-29-1958	316.0	315.0	63.9	252.1	62.9			5000	
09-26-1958	316.0	315.0	89.8	226.2	88.8			5000	
02-03-1959	316.0	315.0					1	5000	
09-22-1959	316.0	315.0					1	5000	
02-03-1960	316.0	315.0	59.8	256.2	58.8			5050	
10-06-1960	316.0	315.0					1	5050	
02-07-1961	316.0	315.0	68.6	247.4	67.6			5050	
10-03-1961	316.0	315.0	109.5	206.5	108.5			5001	

01-31-1962	316.0	315.0	85.6	230.4	84.6			5001	
10-02-1962	316.0	315.0	112.3	203.7	111.3			5001	
01-29-1963	316.0	315.0					1	5001	
09-16-1963	316.0	315.0					1	5001	
01-27-1964	316.0	315.0					1	5001	
09-21-1964	316.0	315.0					1	5001	
01-27-1965	316.0	315.0	90.3	225.7	89.3			5001	
09-29-1965	316.0	315.0	138.5	177.5	137.5			5001	
01-26-1966	316.0	315.0	95.0	221.0	94.0			5001	
09-28-1966	316.0	315.0					1	5001	
01-31-1967	316.0	315.0	101.2	214.8	100.2			5001	
09-26-1967	316.0	315.0	133.5	182.5	132.5			5001	
01-30-1968	316.0	315.0	131.5	184.5	130.5			5001	
09-24-1968	316.0	315.0	131.6	184.4	130.6			5001	
01-29-1969	316.0	315.0	101.0	215.0	100.0			5001	
09-23-1969	316.0	315.0	142.4	173.6	141.4			5001	
01-26-1970	316.0	315.0	90.8	225.2	89.8			5001	
09-21-1970	316.0	315.0	137.8	178.2	136.8			5001	
01-26-1971	316.0	315.0	89.6	226.4	88.6			5001	
09-21-1971	316.0	315.0	131.0	185.0	130.0			5001	
01-26-1972	316.0	315.0	103.4	212.6	102.4			5001	
09-26-1972	316.0	315.0	133.7	182.3	132.7			5001	
01-31-1973	316.0	315.0	90.9	225.1	89.9			5001	
09-27-1973	316.0	315.0	116.8	199.2	115.8			5001	
01-28-1974	316.0	315.0	90.0	226.0	89.0			5001	
09-24-1974	316.0	315.0	121.0	195.0	120.0			5001	
01-20-1975	316.0	315.0	90.9	225.1	89.9			5001	
09-29-1975	316.0	315.0	115.2	200.8	114.2			5001	
01-19-1976	316.0	315.0	99.0	217.0	98.0			5001	
10-07-1976	316.0	315.0	113.1	202.9	112.1			5001	
01-18-1977	316.0	315.0	104.8	211.2	103.8	4		5001	
10-06-1977	316.0	315.0	121.0	195.0	120.0			5001	
01-26-1978	316.0	315.0	109.6	206.4	108.6			5001	
09-30-1978	316.0	315.0	140.0	176.0	139.0			5001	
01-18-1979	316.0	315.0	68.0	248.0	67.0			5001	
09-26-1979	316.0	315.0	135.8	180.2	134.8			5001	
01-21-1980	316.0	315.0	89.0	227.0	88.0			5001	
09-25-1980	316.0	315.0	107.0	209.0	106.0			5001	
01-28-1981	316.0	315.0	86.0	230.0	85.0			5001	
09-23-1981	316.0	315.0	116.0	200.0	115.0			5001	
01-26-1982	316.0	315.0	83.0	233.0	82.0			5001	
09-28-1982	316.0	315.0					7	5001	
01-26-1983	316.0	315.0	78.0	238.0	77.0	9		5001	
09-27-1983	316.0	315.0	82.0	234.0	81.0			5001	
01-31-1984	316.0	315.0	63.5	252.5	62.5			5001	
10-03-1984	316.0	315.0	84.5	231.5	83.5			5001	
01-29-1985	316.0	315.0	67.0	249.0	66.0	9		5001	
10-04-1985	316.0	315.0	77.0	239.0	76.0	9		5001	
01-30-1986	316.0	315.0	67.0	249.0	66.0	9		5001	

10-03-1986	316.0	315.0	74.0	242.0	73.0	9		5001	
01-30-1987	316.0	315.0	68.0	248.0	67.0	9		5001	
10-09-1987	316.0	315.0	73.0	243.0	72.0	9		5001	
01-29-1988	316.0	315.0	55.0	261.0	54.0			5001	
10-07-1988	316.0	315.0					9	5001	
01-27-1989	316.0	315.0					2	5001	
10-06-1989	316.0	315.0	90.0	226.0	89.0	9		5001	
01-26-1990	316.0	315.0	63.0	253.0	62.0	9		5001	
10-05-1990	316.0	315.0					2	5001	
02-01-1991	316.0	315.0					2	5001	
10-04-1991	316.0	315.0					2	5001	
01-31-1992	316.0	315.0					2	5001	
10-09-1992	316.0	315.0	94.0	222.0	93.0			5001	
01-29-1993	316.0	315.0					7	5001	
10-08-1993	316.0	315.0					2	5001	
01-25-1994	316.0	315.0	71.0	245.0	70.0	9		5001	
10-13-1994	316.0	315.0					2	5001	
04-05-1995	316.0	315.0	66.0	250.0	65.0	3		5001	
10-06-1995	316.0	315.0					2	5001	
01-12-1996	316.0	315.0					2	5001	
10-11-1996	316.0	315.0					2	5001	
01-08-1997	316.0	315.0	61.0	255.0	60.0			5001	
10-09-1997	316.0	315.0	69.7	246.3	68.7			5001	
01-21-1998	316.0	315.0	151.0	165.0	150.0			5050	
10-09-1998	316.0	315.0	63.3	252.7	62.3			5050	
01-07-1999	316.0	315.0	51.0	265.0	50.0	7		5050	
10-08-1999	316.0	315.0	70.0	246.0	69.0	9		5050	
01-07-2000	316.0	315.0					9	5050	
01-26-2001	316.0	315.0	53.0	263.0	52.0	9		5050	
10-04-2001	316.0	315.0	74.0	242.0	73.0	9		5050	
01-10-2002	316.0	315.0	56.0	260.0	55.0	9		5050	
11-08-2002	316.0	315.0					2	5050	
01-31-2003	316.0	315.0	55.0	261.0	54.0			5050	
10-29-2003	316.0	315.0	67.0	249.0	66.0	9		5050	
01-30-2004	316.0	315.0	55.0	261.0	54.0			5050	
11-04-2004	316.0	315.0	70.0	246.0	69.0	9		5050	
01-27-2005	316.0	315.0	56.0	260.0	55.0			5050	
10-21-2005	316.0	315.0	64.0	252.0	63.0			5050	
01-18-2006	316.0	315.0	50.9	265.1	49.9			5050	
10-20-2006	316.0	315.0					2	5050	
01-12-2007	316.0	315.0	54.7	261.3	53.7			5050	
10-19-2007	316.0	315.0	69.5	246.5	68.5			5050	
02-07-2008	316.0	315.0	50.9	265.1	49.9			5050	
10-10-2008	316.0	315.0	78.6	237.4	77.6			5050	
01-20-2009	316.0	315.0	72.3	243.7	71.3			5050	

Well Coordinates

Projection	Datum	Easting	Northing	Units	Zone
LL	NAD27	118.9690	35.2080	decimal degrees	

UTM	NAD27	320685	3897885	metres	11

Well Use: Undetermined

For more information contact:
Department of Water Resources, San Joaquin District
Water Management Section
3374 East Shields Avenue
Fresno, CA 93726

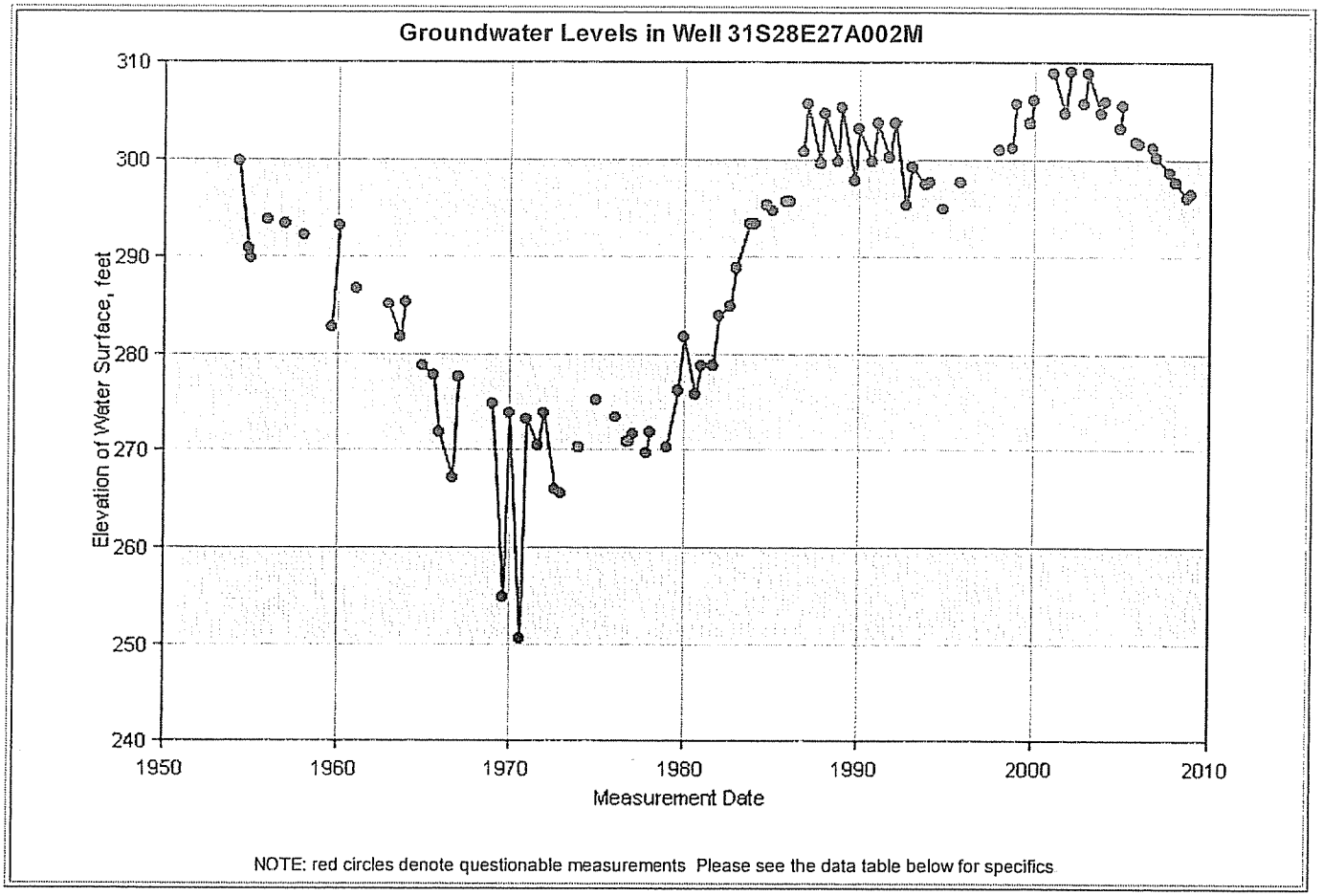
Phone: 559-230-3326
Fax: 559-230-3301

New Search

Search for wells within 0.5 mile radius. Nearby Search

Groundwater Level Data for Well 31S28E27A002M

Your selection returned a total of **99** records. Wells in the Department of Water Resources monitoring network are identified by a State Well Number, which is based on the Public Land Grid System. The table headings and records contain several codes and abbreviations. Press the ***New Search*** or ***Nearby Search*** buttons or at the bottom of the page to begin a new data retrieval. Data for this well can also be downloaded in MS Excel or text delimited format.



NOTE: red circles denote questionable measurements Please see the data table below for specifics

Groundwater Level Readings

Meas. Date	R.P. Elev.	G.S. Elev.	RPWS	WSE	GSWS	QM Code	NM Code	Agency	Comment
05-24-1954	331.8	329.8	32.0	299.8	30.0			5700	
11-22-1954	331.8	329.8	41.0	290.8	39.0			5700	
01-24-1955	331.8	329.8	42.0	289.8	40.0			5700	
01-26-1956	331.8	329.8	38.0	293.8	36.0			5700	
01-28-1957	331.8	329.8	38.5	293.3	36.5			5700	
01-31-1958	331.8	329.8	39.7	292.1	37.7			5700	
09-22-1959	331.8	329.8	49.2	282.6	47.2			5700	
02-04-1960	331.8	329.8	38.6	293.2	36.6			5050	
10-06-1960	331.8	329.8					1	5050	
02-07-1961	331.8	329.8	45.2	286.6	43.2			5050	
10-03-1961	331.8	329.8					1	5001	
01-31-1962	331.8	329.8					5	5001	
10-02-1962	331.8	329.8					1	5001	

01-29-1963	331.8	329.8	46.7	285.1	44.7			5001	
09-16-1963	331.8	329.8	50.0	281.8	48.0			5001	
01-27-1964	331.8	329.8	46.5	285.3	44.5			5001	
09-21-1964	331.8	329.8					1	5001	
01-27-1965	331.8	329.8	53.0	278.8	51.0			5001	
09-29-1965	331.8	329.8	54.1	277.7	52.1			5001	
01-26-1966	331.8	329.8	60.0	271.8	58.0			5001	
09-28-1966	331.8	329.8	64.6	267.2	62.6			5001	
01-31-1967	331.8	329.8	54.3	277.5	52.3			5001	
09-26-1967	331.8	329.8					1	5001	
01-30-1968	331.8	329.8					1	5001	
09-24-1968	331.8	329.8					1	5001	
01-29-1969	331.8	329.8	57.0	274.8	55.0			5001	
09-23-1969	331.8	329.8	77.0	254.8	75.0			5001	
01-26-1970	331.8	329.8	58.0	273.8	56.0			5001	
09-21-1970	331.8	329.8	81.2	250.6	79.2			5001	
01-26-1971	331.8	329.8	58.6	273.2	56.6			5001	
09-21-1971	331.8	329.8	61.4	270.4	59.4			5001	
01-26-1972	331.8	329.8	57.9	273.9	55.9			5001	
09-26-1972	331.8	329.8	65.9	265.9	63.9			5001	
01-31-1973	331.8	329.8	66.3	265.5	64.3			5001	
01-28-1974	331.8	329.8	61.5	270.3	59.5	8		5001	
09-24-1974	331.8	329.8					1	5001	
01-20-1975	331.8	329.8	56.6	275.2	54.6			5001	
09-29-1975	331.8	329.8					1	5001	
01-19-1976	331.8	329.8	58.4	273.4	56.4			5001	
10-07-1976	331.8	329.8	61.0	270.8	59.0	8		5001	
01-18-1977	331.8	329.8	60.2	271.6	58.2			5001	
10-06-1977	331.8	329.8	62.2	269.6	60.2			5001	
01-26-1978	331.8	329.8	59.9	271.9	57.9			5001	
01-18-1979	331.8	329.8	61.5	270.3	59.5			5001	
09-26-1979	331.8	329.8	55.6	276.2	53.6			5001	
01-21-1980	331.8	329.8	50.0	281.8	48.0			5001	
09-25-1980	331.8	329.8	56.0	275.8	54.0			5001	
01-28-1981	331.8	329.8	53.0	278.8	51.0			5001	
09-23-1981	331.8	329.8	53.0	278.8	51.0			5001	
01-26-1982	331.8	329.8	48.0	283.8	46.0			5001	
09-28-1982	331.8	329.8	47.0	284.8	45.0			5001	
01-26-1983	331.8	329.8	43.0	288.8	41.0	9		5001	
09-27-1983	331.8	329.8	38.5	293.3	36.5			5001	
01-31-1984	331.8	329.8	38.5	293.3	36.5			5001	
10-03-1984	331.8	329.8	36.5	295.3	34.5	9		5001	
01-29-1985	331.8	329.8	37.0	294.8	35.0			5001	
10-04-1985	331.8	329.8	36.0	295.8	34.0	9		5001	
01-30-1986	331.8	329.8	36.0	295.8	34.0			5001	
10-03-1986	331.8	329.8	31.0	300.8	29.0			5001	
01-30-1987	331.8	329.8	26.0	305.8	24.0			5001	
10-09-1987	331.8	329.8	32.2	299.6	30.2	9		5001	
01-29-1988	331.8	329.8	27.1	304.7	25.1			5001	

10-07-1988	331.8	329.8	32.0	299.8	30.0			5001	
01-27-1989	331.8	329.8	26.4	305.4	24.4			5001	
10-06-1989	331.8	329.8	33.9	297.9	31.9			5001	
01-26-1990	331.8	329.8	28.7	303.1	26.7			5001	
10-05-1990	331.8	329.8	32.0	299.8	30.0			5001	
02-01-1991	331.8	329.8	28.0	303.8	26.0			5001	
10-04-1991	331.8	329.8	31.6	300.2	29.6			5001	
01-31-1992	331.8	329.8	28.0	303.8	26.0			5001	
10-09-1992	331.8	329.8	36.5	295.3	34.5			5001	
01-29-1993	331.8	329.8	32.5	299.3	30.5			5001	
10-08-1993	331.8	329.8	34.3	297.5	32.3			5001	
01-25-1994	331.8	329.8	34.2	297.6	32.2			5050	
10-13-1994	331.8	329.8	36.8	295.0	34.8			5001	
10-06-1995	331.8	329.8	34.1	297.7	32.1			5001	
01-12-1996	331.8	329.8					2	5001	
01-21-1998	331.8	329.8	30.8	301.0	28.8			5050	
10-09-1998	331.8	329.8	30.6	301.2	28.6			5050	
01-07-1999	331.8	329.8	26.0	305.8	24.0			5050	
10-08-1999	331.8	329.8	28.0	303.8	26.0	6		5050	
01-06-2000	331.8	329.8	25.7	306.1	23.7			5050	
01-25-2001	331.8	329.8	22.8	309.0	20.8			5050	
10-04-2001	331.8	329.8	27.0	304.8	25.0			5050	
01-10-2002	331.8	329.8	22.7	309.1	20.7			5050	
11-07-2002	331.8	329.8	26.1	305.7	24.1			5050	
01-30-2003	331.8	329.8	22.8	309.0	20.8			5050	
10-29-2003	331.8	329.8	27.0	304.8	25.0			5050	
01-30-2004	331.8	329.8	25.9	305.9	23.9			5050	
11-04-2004	331.8	329.8	28.6	303.2	26.6			5050	
01-27-2005	331.8	329.8	26.2	305.6	24.2			5050	
10-21-2005	331.8	329.8	30.0	301.8	28.0			5050	
01-18-2006	331.8	329.8	30.2	301.6	28.2			5050	
10-20-2006	331.8	329.8	30.6	301.2	28.6			5050	
01-12-2007	331.8	329.8	31.5	300.3	29.5			5050	
10-19-2007	331.8	329.8	33.2	298.6	31.2			5050	
02-07-2008	331.8	329.8	34.1	297.7	32.1			5050	
10-10-2008	331.8	329.8	35.7	296.1	33.7			5050	
01-20-2009	331.8	329.8	35.4	296.4	33.4			5050	

Well Coordinates

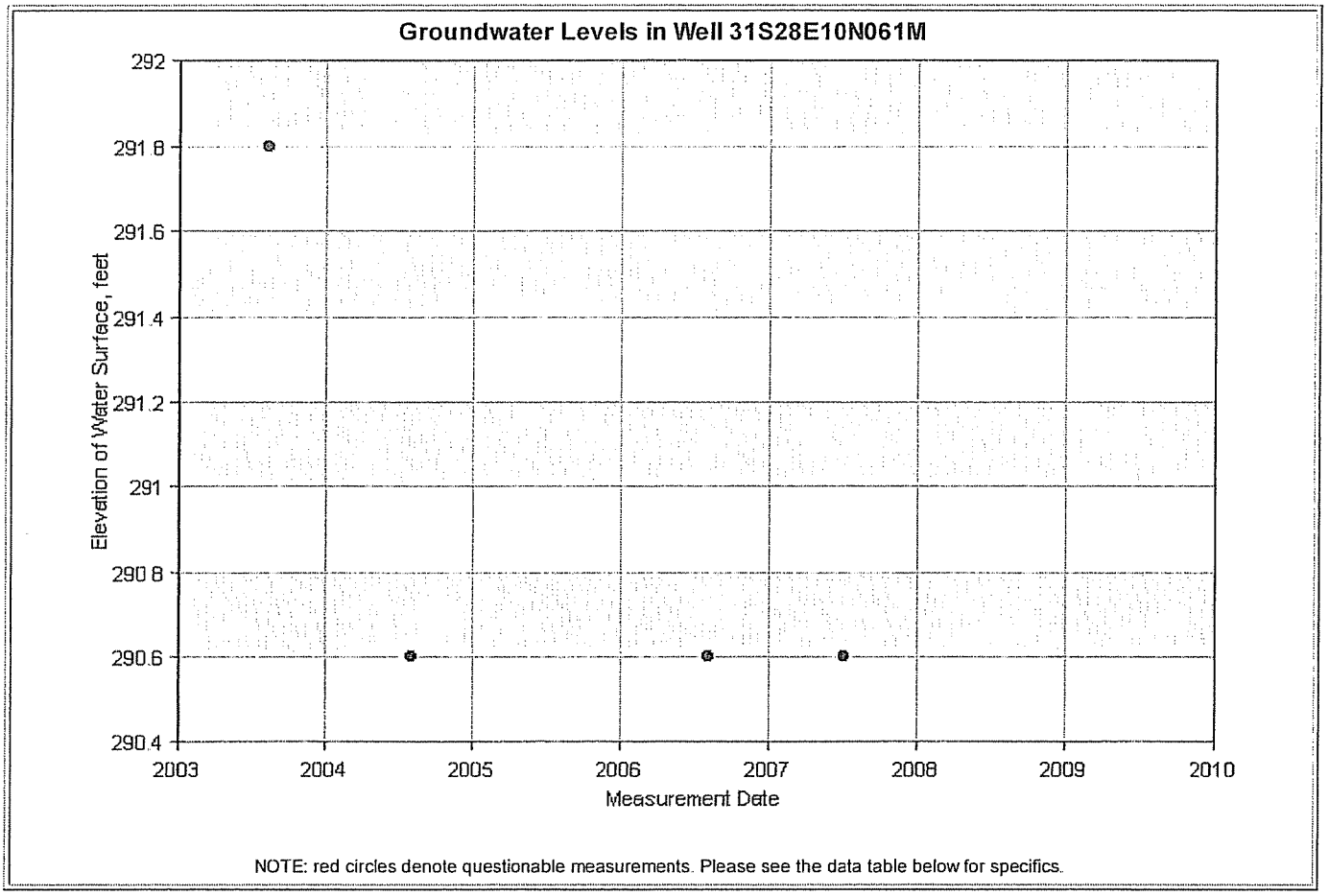
Projection	Datum	Easting	Northing	Units	Zone
LL	NAD27	118.9573	35.2102	decimal degrees	
UTM	NAD27	321752	3898111	metres	11

Well Use: Undetermined

For more information contact:
Department of Water Resources, San Joaquin District
Water Management Section
3374 East Shields Avenue
Fresno, CA 93726

Groundwater Level Data for Well 31S28E10N061M

Your selection returned a total of 7 records. Wells in the Department of Water Resources monitoring network are identified by a State Well Number, which is based on the Public Land Grid System. The table headings and records contain several codes and abbreviations. Press the ***New Search*** or ***Nearby Search*** buttons or at the bottom of the page to begin a new data retrieval. Data for this well can also be downloaded in MS Excel or text delimited format.



NOTE: red circles denote questionable measurements. Please see the data table below for specifics.

Groundwater Level Readings

Meas. Date	R.P. Elev.	G.S. Elev.	RPWS	WSE	GSWS	QM Code	NM Code	Agency	Comment
08-01-2003	306.0	305.6	14.2	291.8	13.8			5133	
08-01-2004	306.0	305.6	15.4	290.6	15.0			5133	
08-01-2005	306.0	305.6					D	5133	
08-01-2006	306.0	305.6	15.4	290.6	15.0			5133	
07-01-2007	306.0	305.6	15.4	290.6	15.0			5133	
08-14-2008	306.0	305.6					D	5133	
07-28-2009	306.0	305.6					D	5133	

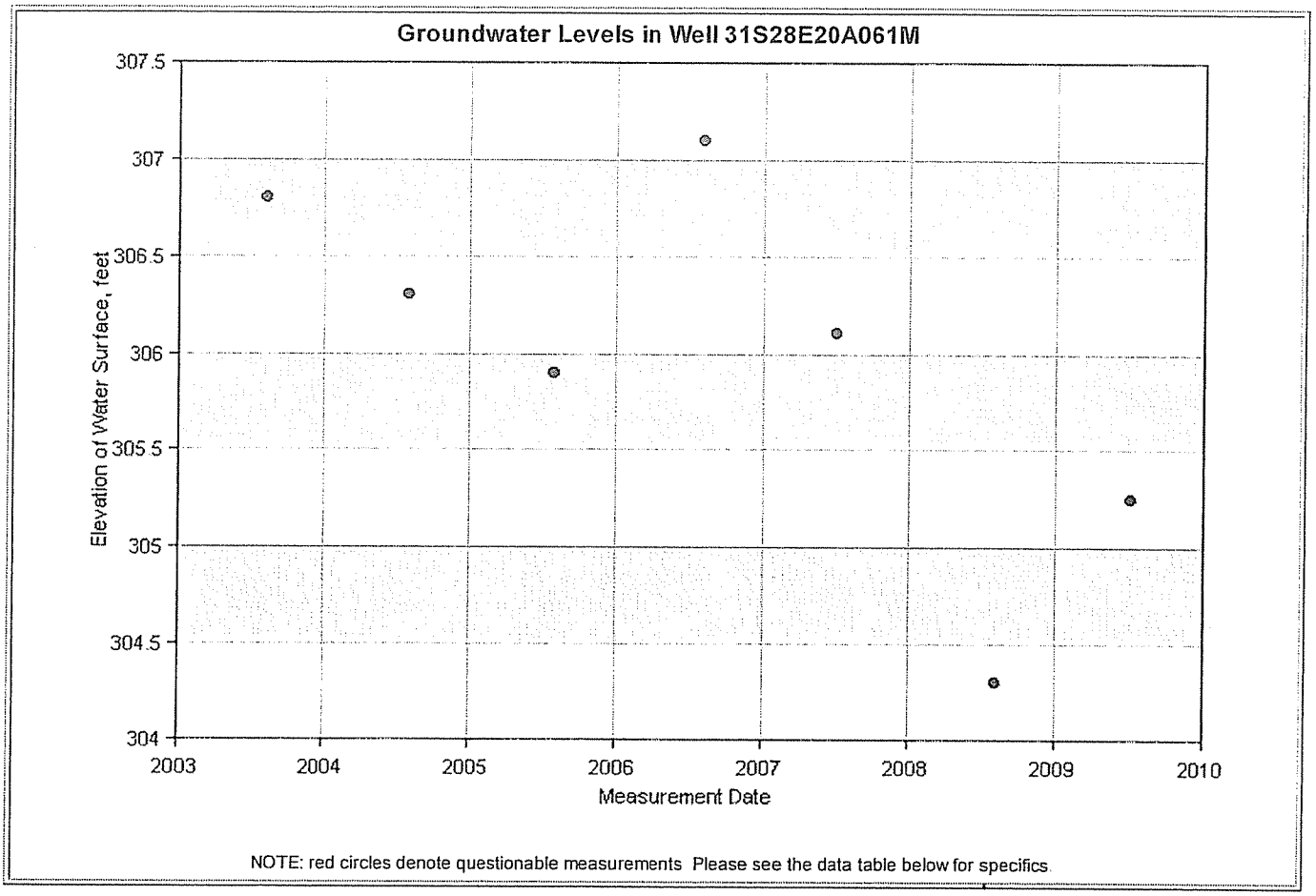
Well Coordinates

Projection	Datum	Easting	Northing	Units	Zone
LL	NAD27	118.9672	35.2379	decimal degrees	

Well Use: Observation

Groundwater Level Data for Well 31S28E20A061M

Your selection returned a total of **7** records. Wells in the Department of Water Resources monitoring network are identified by a State Well Number, which is based on the Public Land Grid System. The table headings and records contain several codes and abbreviations. Press the ***New Search*** or ***Nearby Search*** buttons or at the bottom of the page to begin a new data retrieval. Data for this well can also be downloaded in MS Excel or text delimited format.



NOTE: red circles denote questionable measurements Please see the data table below for specifics

Groundwater Level Readings

Meas. Date	R.P. Elev.	G.S. Elev.	RPWS	WSE	GSWS	QM Code	NM Code	Agency	Comment
08-01-2003	312.0	311.9	5.2	306.8	5.1			5133	
08-01-2004	312.0	311.9	5.7	306.3	5.6			5133	
08-01-2005	312.0	311.9	6.1	305.9	6.0			5133	
08-01-2006	312.0	311.9	4.9	307.1	4.8			5133	
07-01-2007	312.0	311.9	5.9	306.1	5.8			5133	
08-14-2008	312.0	311.9	7.7	304.3	7.6			5133	
07-28-2009	312.0	311.9	6.8	305.3	6.6			5133	

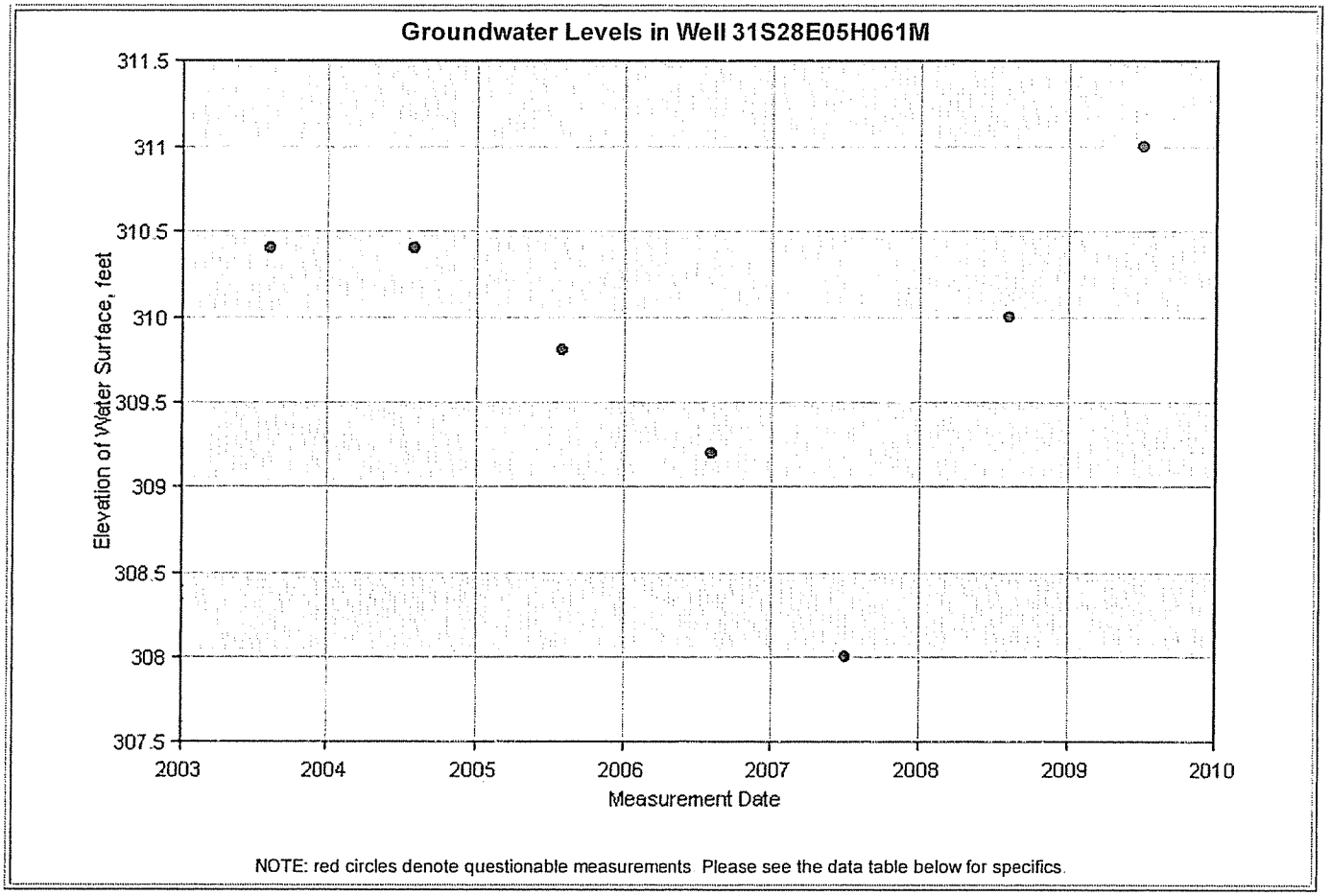
Well Coordinates

Projection	Datum	Easting	Northing	Units	Zone
LL	NAD27	118.9855	35.2232	decimal degrees	

Well Use: Observation

Groundwater Level Data for Well 31S28E05H061M

Your selection returned a total of **7** records. Wells in the Department of Water Resources monitoring network are identified by a State Well Number, which is based on the Public Land Grid System. The table headings and records contain several codes and abbreviations. Press the ***New Search*** or ***Nearby Search*** buttons or at the bottom of the page to begin a new data retrieval. Data for this well can also be downloaded in MS Excel or text delimited format.



NOTE: red circles denote questionable measurements. Please see the data table below for specifics.

Groundwater Level Readings

Meas. Date	R.P. Elev.	G.S. Elev.	RPWS	WSE	GSWS	QM Code	NM Code	Agency	Comment
08-01-2003	317.3	315.0	6.9	310.4	4.6			5133	
08-01-2004	317.3	315.0	6.9	310.4	4.6			5133	
08-01-2005	317.3	315.0	7.5	309.8	5.2			5133	
08-01-2006	317.3	315.0	8.1	309.2	5.8			5133	
07-01-2007	317.3	315.0	9.3	308.0	7.0			5133	
08-14-2008	317.3	315.0	7.3	310.0	5.0			5133	
07-28-2009	317.3	315.0	6.3	311.0	4.0			5133	

Well Coordinates

Projection	Datum	Easting	Northing	Units	Zone
LL	NAD27	118.9857	35.2597	decimal degrees	

Well Use: Observation

Appendix B

Department of Water Resources
Bulletin 118 – Update 2003

Tulare Lake Hydrologic Region

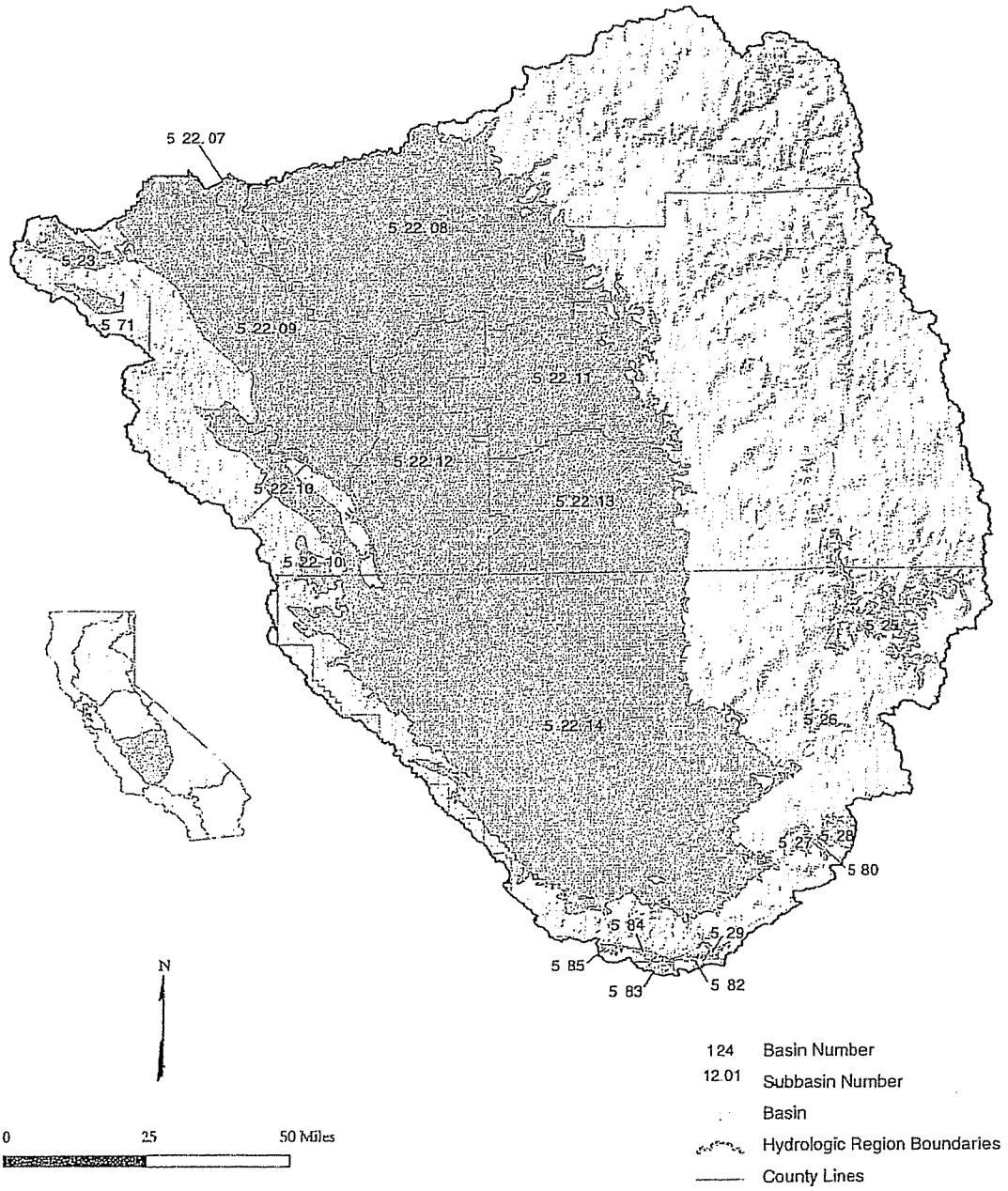


Figure 37 Tulare Lake Hydrologic Region

Basins and Subbasins of Tulare Lake Hydrologic Region

Basin/subbasin	Basin name
5-22	San Joaquin Valley
5-22.08	Kings
5-22.09	Westside
5-22.10	Pleasant Valley
5-22.11	Kaweah
5-22.12	Tulare Lake
5-22.13	Tule
5-22.14	Kern County
5-23	Panoche Valley
5-25	Kern River Valley
5-26	Walker Basin Creek Valley
5-27	Cummings Valley
5-28	Tehachapi Valley West
5-29	Castaic Lake Valley
5-71	Vallecitos Creek Valley
5-80	Brite Valley
5-82	Cuddy Canyon Valley
5-83	Cuddy Ranch Area
5-84	Cuddy Valley
5-85	Mil Potrero Area

Description of the Region

The Tulare Lake HR covers approximately 10.9 million acres (17,000 square miles) and includes all of Kings and Tulare counties and most of Fresno and Kern counties (Figure 37). The region corresponds to approximately the southern one-third of RWQCB 5. Significant geographic features include the southern half of the San Joaquin Valley, the Temblor Range to the west, the Tehachapi Mountains to the south, and the southern Sierra Nevada to the east. The region is home to more than 1.7 million people as of 1995 (DWR, 1998). Major population centers include Fresno, Bakersfield, and Visalia. The cities of Fresno and Visalia are entirely dependent on groundwater for their supply, with Fresno being the second largest city in the United States reliant solely on groundwater.

Groundwater Development

The region has 12 distinct groundwater basins and 7 subbasins of the San Joaquin Valley Groundwater Basin, which crosses north into the San Joaquin River HR. These basins underlie approximately 5.33 million acres (8,330 square miles) or 49 percent of the entire HR area.

Groundwater has historically been important to both urban and agricultural uses, accounting for 41 percent of the region's total annual supply and 35 percent of all groundwater use in the State. Groundwater use in the region represents about 10 percent of the State's overall supply for agricultural and urban uses (DWR 1998).

The aquifers are generally quite thick in the San Joaquin Valley subbasins with groundwater wells commonly exceeding 1,000 feet in depth. The maximum thickness of freshwater-bearing deposits (4,400 feet) occurs at the southern end of the San Joaquin Valley. Typical well yields in the San Joaquin Valley range from 300 gpm to 2,000 gpm with yields of 4,000 gpm possible. The smaller basins in the mountains surrounding the San Joaquin Valley have thinner aquifers and generally lower well yields averaging less than 500 gpm.

The cities of Fresno, Bakersfield, and Visalia have groundwater recharge programs to ensure that groundwater will continue to be a viable water supply in the future. Extensive groundwater recharge programs are also in place in the south valley where water districts have recharged several million acre-feet for future use and transfer through water banking programs.

The extensive use of groundwater in the San Joaquin Valley has historically caused subsidence of the land surface primarily along the west side and south end of the valley.

Groundwater Quality

In general, groundwater quality throughout the region is suitable for most urban and agricultural uses with only local impairments. The primary constituents of concern are high TDS, nitrate, arsenic, and organic compounds.

The areas of high TDS content are primarily along the west side of the San Joaquin Valley and in the trough of the valley. High TDS content of west-side water is due to recharge of stream flow originating from marine sediments in the Coast Range. High TDS content in the trough of the valley is the result of concentration of salts because of evaporation and poor drainage. In the central and west-side portions of the valley, where the Corcoran Clay confining layer exists, water quality is generally better beneath the clay than above it. Nitrates may occur naturally or as a result of disposal of human and animal waste products and fertilizer. Areas of high nitrate concentrations are known to exist near the town of Shafter and other isolated areas in the San Joaquin Valley. High levels of arsenic occur locally and appear to be associated with lakebed areas. Elevated arsenic levels have been reported in the Tulare Lake, Kern Lake and Buena Vista Lake bed areas. Organic contaminants can be broken into two categories, agricultural and industrial. Agricultural pesticides and herbicides have been detected throughout the valley, but primarily along the east side where soil permeability is higher and depth to groundwater is shallower. The most notable agricultural contaminant is DBCP, a now-banned soil fumigant and known carcinogen once used extensively on grapes. Industrial organic contaminants include TCE, DCE, and other solvents. They are found in groundwater near airports, industrial areas, and landfills.

Water Quality in Public Supply Wells

From 1994 through 2000, 1,476 public supply water wells were sampled in 14 of the 19 groundwater basins and subbasins in the Tulare Lake HR. Evaluation of analyzed samples shows that 1,049 of the wells, or 71 percent, met the state primary MCLs for drinking water. Four-hundred-twenty-seven wells, or 29 percent, exceeded one or more MCL. Figure 38 shows the percentages of each contaminant group that exceeded MCLs in the 427 wells.

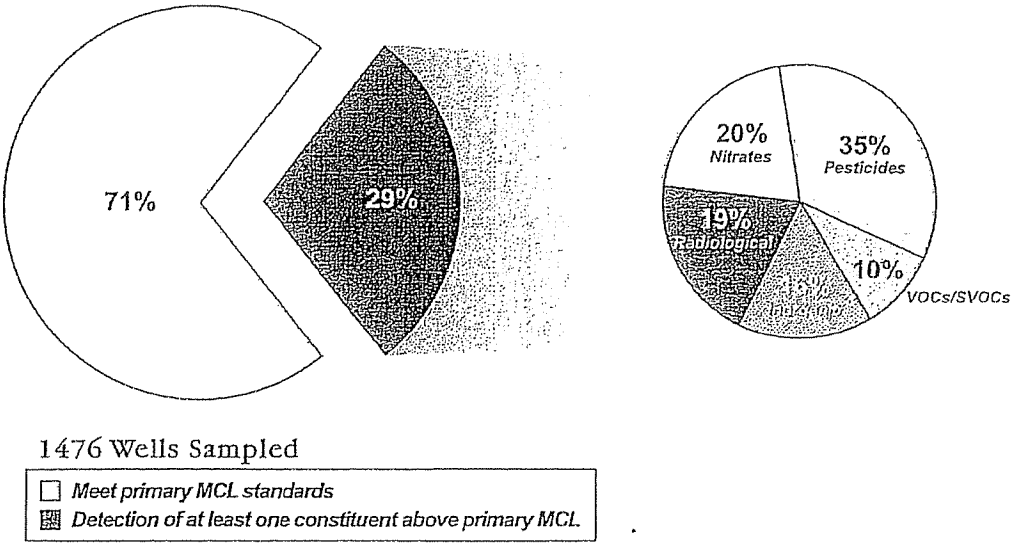


Figure 38 MCL exceedances by contaminant group in public supply wells in the Tulare Lake Hydrologic Region

Table 31 lists the three most frequently occurring contaminants in each of the six contaminant groups and shows the number of wells in the HR that exceeded the MCL for those contaminants.

Table 31 Most frequently occurring contaminants by contaminant group in the Tulare Lake Hydrologic Region

Contaminant group	Contaminant - # of wells	Contaminant - # of wells	Contaminant - # of wells
Inorganics - Primary	Fluoride – 32	Arsenic – 16	Aluminum – 13
Inorganics - Secondary	Iron – 155	Manganese – 82	TDS – 9
Radiological	Gross Alpha – 74	Uranium – 24	Radium 228 – 8
Nitrates	Nitrate(as NO_3) – 83	Nitrate + Nitrite – 14	Nitrite(as N) – 3
Pesticides	DBCP – 130	EDB – 24	Di(2-Ethylhexyl)phthalate – 7
VOCs/SVOCs	TCE – 17	PCE – 16	Benzene – 6 MTBE – 6

DBCP = Dibromochloropropane
EDB = Ethylenedibromide
TCE = Trichloroethylene
PCE = Tetrachloroethylene
VOC = Volatile organic compound
SVOC = Semivolatile organic compound

Changes from Bulletin 118-80

There are no newly defined basins since Bulletin 118-80. However, the subbasins of the San Joaquin Valley, which were delineated as part of the 118-80 update, are given their first numeric designation in this report (Table 32).

Table 32 Modifications since Bulletin 118-80 of groundwater basins and subbasins in Tulare Lake Hydrologic Region

Subbasin name	New number	Old number
Kings	5-22.08	5-22
Westside	5-22.09	5-22
Pleasant Valley	5-22.10	5-22
Kaweah	5-22.11	5-22
Tulare Lake	5-22.12	5-22
Tule	5-22.13	5-22
Kern County	5-22.14	5-22
Squaw Valley	deleted	5-24
Cedar Grove Area	deleted	5-72
Three Rivers Area	deleted	5-73
Springville Area	deleted	5-74
Templeton Mountain Area	deleted	5-75
Manache Meadow Area	deleted	5-76
Sacator Canyon Valley	deleted	5-77
Rockhouse Meadows Valley	deleted	5-78
Inns Valley	deleted	5-79
Bear Valley	deleted	5-81

Several basins have been deleted from the Bulletin 118-80 report. In Squaw Valley (5-24) all 118 wells are completed in hard rock. Cedar Grove Area (5-72) is a narrow river valley in Kings Canyon National Park with no wells. Three Rivers Area (5-73) has a thin alluvial terrace deposit but 128 of 130 wells are completed in hard rock. Springville Area (5-74) is this strip of alluvium adjacent to Tule River and all wells are completed in hard rock. Templeton Mountain Area (5-75), Manache Meadow Area (5-76), and Sacator Canyon Valley (5-77) are all at the crest of mountains with no wells. Rockhouse Meadows Valley (5-78) is in wilderness with no wells. Inns Valley (5-79) and Bear Valley (5-81) both have all wells completed in hard rock.

Table 33 Tulare Lake Hydrologic Region groundwater data

Basin/Subbasin	Basin Name	Area (acres)	Groundwater Budget Type	Well Yields (gpm)		Types of Monitoring			TDS (mg/L)	
				Maximum	Average	Levels	Quality	Title 22	Average	Range
5-22	SAN JOAQUIN VALLEY									
5-22.08	KINGS	976,000	C	3,000	500-1,500	909	-	722	200-700	40-2000
5-22.09	WESTSIDE	640,000	C	2,000	1,100	960	-	50	520	220-35,000
5-22.10	PLEASANT VALLEY	146,000	B	3,300	-	151	-	2	1,500	1000-3000
5-22.11	KAWEAH	446,000	B	2,500	1,000-2,000	568	-	270	189	35-580
5-22.12	TULARE LAKE	524,000	B	3,000	300-1,000	241	-	86	200-600	200-40,000
5-22.13	TULE	467,000	B	3,000	-	459	-	150	256	200-30,000
5-22.14	KERN COUNTY	1,950,000	A	4,000	1,200-1,500	2,258	249	476	400-450	150-5000
5-23	PANOCHE VALLEY	33,100	C	-	-	48	-	-	1,300	394-3530
5-25	KERN RIVER VALLEY	74,000	C	3,650	350	-	-	92	378	253-480
5-26	WALKER BASIN CREEK VALLEY	7,670	C	650	-	-	-	1	-	-
5-27	CUMMINGS VALLEY	10,000	A	150	56	51	-	15	344	-
5-28	TEHACHAPI VALLEY WEST	14,800	A	1,500	454	64	-	19	315	280-365
5-29	CASTAC LAKE VALLEY	3,600	C	400	375	-	-	3	583	570-605
5-71	VALLECITOS CREEK VALLEY	15,100	C	-	-	-	-	0	-	-
5-80	BRITE VALLEY	3,170	A	500	50	-	-	-	-	-
5-82	CUDDY CANYON VALLEY	3,300	C	500	400	-	-	3	693	695
5-83	CUDDY RANCH AREA	4,200	C	300	180	-	-	4	550	480-645
5-84	CUDDY VALLEY	3,500	A	160	135	3	-	3	407	325-645
5-85	MIL POTRERO AREA	2,300	C	3,200	240	7	-	7	460	372-657

gpm - gallons per minute
mg/L - milligram per liter
TDS -total dissolved solids

San Joaquin Valley Groundwater Basin
Kern County Subbasin

- Groundwater Basin Number: 5-22.14
- County: Kern
- Surface Area: 1,945,000 acres (3,040 square miles)

Basin Boundaries & Hydrology

The San Joaquin Valley is surrounded on the west by the Coast Ranges, on the south by the San Emigdio and Tehachapi Mountains, on the east by the Sierra Nevada and on the north by the Sacramento-San Joaquin Delta and Sacramento Valley. The northern portion of the San Joaquin Valley drains toward the Delta by the San Joaquin River and its tributaries, the Fresno, Merced, Tuolumne, and Stanislaus Rivers. The southern portion of the valley is internally drained by the Kings, Kaweah, Tule, and Kern Rivers that flow into the Tulare drainage basin including the beds of the former Tulare, Buena Vista, and Kern Lakes.

The Kern County Groundwater subbasin is bounded on the north by the Kern County line and the Tule Groundwater subbasin, on the east and southeast by granitic bedrock of the Sierra Nevada foothills and Tehachapi mountains, and on the southwest and west by the marine sediments of the San Emigdio Mountains and Coast Ranges. Principal rivers and streams include Kern River and Poso Creek. Active faults include the Edison, Pond-Poso, and White Wolf faults. Average precipitation values range from 5 in. at the subbasin interior to 9 to 13 in. at the subbasin margins to the east, south, and west.

Hydrogeologic Information

The San Joaquin Valley represents the southern portion of the Great Central Valley of California. The San Joaquin Valley is a structural trough up to 200 miles long and 70 miles wide filled with up to 32,000 feet of marine and continental sediments deposited during periodic inundation by the Pacific Ocean and by erosion of the surrounding mountains, respectively. Continental deposits shed from the surrounding mountains form an alluvial wedge that thickens from the valley margins toward the axis of the structural trough. This depositional axis is below to slightly west of the series of rivers, lakes, sloughs, and marshes that mark the current and historic axis of surface drainage in the San Joaquin Valley.

Water Bearing Formations

Sediments that comprise the shallow to intermediate depth water-bearing deposits in the groundwater subbasin are primarily continental deposits of Tertiary and Quaternary age. From oldest to youngest the deposits include the Olcese and Santa Margarita Formations; the Tulare Formation (western subbasin) and its eastern subbasin equivalent, the Kern River Formation; older alluvium/stream deposits; and younger alluvium and coeval flood basin deposits. Specific yield values for the unconfined aquifer (Tulare and Kern River Formations and overlying alluvium) were compiled from two sources. The DWR's San Joaquin District office estimates (unpublished) ranges from 5.3 to 19.6 percent and averages 11.8 percent for the interval from surface to

300 feet below grade. The DWR (1977) groundwater model of Kern County lists the range as 8.0 to 19.5 percent with an average value of 12.4 percent representing an interval thickness of 175 to 2,900 feet and averaging approximately 600 feet. The greatest thickness of unconfined aquifer occurs along the eastern subbasin margin. The highest specific yield values are associated with sediments of the Kern River Fan west of Bakersfield.

Olcese and Santa Margarita Formations
The origin of these Miocene-age deposits varies from continental to marine from east to west across the subbasin (Bartow and McDougall 1984). The Olcese and Santa Margarita Formations are current or potential sources of drinking water only in the northeastern portion of the subbasin where they occur as confined aquifers. The Olcese Formation is primarily sand, ranging in thickness from 100 to 450 feet. The Santa Margarita Formation is from 200 to 600 feet thick and consists of coarse sand (Hilton and others 1963).

Tulare and Kern River Formations
These units are both Plio-Pleistocene age and represent a west/east facies change across the subbasin. The Tulare Formation (western subbasin) contains up to 2,200 feet of interbedded, oxidized to reduced sands; gypsiferous clays and gravels derived predominantly from Coast Range sources. The formation includes the Corcoran Clay Member, which is present in the subsurface from the Kern River Outlet Channel on the west through the central and much of the eastern subbasin at depths of 300 to 650 feet (Croft 1972), groundwater beneath the Corcoran Clay is confined. The Kern River Formation includes from 500 to 2,000 feet of poorly sorted, lenticular deposits of clay, silt, sand, and gravel derived from the Sierra Nevada. Both units are moderately to highly permeable and yield moderate to large quantities of water to wells (Hilton and others 1963).

Older Alluvium/Stream and Terrace Deposits
This unit is composed of up to 250 feet of Pleistocene-age lenticular deposits of clay, silt, sand, and gravel that are loosely consolidated to cemented and are exposed mainly at the subbasin margins. The unit is moderately to highly permeable and yields large quantities of water to wells (Hilton and others 1963; Wood and Davis 1959; Wood and Dale 1964). This sedimentary unit is often indistinguishable from the Tulare and Kern Formations below and together with these underlying formations, forms the principal aquifer body in the Kern County Groundwater subbasin.

Younger Alluvium/Flood Basin Deposits
This Holocene-age unit varies in character and thickness about the subbasin. At the eastern and southern subbasin margins the unit is composed of up to 150 feet of interstratified and discontinuous beds of clay, silt, sand, and gravel. In the southwestern subbasin it is finer grained and less permeable as it grades into fine-grained flood basin deposits underlying the historic beds of Buena Vista and Kern Lakes in the southern subbasin (Hilton and others 1963; Wood and Dale 1964). The flood basin deposits consist of silt, silty clay, sandy clay, and clay interbedded with poorly permeable sand layers. These flood basin deposits are difficult to distinguish from underlying fine-grained older alluvium and the total thickness of both units may be as much as 1,000 feet (Wood and Dale 1964).

Restrictive Structures

Faults that affect groundwater movement include the Edison, Pond-Poso, and White Wolf faults. Other barriers to groundwater movement include folds such as Elk Hills and Buena Vista Hills, angular unconformities, and contacts with crystalline and consolidated sedimentary rocks at the subbasin margins (DWR 1977). The Corcoran Clay significantly impedes vertical groundwater movement where present.

Recharge Areas

Natural recharge is primarily from stream seepage along the eastern subbasin and the Kern River; recharge of applied irrigation water, however, is the largest contributor (DWR 1995).

Groundwater Level Trends

The average subbasin water level is essentially unchanged from 1970 to 2000, after experiencing cumulative changes of approximately -15 feet through 1978, a 15-foot increase through 1988, and an 8-foot decrease through 1997. However, net water level changes in different portions of the subbasin were quite variable through the period 1970-2000. These changes ranged from increases of over 30 feet at the southeast valley margin and in the Lost Hills/Buttonwillow areas to decreases of over 25 and 50 feet in the Bakersfield area and McFarland/Shafter areas, respectively. The above information is a summary of unpublished DWR water level data.

Groundwater Storage

Kern County Water Agency estimates the total water in storage to be 40,000,000 af and dewatered aquifer storage to be 10,000,000 af (Fryer 2002). It appears that these calculations consider areas of the subbasin which are known to overlay useable groundwater, which they report to be about 1,000,000 acres.

Additional Information

Between 1926 and 1970, groundwater extraction has resulted in more than 8 feet of subsidence in the north-central portion of the subbasin, and approximately 9 feet in the south-central area (Ireland and others 1984).

Water banking was initiated in the subbasin in 1978, and as of 2000, seven projects contain over 3 million af (MAF) of banked water in a combined potential storage volume of 3.9 MAF (KCWA 2001). Approximately two-thirds of this storage is in the Kern River Fan area west of Bakersfield; the remainder is in the Arvin-Edison WSD in the southeastern subbasin or in the Semitropic WSD in the northwestern subbasin.

Groundwater Budget (Type A)

The budget presented below is based on data collected as part of DWR's Bulletin 160 preparation. The basis for calculations include a 1990 normalized year and land and water use data, with subsequent analysis by a DWR water budget spreadsheet to estimate overall applied water demands, agricultural groundwater pumpage, urban pumping demand, and other extraction data. As no data for subsurface inflow or outflow exists in Bulletin 160 data, these values were obtained from a 1977 groundwater

model developed by DWR and the Kern County Water Agency (DWR 1977). Inflows to the subbasin include natural recharge of 150,000 af per year, artificial recharge of 308,000 af per year, applied water recharge 843,000 af per year, and a 1958-1966 average estimated subsurface inflow of 233,000 af per year (DWR 1977), for a total subbasin inflow of 1,534,000 af per year. Subbasin outflows are urban extraction of 154,000 af per year, agricultural extraction of 1,160,000 af per year, other extractions (oil industry related) of 86,333, and subsurface outflow was considered minimal, for a total subbasin outflow of 1,400,300 af per year. In addition to the above budget, KCWA has prepared a detailed long-term water balance from 1970 to 1998 which shows an average change in storage of minus 325,000 af per year (Fryer 2002). This analysis does not consider subsurface inflow.

Groundwater Quality

Characterization. The eastern subbasin contains primarily calcium bicarbonate waters in the shallow zones, increasing in sodium with depth. Bicarbonate is replaced by sulfate and lesser chloride in an east to west trend across the subbasin. West side waters are primarily sodium sulfate to calcium-sodium sulfate type (Hilton and others 1963; Wood ands Dale 1964; Wood and Davis 1959; Dale and others, 1966). The average TDS of groundwater is 400-450 mg/L with a range of 150 – 5,000 mg/L (KCWA 1995).

Impairments. Shallow groundwater presents problems for agriculture in the western portion of the basin. High TDS, sodium chloride, and sulfate are associated with the axial trough of the subbasin. Elevated arsenic concentrations exist in some areas associated with lakebed deposits. Nitrate, DBCP, and EDB concentrations exceed MCLs in various areas of the basin. Specific data for municipal production wells are available in the DHS water quality data base.

Water Quality in Public Supply Wells

Constituent Group[1]	Number of wells sampled[2]	Number of wells with a concentration above an MCL[3]
Inorganics – Primary	444	18
Radiological	372	15
Nitrates	475	38
Pesticides	436	23
VOCs and SVOCs	409	19
Inorganics – Secondary	444	60

[1] A description of each member in the constituent groups and a generalized discussion of the relevance of these groups are included in *California's Groundwater – Bulletin 118* by DWR (2003).
[2] Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.
[3] Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report

Well Characteristics

	Well yields (gal/min)	
Municipal/Irrigation	Range: 200-4,000	Average: 1,200-1,500 (KCWA 1995)
	Total depths (ft)	
Domestic	Range: Not determined	Average: Not determined
Municipal/Irrigation	Range: 150-1,200	Average: 300-600 (KCWA 1995)

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
DWR (incl. Cooperators)	Groundwater levels	1,487 Semi-annually
Arvin Edison WSD	Quality	50-75 Annually
Arvin Edison WSD	Levels	250-300 Biennially
Cawelo WD	Quality	45 Annually
Kern Delta WD	Quality (EC, TDS, pH)	17 Infrequently
Kern Delta WD	Levels	115 Semi-annually
West Kern WD	Levels	5 Monthly
West Kern WD	Gen. mineral, organic chemicals, and radiological.	5 Every 3 years
Wheeler Ridge-Maricopa WSD	Quality (Irregular) Title 22	12 Annually 17 During Drought Years
Wheeler Ridge-Maricopa WSD	Levels	88-110 Annually
Buena Vista WSD	Quality (EC, TDS)	25 Quarterly 94 Biennially
Buena Vista WSD	Levels	76 Quarterly
Semitropic WSD	Levels	300 Annually
Department of Health Services and cooperators	Title 22 water quality	476 Varies

Basin Management

Groundwater management	Recharge and in-lieu programs are operated by various water districts, the City of Bakersfield, and Kern County Water Agency (see Comments below). Buena Vista WSD is currently drafting an AB 255 Management Plan. Shafter-Wasco ID implemented an AB 255 management plan in June 1993. West Kern Water District adopted a groundwater management plan. Kern Delta WD adopted a plan on October 15, 1996. Rosedale-Rio Bravo WSD's AB 3030 plan was adopted on March 11, 1997. Arvin-Edison WSD adopted a plan. Cawelo WD adopted an AB 3030 management plan in 1994. While Wheeler Ridge-Maricopa WSD has not formally adopted an AB 255 or AB 3030 plan, it has implemented the groundwater management plan contained in its Project Report. Semitropic Water Storage District adopted a groundwater management plan in September 2003.
Water agencies	
Public	Kern County Water Agency, City of Bakersfield, and numerous water districts and small Community Services Districts.
Private	California Water Service Co., McFarland Mutual Water Company, Stockdale Mutual Water Company, and numerous small community water groups.
Water Projects	Kern Fan Banking Unit; Arvin-Edison Banking Project; Semitropic Banking Project; Cross Valley Canal; Friant-Kern Canal.

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Errata

Updated groundwater management information and added hotlinks to applicable websites. (1/20/06)

Appendix C

Greenfield County Water District's Calculation for Water Service

GREENFIELD COUNTY WATER DISTRICT

CALCULATION OF SINGLE-FAMILY RESIDENCE
EQUIVALENTS FOR WATER SERVICE

Description	Unit of Measure	Water Estimated Flow (GPD)	Equivalent Dwelling Unit (EDU)
Residential:			
Single-family Home	Parcel	470	1.0
Duplex	Parcel	554	1.17
Triplex	Parcel	829	1.76
Fourplex	Parcel	1,106	2.35
Condominiums	Parcel	244	.51
Five Units or More	Units	244	.51
Mobile Home Parks	Spaces	244	.51
Commercial:			
Animal Kennel	1000 s.f.	114	.24
Auto Sales/Repair	1000 s.f.	114	.24
Bowling/Skating	1000 s.f.	172	.36
Car Wash:			
Tunnel Type	1000 s.f.	3,976	8.45
Wand Type	1000 s.f.	766	1.62
Drive-in Theatre	1000 s.f.	23	.04
Dry Goods Retail	1000 s.f.	43	.09
Dry Manufacturing	1000 s.f.	28	.10
Financial Inst.	1000 s.f.	114	.24
Hospital	1000 s.f.	1,092	2.32
Hotel/Motel/Rooming House	1000 s.f.	273	.58
Indoor Theatre	1000 s.f.	143	.30
Laundromat	1000 s.f.	2,929	6.23
Lumber Yard	1000 s.f.	28	.05
Manufacturing	1000 s.f.	229	.48
Night Club	1000 s.f.	383	.81
Nursery/Greenhouse	1000 s.f.	28	.05
Office Building	1000 s.f.	229	.48
Open Storage	1000 s.f.	28	.06
Professional Bldg.	1000 s.f.	328	.69
Restaurant	1000 s.f.	1,075	2.28
School	1000 s.f.	900	1.9
Service Shop	1000 s.f.	114	.24
Service Station	1000 s.f.	114	.24
Shopping Center	1000 s.f.	346	.73
Store	1000 s.f.	114	.24
Supermarket	1000 s.f.	172	.36
Warehousing	1000 s.f.	28	.05
Wholesale Outlet	1000 s.f.	114	.24

ADOPTED 11-95

Appendix D

California Resolution No. 77-1, Policy With Respect to Water Reclamation in California

STATE WATER RESOURCES CONTROL BOARD
RESOLUTION NO. 77-1

POLICY WITH RESPECT TO WATER
RECLAMATION IN CALIFORNIA

WHEREAS:

1. The California Constitution provides that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that waste or unreasonable use or unreasonable method of use of water be prevented, and that conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare;

2. The California Legislature has declared that the State Water Resources Control Board and each Regional Water Quality Control Board shall be the principal state agencies with primary responsibility for the coordination and control of water quality;

3. The California Legislature has declared that the people of the State have a primary interest in the development of facilities to reclaim water containing waste to supplement existing surface and underground water supplies;

4. The California Legislature has declared that the State shall undertake all possible steps to encourage the development of water reclamation facilities so that reclaimed water may be made available to help meet the growing water requirements of the State;

5. The Board has reviewed the document entitled "Policy and Action Plan for Water Reclamation in California", dated December 1976. This document recommends a variety of actions to encourage the development of water reclamation facilities and the use of reclaimed water. Some of these actions require direct implementation by the Board; others require implementation by the Executive Officer and the Regional Boards. In addition, this document recognizes that action by many other state, local, and federal agencies and the California State Legislature would also encourage construction of water reclamation facilities and the use of reclaimed water. Accordingly, the Board recommends for its consideration a number of actions intended to coordinate with the program of this Board;

6. The Board must concentrate its efforts to encourage and promote reclamation in water-short areas of the State where reclaimed water can supplement or replace other water supplies without interfering with water rights or instream beneficial uses or placing an unreasonable burden on present water supply systems; and

7. In order to coordinate the development of reclamation potential in California, the Board must develop a data collection, research, planning, and implementation program for water reclamation and reclaimed water uses.

THEREFORE, BE IT RESOLVED:

1. That the State Board adopt the following Principles:

   I. The State Board and the Regional Boards shall encourage, and consider or recommend for funding, water reclamation projects which meet Condition 1, 2, or 3 below and which do not adversely impact vested water rights or unreasonably impair instream beneficial uses or place an unreasonable burden on present water supply systems;

      (1) Beneficial use will be made of wastewaters that would otherwise be discharged to marine or brackish receiving waters or evaporation ponds,

      (2) Reclaimed water will replace or supplement the use of fresh water or better quality water,

      (3) Reclaimed water will be used to preserve, restore, or enhance instream beneficial uses which include, but are not limited to, fish, wildlife, recreation and esthetics associated with any surface water or wetlands.

   II. The State Board and the Regional Boards shall (1) encourage reclamation and reuse of water in water-short areas of the State, (2) encourage water conservation measures which further extend the water resources of the State, and (3) encourage other agencies, in particular the Department of Water Resources, to assist in implementing this policy.

   III. The State Board and the Regional Boards recognize the need to protect the public health including potential vector problems and the environment in the implementation of reclamation projects.

   IV. In implementing the foregoing Principles, the State Board or the Regional Boards, as the case may be, shall take appropriate actions, recommend legislation, and recommend actions by other agencies in the areas of (1) planning, (2) project funding, (3) water rights, (4) regulation and enforcement, (5) research and demonstration, and (6) public involvement and information.

2. That, in order to implement the foregoing Principles, the State Board:

(a) Approves Planning Program Guidance Memorandum No. 9, "PLANNING FOR WASTEWATER RECLAMATION",

(b) Adopts amendments and additions to Title 23, California Administrative Code Sections 654.4, 761, 764.9, 783, 2101, 2102, 2107, 2109, 2109.1, 2109.2, 2119, 2121, 2133(b)(2), and 2133(b)(3),

(c) Approves Grants Management Memorandum No. 9.01, "WASTEWATER RECLAMATION",

(d) Approves the Division of Planning and Research, Procedures and Criteria for the Selection of Wastewater Reclamation Research and Demonstration Projects,

(e) Approves "GUIDELINES FOR REGULATION OF WATER RECLAMATION",

(f) Approves the Plan of Action contained in Part III of the document identified in Finding Five above,

(g) Directs the Executive Officer to establish an Interagency Water Reclamation Policy Advisory Committee. Such Committee shall examine trends, analyze implementation problems, and report annually to the Board the results of the implementation of this policy, and

(h) Authorizes the Chairperson of the Board and directs the Executive Officer to implement the foregoing Principles and the Plan of Action contained in Part III of the document identified in Finding Five above, as appropriate.

3. That not later than July 1, 1978, the Board shall review this policy and actions taken to implement it, along with the report prepared by the Interagency Water Reclamation Policy Advisory Committee, to determine whether modifications to this policy are appropriate to more effectively encourage water reclamation in California.

4. That the Chairperson of the Board shall transmit to the California Legislature a complete copy of the "Policy and Action Plan for Water Reclamation in California".

CERTIFICATION

The undersigned, Executive Officer of the State Water Resources Control Board, does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a special meeting of the State Water Resources Control Board held on January 6, 1977.

Dated: JAN 6 1977

Bill B. Dendy

Bill B. Dendy
Executive Officer

Appendix E

GCWD Consumer Confidence Report for Calendar Year 2008

Greenfield County Water District
551 Taft Highway
Bakersfield, California 93307
Phone (661) 831-0989

July 1, 2009

CONSUMER CONFIDENCE REPORT
FOR CALENDAR YEAR 2008

Este informe contiene informacion muy importante sobre su agua beber.
Traduzealo o hable con alguien que lo entienda bien.

The California Domestic Water Quality and Monitoring Regulations, (Title 22, California Code of Regulations), adopted January, 1989, include a requirement on Public Information, Section 64463.1. This section requires that each community water system distribute to each customer an annual report on the quality of water served.

This years report will show only those items for which constituents were detected The State allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of our data, though representative, are more than on year old.

Drinking water standards are established both by the California Department of Health Services and by the U.S. Environmental Protection Agency, (EPA), in compliance with the Safe Drinking Water Act.

The standards they maintain fall into two categories:

1. Primary Standards relate specifically to the health of the community as it might be affected by the water supply. Mandatory maximum contaminant levels are established for those constituents as well.

2. Secondary Standards relate to aesthetic qualities of the water including taste, odor, and some metals. In California, maximum contaminant levels are established for specific constituents.

Greenfield County Water District's water supply consistently meets all EPA and California Department of Health Services primary standards.

Fear for your health should not be a reason to purchase a home filtration system or buy bottled water. The tap water in the District is monitored on a routine schedule in order to make sure your water is safe to drink. Personal taste, not a concern over safety of tap water quality should be the only reason to consider bottled water or a water filter. If in doubt about purchasing the above mentioned products, please call the District Office for additional information.

2008 CONSUMER CONFIDENCE REPORT

Water System Name	Report Date
Greenfield County Water District	July 1, 2009

We test the drinking water quality for many constituents as required by State and Federal Regulations. This report shows the results of our monitoring for the period of January 1 - December 31, 2008

Type of water source(s) in use: Five water wells.

Drinking Water Source Assessment Information: Completed, April 2001

Time and place of regularly scheduled board meetings for public participation: Second Monday of the month, 7:00 P.M., District Office, 551 Taft Highway, Bakersfield, California 93307. For more information call Mel Johnson @ (661) 831-0989.

TERMS USED IN THIS REPORT

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. Primary MCL's are set as close to the PHG's (or MCLG's) as is economically and technologically feasible. Secondary MCL's are set to protect the odor, taste, and appearance of drinking water.
Primary Drinking Water Standards (PDWS): MCL's for contaminants that affect health along with their monitoring and reporting requirements and water treatment requirements
Secondary Drinking Water Standards (SDWS): MCL's for contaminants that affect taste, odor, or appearance of the drinking water. Contaminants with SDWS's do not affect the health at the MDL levels.
ND: Not detectable at testing limit.
ppm: Parts per million or milligrams per liter (mg/L).
Public Health Goal (PHG): The level of a contaminant in drinking water below which there is no known or expected risk to health. PHG's are set by the California Environmental Protection Agency.
Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLG's are set by the U.S. Environmental Protection Agency (USEPA).
Regulatory Action Level Goal (AL): The concentration of a contaminant, which, if exceeded, triggers treatment or other requirements which a water system must follow.
ppb: Parts per billion or micrograms per liter (ug/L).
ppt: Parts per trillion or nanograms per liter (ng/L).
pci/L: Picocuries per liter (a measure of radiation).
Maximum Residual Disinfectant Level Goal (MRDLG): The level of a disinfectant added for water treatment below which there is no known or expected risk to health.
Maximum Residual Disinfectant Level (MRDL): The level of a disinfectant added for water treatment that may not be exceeded at the consumer's tap.

The sources of drinking water (both tap and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:
Microbial contaminants, such as viruses and bacteria, may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife. Inorganic contaminants, such as salts and metals, that can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming

Water softeners: The well water provided by the District is considered to be soft (see report). Softening is almost entirely a matter of personal aesthetic preference. If a water softener is installed, it is generally used to reduce the amount of soap for washing laundry. Persons on low sodium diets SHOULD NOT drink water softened with the typical ION exchange home-type softener since these drastically raise the sodium content of the water. For additional information call the District Office

While your drinking water meets the current standard for arsenic, it does contain low levels of arsenic. The standard balances the current understanding of arsenic's possible health effects against the cost of removing arsenic from drinking water. The California Department of Health Services continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and other circulatory problems. Some people who drink water containing arsenic in excess of the MCL over many years, could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.

A source water assessment was conducted for the water supply wells of Greenfield County Water District water system in April 2001. The sources are considered most vulnerable to the following activities associated with contaminants detected in the water supply: septic systems, fertillizer-pesticide/herbicide application, storm water detention facilities, auto repair shops, parks, and junk/scrap/salvage yards.

The sources are considered most vulnerable to the following activities not associated with any detected contaminants: automobile-gas stations, historic gas stations, and transportation corridors-freeway/state highways.

A copy of the completed assessment may be viewed at the office of Greenfield County Water District, 551 Taft Highway, Bakersfield, California 93307.

You may request a summary of the assessment be sent to you by contacting Mr. Mel Johnson, General Manager at (661) 831-0989.

Table 1 - Sampling Results Showing the Detection of Coliform Bacteria

Microbiological Contaminants (to be completed only if there was a detection of bacteria)	Highest No. of Detections	No. of Months in Violation	MCL	MCLG	Typical Source of Bacteria
Total Coliform Bacteria	(In a mo.) 0	0	More than 1 sample in a month with a detection	0	Naturally present in the environment
Fecal Coliform or E. Coli	(In the year) 0	0	A routine sample and a repeat sample detect total coli form and either sample also detects fecal coli form or E. Coli.	0	Human and animal fecal waste

Table 2 - Sampling Results Showing the Detection of Lead and Copper

Lead & Copper (to be completed only if there was a detection of lead or copper in the last sample set)	No. of Samples Collected	90th Percentile Level Detected	No. of Sites Exceeding AL	AL	MCLG	Typical Source of Contaminant
Lead mg/L 08/13/08	20	.011	0	.015	2	Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits
Copper mg/L 08/13/08	20	<.05	0	1.3	0.17	Internal corrosion of household water plumbing systems; erosion of natural deposits; leaching from wood preservatives.

**We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not our drinking water meets health standards. During the 2008 year we did not monitor or test for all required Title 22 constituents and therefore cannot be sure of the quality of our drinking water during that time. Sampling was conducted in February 2009 for the missed monitoring.*

Table 3 - Sampling Results for Sodium and Hardness

Chemical or Constituent (and reporting units)	Sample Date	Average Level Detected	Range of Detections	MCL	PHG (MCLG)	Typical Source of Contaminant
Sodium (ppm)	11/29/05	41	31 - 52	None	None	Generally found in ground and surface water.
Hardness (ppm)	11/29/05	130	58.9 - 188	None	None	Generally found in ground and surface water.

* Any violation of an MCL or AL is asterisked. Additional information regarding the violation is provided on the next page.

Table 4 - Detection of Contaminants With A Primary Drinking Water Standard

Chemical or Constituent (and reporting units)	Sample Date	Average Level Detected	Range of Detections	MCL	PHG (MCLG)	Typical Source of Contaminant
Aluminum (ppb)	11 29 05	27.5	0 - 110	1000	N A	Erosion of natural deposits; residual from some surface water treatment processes.
Arsenic (ppb)	06 14 05	3.3	2 - 7	5	N A	Erosion of natural deposits; runoff from orchards, glass & electronics production wastes.
Barium (ppb)	11 29 05	100.5	53.7 - 138	1000	2000	Discharge of oil drilling wastes & from metal refineries; erosion of natural deposits.
Chromium (ppb)	11 29 05	3 - 25	1 - 5	50	2.5	Discharge from steel and pulp mills and chrome plating; erosion of natural deposits
Fluoride (ppm)	11 29 05	0.2	0.2	2	1	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Nitrate (ppm)	08 08 07	13.46	3.3 - 20	45	N A	Runoff and leaching from fertilizer use; leaching from septic tanks sewage; erosion of natural deposits
Selenium (ppb)	11 29 05	2	0 - 4	50	50	Discharge from petroleum, glass and metal refineries; erosion of natural deposits; discharge from mines & chemical manufacturers; runoff from livestock lots (feed additive)
Gross Alpha Activity (pCi L)	08 13 07	6.21	1.44 - 15.8	15	0	Erosion of natural deposits

Table 5 - Detection of Contaminants With A Secondary Drinking Water Standard

Chemical or Constituent (reporting units)	Sample Date	Average Level Detected	Range of Detections	MCL	PHG (MCLG)	Typical Source of Contaminant
Aluminum (ppb)	11 29 05	25	0 - 100	200	N A	Erosion of natural deposits; residual from some surface water treatment processes
Iron (ppb)	11 29 05	50	0 - 100	300	N A	Leaching from natural deposits; industrial wastes.
Total Dissolved Solids (ppm)	11 29 05	307.5	170 - 400	1000	N A	Runoff leaching from natural deposits
Turbidity (units)	11 29 05	0.52	0 - 1.6	5 units	N A	Soil run-off.
Specific Conductance (micromhos)	11 29 05	446	262 - 587	1600	N A	Substances that form ions when in water; seawater influence
Chloride (ppm)	11 29 05	24.75	9.5	500	N A	Runoff leaching from natural deposits; seawater influence
Sulfate (ppm)	11 29 05	36.5	17 - 56	500	N A	Runoff leaching from natural deposits; industrial wastes.

* Any violation of any MCL or AL is asterisked. Additional information regarding the violation is provided on the next page

Table 6 - Disinfection Byproducts

	Sample Date	MCL	PHG	Violation	Range	Highest Annual Average	Typical Source of Contaminant
TTHM Total Tri-Holomathanes	08/2008	80.0	N/A	No	0 - 80	1.4 ppb	By-products of drinking water chlorination.
Total Haloacetic Acids (HAA5)	08/2008	60.0	N/A	No	0 - 60	1.8 ppb	By-products of drinking water chlorination.

Disinfectant	Sample Date	MRDL	MRDL6	Violation	Range	Average	Typical Source of Contaminant
Chlorine	2008	4.00	4.00	No	0.2 - 1.1	0.6	Drinking water disinfectant added for treatment.

Additional General Information on Drinking Water

All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (800) 426-47913.

Key to Abbreviations

NS	No Standard.
NTR	No Test Required this period.
NTU	Nephelometric Turbidity Units. This is a measure of the suspended material in water.
Mg/L	Milligrams per liter (parts per million).
Umhos/cm	Micromhos per centimeter.
<=	Less than or equal to.
<	Less than.
*	Proposed standard.
(a)	For averaging purposed, ND is considered as zero.
(b)	Overall ranges are based on all samples tested in the same year.
(c)	State level is dependent upon the annual average temperature.
(d)	Violation of Title 22, Chapter 15, Section 64426.1 (b) (3 or 4)

Appendix F

GCWD Purchase of Canal Seepage, Years 2008 & 2009

KERN DELTA WATER DISTRICT

501 TAFT HIGHWAY
BAKERSFIELD, CALIFORNIA 93307-4267
Telephone (661) 834-4656 Fax (661) 836-1705

INVOICE

Greenfield County Water District
c/o Mel Johnson
551 Taft Highway
Bakersfield, CA 93307

Invoice : #201016
Amount: $144,653.77
Date: January 26, 2010

Date	Description	Amount
1/26/10	2008 Greenfield Co. Water District Equalization Charge 4,276.41 acres X $10.65ac	45,543.77
	2008 Greenfield Co. Water District Seepage Fee Charge 2,915 acf X $34.00 acf	99,110.00
	A spreadsheet as been attached to explain how the District arrived at the above number. If you have any questions please contact Robert Lusich at the above mentioned telephone number.	
	Prepared by: Lynn	
	TOTAL AMOUNT DUE	**$144,653.77**

To avoid penalties and interest of 1.5% payments must be received in the District Office within 30 days of the date of this invoice. **Page 1 of 1**

Kern Delta Water District
Greenfield County Water District Billing

	July	August	September	October	November	December	Total
Kern Island	144	142	161	183	192	29	851
Central	119	89	71	99	87	16	481
Total Ac. Ft. Utility Used	263	231	232	282	279	45	1332
Utility Water Tolls							
Kern Island @ $34.00 per Ac.Ft.	$4,896.00	$4,828.00	$5,474.00	$6,222.00	$6,528.00	$986.00	$28,934.00
Central @ $34.00 per Ac.Ft.	$4,046.00	$3,026.00	$2,414.00	$3,366.00	$2,958.00	$544.00	$16,354.00
Total Utility AcFt. Billed	$8,942.00	$7,854.00	$7,888.00	$9,588.00	$9,486.00	$1,530.00	$45,288.00

Kern Island - July 2008

	Inflow	Outflow	Deliv	Wells	Total Seepage	
	+	-	-	+	=	
1	153	151			2	
2	176	172			4	
3	163	161			2	
4	98	84	10		4	
5	113	95	12		6	
6	131	114	12		5	
7	142	125	15		2	
8	146	136	5		5	
9	155	144	4		7	
10	195	187			8	
11	231	212	13		6	
12	228	191	32		5	
13	235	204	28		3	
14	238	210	24		4	
15	237	227	5		5	
16	191	182	7		2	
17	176	168	5		3	
18	186	176	6		4	
19	155	150			5	
20	119	112			7	
21	136	129			7	
22	214	202	6		6	
23	189	170	14		5	
24	108	86	17		5	
25	107	88	11		8	
26	188	180			8	
27	141	134			7	
28	96	83	9		4	
29	94	82	10		2	
30	86	75	9		2	
31	181	168	11		2	
	5008	4598	265	0	145	CFS

1/2 CFS = 72.5
Ac. Ft.= 144
At $34.00 per Ac. Ft.= $4,896.00

Central - July 2008

	Inflow	Outflow	AE Turnout	Deliv.	Wells	Total Seepage	
	+	-	-	-	+	=	
1	19	24		13	22	4	
2	14	28		4	23	5	
3	13	28		6	26	5	
4	32	36		13	22	5	
5	31	33		17	24	5	
6	51	54		16	24	5	
7	32	37		14	24	5	
8	26	32		14	25	5	
9	33	42		6	18	3	
10	32	43		2	18	5	
11	41	39		15	18	5	
12	57	58		13	17	3	
13	41	36		20	17	2	
14	44	49		10	19	4	
15	54	41		20	9	2	
16	61	47		20	10	4	
17	75	59		14	3	5	
18	53	47		5	3	4	
19	40	30		10	3	3	
20	37	30		14	9	2	
21	33	31		9	9	2	
22	48	47		8	11	4	
23	41	44		3	9	3	
24	44	42		7	9	4	
25	43	43		6	10	4	
26	52	48		14	15	5	
27	57	58		8	13	4	
28	30	24		16	13	3	
29	48	49		14	19	4	
30	31	35		12	19	3	
31	29	28		18	20	3	
	1242	1242	0	361	481	120	CFS

1/2 CFS = 60
Ac. Ft.= 119
At $34.00 per Ac Ft.= $4,046 00

Kern Island - August 2008

	Inflow	Outflow	Deliv.	Wells	Total Seepage	
	+	-	-	+	=	
1	178	164	12		2	
2	173	156	13		4	
3	166	161			5	
4	204	196			8	
5	197	189			8	
6	173	166			7	
7	190	185			5	
8	208	195	7		6	
9	199	180	14		5	
10	194	173	17		4	
11	212	192	14		6	
12	177	170			7	
13	149	126	15		8	
14	188	162	19		7	
15	151	110	36		5	
16	122	99	20		3	
17	120	116			4	
18	120	108	10		2	
19	133	131			2	
20	128	120	4		4	
21	162	149	9		4	
22	158	142	13		3	
23	147	130	13		4	
24	122	110	7		5	
25	101	84	13		4	
26	141	129	8		4	
27	123	119			4	
28	126	112	9		5	
29	95	77	15		3	
30	60	47	10		3	
31	66	56	8		2	
	4683	4254	286	0	143	CFS

1/2 CFS = 71.5
Ac. Ft.= 142
At $34.00 per Ac. Ft.= $4,828.00

Central - August 2009

	Inflow	Outflow	AE Turnout	Deliv.	Wells	Total Seepage	
	+	-	-	-	+	=	
1	57	34	21	17	19	4	
2	38	27		26	20	5	
3	29	33		14	21	3	
4	36	18		36	20	2	
5	34	40		12	21	3	
6	30	33	21	3	29	2	
7	44	30	21	14	22	1	
8	42	24	21	15	19	1	
9	42	22	21	17	20	2	
10	42	42		17	20	3	
11	40	44		9	17	4	
12	54	31	22	16	20	5	
13	61	23	20	34	20	4	
14	50	22	20	25	20	3	
15	39	35	5	19	22	2	
16	24	30		14	24	4	
17	11	8		21	20	2	
18	15	31			21	5	
19	18	40		4	30	4	
20	24	11		33	23	3	
21	28	38		13	25	2	
22	50	18	19	27	16	2	
23	66	41	20	15	14	4	
24	37	13	20	12	9	1	
25	40	20	18	9	8	1	
26	44	21	20	16	16	3	
27	44	22	20	15	18	5	
28	42	18	20	19	18	3	
29	50	27	23	16	17	1	
30	45	13	20	18	7	1	
31	35	25		10	5	5	
	1211	834	352	516	581	90	CFS

1/2 CFS = 45
Ac. Ft.= 89
At $34.00 per Ac. Ft.= $3,026.00

Kern Island - September 2008

	Inflow	Outflow	Deliv	Wells	Total Seepage	
	+	-	-	+	=	
1	71	55	12		4	
2	72	62	7		3	
3	76	67	4		5	
4	73	65	4		4	
5	79	44	29		6	
6	77	69	2		6	
7	74	65	2		7	
8	77	65	6		6	
9	82	70	6		6	
10	87	67	12		8	
11	73	57	12		4	
12	68	49	15		4	
13	67	46	15		6	
14	36	25	6		5	
15	49	39	4		6	
16	72	59	10		3	
17	84	73	6		5	
18	92	79	6		7	
19	98	89			9	
20	93	87			6	
21	63	50	7		6	
22	57	46	9		2	
23	80	58	18		4	
24	64	39	19	18	4	
25	69	61	18	17	7	
26	63	60	13	17	7	
27	60	53	18	16	5	
28	50	48	18	22	6	
29	42	42	8	14	6	
30	41	43	11	18	5	
31						
	2089	1752	297	122	162	CFS

1/2 CFS = 81
Ac. Ft.= 161
At $34.00 per Ac. Ft.= $5,474.00

Central - September 2008

	Inflow	Outflow	AE Turnout	Deliv	Wells	Total Seepage	
	+	-	-	-	+	=	
1	37	14	20	9	8	2	
2	35	16	19	5	8	3	
3	37	10	19	24	17	1	
4	35	16	20	16	19	2	
5	36	43			11	4	
6	25	12		20	9	2	
7	25	14		15	8	4	
8	27	22		8	7	4	
9	31	24		18	14	3	
10	50	21	21	21	14	1	
11	32	17		29	15	1	
12	34	18		30	15	1	
13	35	21		23	11	2	
14	36	39			7	4	
15	40	24		26	12	2	
16	38	28		18	11	3	
17	29	32		5	12	4	
18	33	36			5	2	
19	31	32			5	4	
20	36	34		5	5	2	
21	28	32			5	1	
22	20	22			5	3	
23	18	16		6	5	1	
24	14	13		2	5	4	
25	14	14		3	5	2	
26	28	24		5	5	4	
27	26	15	5	9	5	2	
28	27	22		9	5	1	
29	29	25		18	16	2	
30	26	24		10	9	1	
31							
	912	680	104	334	278	72	CFS

1/2 CFS = 36
Ac. Ft.= 71
At $34.00 per Ac. Ft.= $2,414.00

Kern Island - October 2008

	Inflow	Outflow	Deliv	Wells	Total Seepage	
	+	-	-	+	=	
1	39	40	11	17	5	
2	50	55	4	17	8	
3	30	37	4	18	7	
4	34	42	4	18	6	
5	17	30	2	17	2	
6	18	32	2	18	2	
7	20	24		9	5	
8	15	16		8	7	
9	14	16		8	6	
10	26	28		7	5	
11	18	19		8	7	
12	21	24		8	5	
13	8	11		9	6	
14	14	15		8	7	
15	11	11	2	8	6	
16	5	5		8	8	
17	7	8		8	7	
18	8	11		9	6	
19	7	1			6	
20	15	10			5	
21	34	25	19	16	6	
22	20	16	15	17	6	
23	31	27	18	17	3	
24	30	25	18	17	4	
25	29	24	17	16	4	
26	35	37	9	17	6	
27	40	41	8	17	8	
28	80	78	8	15	9	
29	60	59	9	17	9	
30	37	39	9	19	8	
31	35	35	9	15	6	
	808	841	168	386	185	CFS

1/2 CFS = 92 5
Ac. Ft.= 183
At $34.00 per Ac. Ft.= $6,222.00

Central - October 2009

	Inflow	Outflow	AE Turnout	Deliv	Wells	Total Seepage	
	+	-	-	-	+	=	
1	28	19		16	8	1	
2	28	4		31	8	1	
3	28	16		16	8	4	
4	30	24		12	8	2	
5	21	19		5	7	4	
6	32	32		4	9	5	
7	28	25		8	9	4	
8	32	26		9	5	2	
9	12	13		3	5	1	
10	13	14		1	5	3	
11	23	23		1	6	5	
12	18	17		1	4	4	
13	32	23		11	4	2	
14	26	27			6	5	
15	22	24		4	10	4	
16	22	21		8	12	5	
17	23	22		10	13	4	
18	25	15		15	7	2	
19	26	15		15	6	2	
20	21	19		6	7	3	
21	15	14		5	5	1	
22	16	17		4	7	2	
23	16	13		8	9	4	
24	15	12		4	5	4	
25	12	11		1	5	5	
26	12	12			5	5	
27	14	17		1	7	3	
28	20	21		5	8	2	
29	21	18		8	7	2	
30	21	22		3	8	4	
31	16	14		5	8	5	
	668	569	0	220	221	100	CFS

1/2 CFS = 50
Ac Ft = 99
At $34.00 per Ac. Ft.= $3,366.00

Kern Island - November 2008

	Inflow	Outflow	Deliv.	Wells	Total Seepage	
	+	-	-	+	=	
1	17	21		7	3	
2	22	26		8	4	
3	20	31		17	6	
4	11	21		17	7	
5	20	31		17	6	
6	33	38	9	17	3	
7	35	38	8	17	6	
8	36	47		18	7	
9	35	44		16	7	
10	34	45		17	6	
11	32	36	8	17	5	
12	28	31	9	17	5	
13	27	24	13	17	7	
14	9		8	8	9	
15	10	11		9	8	
16	11	2	9	9	9	
17	25	22		7	10	
18	15	14		8	9	
19	37	35		8	10	
20	34	33		8	9	
21	31	28	4	9	8	
22	31	27	4	9	9	
23	40	42		8	6	
24	47	51		7	3	
25	51	41	16	9	3	
26	30	33		8	5	
27	12	6	9	8	5	
28	49	52		10	7	
29	80	81		8	7	
30	82	84		7	5	
31						
	944	995	97	342	194	CFS

1/2 CFS = 97
Ac. Ft.= 192
At $34.00 per Ac. Ft.= $6,528.00

Central - November 2008

	Inflow	Outflow	AE Turnout	Deliv.	Wells	Total Seepage	
	+	-	-	-	+	=	
1	11	6		6	6	5	
2	16	12		4	5	5	
3	8	5		6	8	5	
4	14	13		1	5	5	
5	14	14		1	5	4	
6	8	8		1	5	4	
7	5	4		4	5	2	
8	2	3		0	5	4	
9	2	5			5	2	
10	2	6			5	1	
11	3	6			5	2	
12	2	8			7	1	
13	3	6			5	2	
14	6	10			5	1	
15	6	8			5	3	
16	5	6			5	4	
17	5	2		5	5	3	
18	5	8		1	8	4	
19	1	0		5	5	1	
20	20	17		5	5	3	
21	20	17		7	5	1	
22	22	13		13	5	1	
23	23	17		8	5	3	
24	26	24		3	5	4	
25	25	24			4	5	
26	15	16			4	3	
27	9	12			5	2	
28	10	11			5	4	
29	10	13			4	1	
30	9	12			6	3	
31							
	307	306	0	70	157	88	CFS

1/2 CFS = 44
Ac Ft.= 87
At $34.00 per Ac Ft = $2,958.00

Kern Island - December 2008

	Inflow	Outflow	Deliv.	Wells	Total Seepage	
	+	-	-	+	=	
1	68	64			4	
2	69	63			6	
3	92	77	11		4	
4	88	81			7	
5	107	90	13		4	
6	117	115			2	
7	115	113			2	
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
	656	603	24	0	29	CFS

1/2 CFS = 14.5
Ac. Ft.= 29
At $34.00 per Ac. Ft.= $986.00

Central - December 2009

	Inflow	Outflow	AE Turnout	Deliv	Wells	Total Seepage	
	+	-	-	-	+	=	
1	8	12			6	2	
2	10	9				1	
3	15	11		3		1	
4	17	16				1	
5	17	14				3	
6	15	12				3	
7	18	15				3	
8	20	18				2	
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
	120	107	0	3	6	16	CFS

1/2 CFS = 8
Ac. Ft.= 16
At $34.00 per Ac. Ft.= $544.00

ALL APN IN MAP AREA:

Attachment	Description	# Pages	Acres
Attachment 'A'	IN BOTH DISTRICTS	1	97.26
Attachment 'B'	KD PARCELS	4	2356.29 Ac
	(~~EXCLUDES~~ INCLUDES. PINK NOT PASS		
Attachment 'C'	GCWD PARCELS	62	1920.12 Ac
			4270.9
Attachment 'D'	IN NEITHER DISTRICT IN SOI.	2	84.42

[redacted]

JOB NO. _____ PHASE NO. _____ SHEET NO.

DESCRIPTION BASE DATA

BY: _____ DATE: _____

CK BY: _____ DATE: _____

1 OF 1

KERN DELTA WATER DISTRICT

501 TAFT HIGHWAY
BAKERSFIELD, CALIFORNIA 93307-4267
Telephone (661) 834-4656 Fax (661) 836-1705

INVOICE

Greenfield County Water District
c/o Mel Johnson
551 Taft Highway
Bakersfield, CA 93307

Invoice : #201017
Amount: $148,869.77
Date: January 26, 2010

Date	Description	Amount
1/26/10	2009 Greenfield Co. Water District Equalization Charge 4,276.41 acres X $10.65ac	45,543.77
	2009 Greenfield Co. Water District Seepage Fee Charge 3,039 acf X $34.00 acf	103,326.00
	A spreadsheet as been attached to explain how the District arrived at the above number. If you have any questions please contact Robert Lusich at the above mentioned telephone number.	
	Prepared by: Lynn	
	TOTAL AMOUNT DUE	**$148,869.77**

To avoid penalies and interest of 1.5% payments must be received in the District Office within 30 days of the date of this invoice.

Perry L. Hyatt Jr.
Special Projects Technician

Kern Delta Water District
Greenfield County Water District Billing

2008	January*	February*	March*	April*	May*	June*	July	August	September	October	November	December	Total
Kern Island	155	186	158	208	184	164	144	142	161	183	192	29	1906
Central	74	74	69	110	101	100	119	89	71	99	87	16	1009
Total Ac. Ft. Utility Used	229	260	227	318	285	264	263	231	232	282	279	45	2915
Utility Water Tolls													
Kern Island @ $34.00 per Ac.Ft.	$5,270.00	$6,324.00	$5,372.00	$7,072.00	$6,256.00	$5,576.00	$4,896.00	$4,828.00	$5,474.00	$6,222.00	$6,528.00	$986.00	$64,804.00
Central @ $34.00 per Ac.Ft.	$2,516.00	$2,516.00	$2,346.00	$3,740.00	$3,434.00	$3,400.00	$4,046.00	$3,026.00	$2,414.00	$3,366.00	$2,958.00	$544.00	$34,306.00
Total Utility AcFt. Billed	$7,786.00	$8,840.00	$7,718.00	$10,812.00	$9,690.00	$8,976.00	$8,942.00	$7,854.00	$7,888.00	$9,588.00	$9,486.00	$1,530.00	$99,110.00

2009	January	February	March	April	May	June	July	August	September	October	November	December	Total
Kern Island	155	186	158	208	184	164	204	241	185	192	140	40	2057
Central	74	74	69	110	101	100	82	66	94	103	86	23	982
Total Ac. Ft. Utility Used	229	260	227	318	285	264	286	307	279	295	226	63	3039
Utility Water Tolls													
Kern Island @ $34.00 per Ac.Ft.	5,270.00	$6,324.00	$5,372.00	$7,072.00	$6,256.00	$5,576.00	$6,936.00	$8,194.00	$6,290.00	$6,528.00	$4,760.00	$1,360.00	$69,938.00
Central @ $34.00 per Ac.Ft.	2,516.00	$2,516.00	$2,346.00	$3,740.00	$3,434.00	$3,400.00	$2,788.00	$2,244.00	$3,196.00	$3,502.00	$2,924.00	$782.00	$33,388.00
Total Utility AcFt. Billed	$7,786.00	$8,840.00	$7,718.00	$10,812.00	$9,690.00	$8,976.00	$9,724.00	$10,438.00	$9,486.00	$10,030.00	$7,684.00	$2,142.00	$103,326.00

* No recorded Measurements in that Month. Values Estimated

Combined Total
$202,436.00

Kern Island - January 2009

	Inflow	Outflow	Deliv	Wells	Total Seepage	
	+	-	-	+	=	
1	0	0			0	
2	0	0			0	
3	0	0			0	
4	5	0			5	
5	13	7			6	
6	10	4			6	
7	38	33			5	
8	50	45			5	
9	69	63			6	
10	69	62			7	
11	78	72			6	
12	70	65			5	
13	93	89			4	
14	131	127			4	
15	119	116			3	
16	118	114			4	
17	94	91			3	
18	116	111			5	
19	108	102	1		5	
20	108	100	4		4	
21	96	92			4	
22	94	89			5	
23	92	84	2		6	
24	63	83		25	5	
25	60	80		25	5	
26	58	76		25	7	
27	50	61		19	8	
28	66	82		23	7	
29	91	103		20	8	
30	44	60		25	9	
31	48	61	2	24	9	
	2051	2072	9	186	156	CFS

1/2 CFS = 78
Ac Ft.= 155
At $34 00 per Ac Ft = $5,270 00

Central - January 2009

	Inflow	Outflow	AE Turnout	Deliv	Wells	Total Seepage	
	+	-	-	-	+	=	
1	0	0				0	
2	0	0				0	
3	6	2				4	
4	7	4				3	
5	13	9				4	
6	4	1				3	
7	4	2				2	
8	5	0		3		2	
9	5	2				3	
10	19	17				2	
11	11	9				2	
12	8	1		5		2	
13	9	3		4		2	
14	10	7				3	
15	12	9				3	
16	13	10				3	
17	15	13				2	
18	12	10				2	
19	19	16				3	
20	24	14		7		3	
21	19	10		7		2	
22	18	15		1		2	
23	15	12				3	
24	17	13				4	
25	16	13				3	
26	14	11				3	
27	29	26		1		2	
28	29	26				3	
29	33	30				3	
30	37	33		3		1	
31	32	25		6		1	
	455	343	0	37	0	75	CFS

1/2 CFS = 37 5
Ac Ft = 74
At $34 00 per Ac Ft = $2,516 00

Kern Delta Water District
Greenfield County Water District Billing

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Kern Island	155	186	158	208	184	164	204	241	185	192	140	40	2057
Central	74	74	69	110	101	100	82	66	94	103	86	23	982
Total Ac. Ft. Utility Used	229	260	227	318	285	264	286	307	279	295	226	63	3039
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Kern Island @ $34.00 per Ac.Ft.	$5,270.00	$6,324.00	$5,372.00	$7,072.00	$6,256.00	$5,576.00	$6,936.00	$8,194.00	$6,290.00	$6,528.00	$4,760.00	$1,360.00	$69,938.00
Central @ $34.00 per Ac.Ft.	$2,516.00	$2,516.00	$2,346.00	$3,740.00	$3,434.00	$3,400.00	$2,788.00	$2,244.00	$3,196.00	$3,502.00	$2,924.00	$782.00	$33,388.00
Total Utility AcFt. Billed	$7,786.00	$8,840.00	$7,718.00	$10,812.00	$9,690.00	$8,976.00	$9,724.00	$10,438.00	$9,486.00	$10,030.00	$7,684.00	$2,142.00	$103,326.00

	Inflow	Outflow	Deliv.	Wells	Total Seepage
	+	-	-	+	=
1	49	64		24	9
2	77	76	16	24	9
3	82	86	11	24	9
4	78	75	19	25	9
5	64	68	12	24	8
6	66	81		24	9
7	41	57		25	9
8	63	79		24	8
9	67	83		23	7
10	20	35		24	9
11	25	41		24	8
12	50	56	9	24	9
13	49	50	10	19	8
14	7	0	0		7
15	4	0			4
16	4	0			4
17	2	0			2
18	22	19			3
19	21	19			2
20	23	19			4
21	23	19			4
22	25	22			3
23	23	16	4		3
24	21	17			4
25	16	11			5
26	24	19			5
27	24	19			5
28	26	20			6
29	26	20			6
30	26	21			5
31	28	23			5
	1076	1115	81	308	188 CFS

1/2 CFS = 94
Ac. Ft = 186
At $34.00 per Ac Ft = $6,324.00

	Inflow	Outflow	AE Turnout	Deliv	Wells	Total Seepage
	+	-	-	-	+	=
1	35	28		3		4
2	34	31				3
3	26	17		6		3
4	30	27				3
5	12	9				3
6	16	14				2
7	16	14				2
8	15	14				1
9	15	14				1
10	12	10				2
11	9	7				2
12	4	3				1
13	4	2				2
14	2	1				1
15	1	0				1
16	4	2				2
17	17	2		13		2
18	17	7		8		2
19	6	4				2
20	12	8		2		2
21	7	3		2		2
22	8	3		3		2
23	19	3		14		2
24	16	9		4		3
25	21	4		15		2
26	24	2		20		2
27	24	6		15		3
28	30	16		10		4
29	30	16		10		4
30	28	15		8		5
31	28	17		6		5
	522	308	0	139	0	75 CFS

1/2 CFS = 37.5
Ac Ft.= 74
At $34.00 per Ac Ft = $2,516.00

	Inflow	Outflow	Deliv	Wells	Total Seepage
	+	-	-	+	=
1	86	78	25	24	7
2	81	90	9	26	8
3	85	92	9	24	8
4	81	98		25	8
5	48	65		24	7
6	45	63		24	6
7	71	60	7	0	4
8	59	71	7	24	5
9	70	66	7	9	6
10	57	53	8	9	5
11	41	27	8		6
12	42	26	8		8
13	33	14	11		8
14	67	53	31	24	7
15	56	66	6	24	8
16	67	85		24	6
17	24	39	5	24	4
18	23	36	6	24	5
19	22	37	5	24	4
20	36	40	14	24	6
21	56	53	18	23	8
22	29	45		24	8
23	39	53		23	9
24	34	50		24	8
25	30	45		24	9
26	57	72		24	9
27	60	75		24	9
28	68	83	1	24	8
29	64	74	5	23	8
30	81	91	6	24	8
31					
	1612	1800	196	594	210 CFS

1/2 CFS = 105
Ac. Ft = 208
At $34 00 per Ac. Ft = $7,072 00

Central - April 2009

	Inflow	Outflow	AE Turnout	Deliv	Wells	Total Seepage
	+	-	-	-	+	=
1	36	27		10	3	2
2	39	28		10	3	4
3	33	28		7	7	5
4	37	22		18	7	4
5	28	19		6		3
6	31	19		7		5
7	28	20		5		3
8	32	15		12		5
9	44	35		5		4
10	19	6		17	6	2
11	23	20				3
12	22	19				3
13	31	28				3
14	23	13		7		3
15	28	19		9	3	3
16	27	22		0	0	5
17	24	19		5	3	3
18	35	35		2	7	5
19	41	31		8	3	5
20	35	31		10	8	2
21	49	16	20	23	12	2
22	46	18	21	20	16	3
23	24	26		10	15	3
24	21	20		13	16	4
25	24	25		4	10	5
26	38	35		14	16	5
27	42	38		13	14	5
28	48	41		12	9	4
29	41	30		20	13	4
30	45	38		16	13	4
31						
	994	743	41	283	184	111 CFS

1/2 CFS = 55 5
Ac. Ft = 110
At $34 00 per Ac. Ft = $3,740 00

	Inflow	Outflow	Deliv	Wells	Total Seepage
	+	-	-	+	=
1	32	25			7
2	30	29	4	9	6
3	36	41		9	4
4	51	46	10	9	4
5	59	63		9	5
6	77	80		9	6
7	64	65		9	8
8	58	60		9	7
9	58	55	6	9	6
10	39	32	10	9	6
11	64	56	12	9	5
12	66	66	6	9	3
13	58	63		9	4
14	77	81		9	5
15	73	78		9	4
16	72	84		18	6
17	60	71		17	6
18	89	98		16	7
19	70	82		17	5
20	51	62		17	6
21	44	57		17	4
22	33	46		17	4
23	36	46	8	24	6
24	59	69	9	25	6
25	58	69	10	24	3
26	75	84	12	24	3
27	56	62	15	24	3
28	41	48	14	24	3
29	31	36	15	24	4
30	81	63	36	24	6
31	79	65	31	24	7
	1777	1882	198	462	159 CFS

1/2 CFS = 79 5
Ac Ft.= 158
At $34 00 per Ac Ft = $5,372 00

Central - March 2009

	Inflow	Outflow	AE Turnout	Deliv	Wells	Total Seepage
	+	-	-	-	+	=
1	24	2		20		2
2	30	15		14	1	2
3	29	15		17	4	1
4	29	16		12		1
5	32	21		8		3
6	17	15				2
7	14	12				2
8	15	12				3
9	16	9		6		1
10	16	9		6		1
11	18	16				2
12	22	4		17		1
13	20	14		5		1
14	16	11		4		1
15	19	12		5		2
16	12	11				1
17	34	18		14		2
18	40	27		10		3
19	43	22		19		2
20	34	21		12		1
21	45	31		11		3
22	39	22		15		2
23	40	23		14		3
24	25	7		16		2
25	26	9		16		1
26	35	13		20		2
27	32	14		14		4
28	34	24		6		4
29	37	15		17		5
30	36	28		3		5
31	39	20		14		5
	868	488	0	315	5	70 CFS

1/2 CFS = 35
Ac Ft = 69
At $34 00 per Ac Ft = $2,346 00

Kern Island - May 2009

	Inflow	Outflow	Deliv	Wells	Total Seepage	
	+	-	-	+	=	
1	102	119		24	7	
2	78	97		24	5	
3	45	54		14	5	
4	54	62		15	7	
5	46	65		25	6	
6	59	73		22	8	
7	50	60	6	24	8	
8	60	64	12	23	7	
9	57	65	8	23	7	
10	69	80	5	23	7	
11	53	69		24	8	
12	70	86		24	8	
13	81	94	5	25	7	
14	73	83	5	23	8	
15	70	87		23	6	
16	68	87		25	6	
17	63	78		20	5	
18	48	51	11	18	4	
19	70	77	11	22	4	
20	101	103	15	21	4	
21	101	115	5	23	4	
22	108	128		26	6	
23	110	127		22	5	
24	126	143	1	22	4	
25	120	140		25	5	
26	116	125	10	22	3	
27	84	89	12	22	5	
28	78	89	5	23	7	
29	113	124	6	24	7	
30	91	97	11	23	6	
31	97	100	12	22	7	
	2461	2831	140	696	186	CFS

1/2 CFS = 93
Ac Ft = 184
At $34.00 per Ac Ft = $6,256 00

Central - May 2009

	Inflow	Outflow	AE Turnout	Deliv	Wells	Total Seepage	
	+	-	-	-	+	=	
1	44	31		21	13	5	
2	36	38			7	5	
3	26	26		2	7	5	
4	26	26		2	7	5	
5	24	27			7	4	
6	30	30		6	10	4	
7	24	17		14	10	3	
8	21	18		9	9	3	
9	48	41		6	3	4	
10	39	38			3	4	
11	30	28		9	9	2	
12	30	35			7	2	
13	33	26		11	7	3	
14	32	29		9	7	1	
15	30	36			7	1	
16	25	20		2		3	
17	23	12		9		2	
18	28	12		13		3	
19	26	14		8		4	
20	25	20				5	
21	25	22				3	
22	27	25				2	
23	35	32				3	
24	55	34		17		4	
25	50	46				4	
26	51	34		15		2	
27	31	15		13		3	
28	28	13		12		3	
29	40	23		13		4	
30	42	29		9		4	
31	53	39		12		2	
	1037	836	0	212	113	102	CFS

1/2 CFS = 51
Ac Ft = 101
At $34 00 per Ac Ft = $3,434 00

Kern Island - June 2009

	Inflow	Outflow	Deliv	Wells	Total Seepage	
	+	-	-	+	=	
1	120	137		23	6	
2	128	145		22	5	
3	132	149		22	5	
4	144	159		22	7	
5	139	156		24	7	
6	148	165		22	5	
7	151	167		22	6	
8	153	171		23	5	
9	157	171	5	24	5	
10	160	177		21	4	
11	165	173	12	23	3	
12	218	224	14	23	3	
13	203	217	5	22	3	
14	148	166		23	5	
15	151	170		24	5	
16	154	166	5	22	5	
17	153	163	8	24	6	
18	151	155	12	23	7	
19	143	133	12	8	6	
20	105	102	3	8	8	
21	95	88	8	8	7	
22	120	104	16	7	7	
23	107	106	4	8	5	
24	59	49	13	8	5	
25	73	67	8	8	6	
26	155	140	16	8	7	
27	131	126	6	8	7	
28	118	113	7	7	5	
29	115	114	3	8	6	
30	113	113	3	7	4	
31						
	4109	4286	160	502	165	CFS

1/2 CFS = 82 5
Ac Ft = 164
At $34 00 per Ac Ft = $5,576 00

Central - June 2009

	Inflow	Outflow	AE Turnout	Deliv	Wells	Total Seepage
	+	-	-	-	+	=
1	65	44		18		3
2	70	49		17		4
3	68	50		16		2
4	63	45		21	5	2
5	65	45		23	6	3
6	66	48		20	6	4
7	69	50		21	5	3
8	70	52		22	6	2
9	65	44		25	6	2
10	65	43		29	10	3
11	63	41		35	16	3
12	72	51		32	15	4
13	64	61		12	13	4
14	53	53		10	14	4
15	60	56		13	13	4
16	48	36		18	9	3
17	48	33		20	9	4
18	49	33		22	9	3
19	60	26		32		2
20	52	32		31	13	2
21	26	23		8	9	4
22	20	22		3	9	4
23	26	26		4	9	5
24	32	28		11	11	4
25	38	29		15	9	3
26	49	34		20	9	4
27	53	38		20	9	4
28	62	47		20	10	5
29	57	64			11	4
30	44	29		25	13	3
31						
	1642	1232	0	563	254	101 CFS

1/2 CFS = 50 5
Ac Ft = 100
At $34 00 per Ac Ft = $3,400 00

Central - July 2009

	Inflow	Outflow	Deliv	Wells	Total Seepage	
	+	-	-	+	=	
1	149	149	3	7	4	
2	159	160	3	8	4	
3	163	162	3	8	6	
4	168	166	5	8	5	
5	177	169	9	7	6	
6	177	176	3	8	6	
7	198	184	15	8	7	
8	225	218	10	8	5	
9	213	201	16	8	4	
10	167	163	8	8	4	
11	117	121		8	4	
12	120	124		8	4	
13	119	119	2	7	5	
14	117	112	7	8	6	
15	89	82	7	8	8	
16	83	76	7	8	8	
17	95	88	7	8	8	
18	114	102	12	8	8	
19	154	141	14	8	7	
20	150	129	22	8	7	
21	160	151	9	8	8	
22	176	175		8	9	
23	190	188		7	9	
24	196	194		7	9	
25	170	160	9	8	9	
26	180	175	5	8	8	
27	167	149	18	7	7	
28	87	74	13	8	8	
29	93	85	7	7	8	
30	110	104	7	8	7	
31	118	110	8	8	8	
	4601	4407	229	241	206	CFS

1/2 CFS = 103
Ac Ft = 204
At $34 00 per Ac Ft = $6,936.00

	Inflow	Outflow	AE Turnout	Deliv	Wells	Total Seepage	
	+	-	-	-	+	=	
1	60	47		25	15	3	
2	58	49		24	19	4	
3	59	45		26	15	3	
4	56	44		23	15	4	
5	56	50		22	19	3	
6	67	58		25	19	3	
7	54	44		23	15	2	
8	58	49		20	15	4	
9	56	49		20	16	3	
10	53	43		19	12	3	
11	47	37		17	9	2	
12	48	43		15	11	1	
13	40	30		20	11	1	
14	35	24		20	11	2	
15	36	14		29	9	2	
16	36	30		18	15	3	
17	43	35		20	15	3	
18	46	22		31	9	2	
19	46	26		27	9	2	
20	43	36		9	6	4	
21	54	36		27	12	3	
22	57	25		42	12	2	
23	55	31		34	12	2	
24	55	55		6	9	3	
25	46	42		9	9	4	
26	59	37		29	9	2	
27	59	48		18	9	2	
28	54	43		26	17	2	
29	59	56		12	11	2	
30	57	65		4	15	3	
31	54	53		8	11	4	
	1606	1266	0	648	391	83	CFS

1/2 CFS = 41.5
Ac Ft = 82
At $34 00 per Ac Ft = $2,788.00

	Inflow	Outflow	Deliv	Wells	Total Seepage
	+	-	-	+	=
1	167	171		8	4
2	148	151		7	4
3	149	145	6	8	6
4	181	183		8	6
5	176	172	5	8	7
6	127	125	5	8	5
7	137	131	11	8	3
8	99	101		7	5
9	65	62	4	8	7
10	46	43	3	8	8
11	166	148	15	7	10
12	157	152	3	7	9
13	196	193	2	8	9
14	182	181		8	9
15	168	167		8	9
16	135	133		8	10
17	146	136	7	7	10
18	117	109	7	8	9
19	133	125	7	8	9
20	137	127	9	8	9
21	167	164		7	10
22	147	133	12	8	10
23	139	132	5	8	10
24	139	113	24	7	9
25	142	125	16	8	9
26	97	89	7	8	9
27	86	81	4	7	8
28	88	88		8	8
29	33	30	4	8	7
30	36	30	7	8	7
31	60	54	6	8	8
	3966	3794	169	240	243 CFS

1/2 CFS = 121.5
Ac. Ft = 241
At $34.00 per Ac. Ft = $8,194.00

Central - 2009

	Inflow	Outflow	AE Turnout	Deliv	Wells	Total Seepage
	+	-	-	-	+	=
1	49	46		13	13	3
2	44	20		34	12	2
3	41	41		4	6	2
4	32	33		4	6	1
5	32	33		4	6	1
6	34	38		7	13	2
7	29	31		10	15	3
8	27	26		14	15	2
9	21	19				2
10	41	19		18		4
11	48	17		27		4
12	50	18		30		2
13	51	38		10		3
14	59	37		20		2
15	44	33		9		2
16	44	33		10		1
17	44	33		10		1
18	48	29		18		1
19	55	21	20	13		1
20	54	20	20	13		1
21	44	25		17		2
22	38	17		17		4
23	37	23		11		3
24	32	21		8		3
25	25	19		4		2
26	24	13		9		2
27	26	13		12		1
28	36	25		8		3
29	44	37		4		3
30	39	22		15		2
31	51	30		19		2
	1243	830	40	392	86	67 CFS

1/2 CFS = 33.5
Ac. Ft = 66
At $34.00 per Ac. Ft = $2,244.00

[illegible] - September 2009

	Inflow +	Outflow -	Deliv -	Wells +	Total Seepage =
1	53	39	15	7	6
2	64	61	5	8	6
3	59	55	7	8	5
4	51	62	5	21	5
5	61	72	5	22	6
6	45	55	6	22	6
7	25	36	6	22	5
8	13	29		22	6
9	18	37		25	6
10	34	50	2	23	5
11	31	46	2	21	4
12	11	24	4	21	4
13	7	21	4	22	4
14	5	20	4	25	6
15	63	62	14	20	7
16	53	60	9	23	7
17	43	58		22	7
18	36	48	3	22	7
19	36	50		22	8
20	33	43	7	23	6
21	26	35	7	24	8
22	24	40	7	29	6
23	15	36	7	32	4
24	38	54	11	32	5
25	53	68	12	34	7
26	18	37	5	32	8
27	21	40	5	32	8
28	53	62	15	33	9
29	41	45	14	25	7
30	42	52	12	31	9
31					
	1072	1397	193	705	187 CFS

1/2 CFS = 93.5
Ac Ft = 185
At $34.00 per Ac Ft = $6,290.00

Central - September 2009

	Inflow +	Outflow -	AE Turnout -	Deliv -	Wells +	Total Seepage =
1	64	27	21	14		2
2	64	21	23	17		3
3	64	25	22	15		2
4	73	25	23	22		3
5	75	37	21	14		3
6	29	17	0	9	2	5
7	43	17	20	4	2	4
8	39	12	20	5		2
9	59	25	21	10		3
10	68	32	23	10		3
11	58	15	22	19		2
12	55	48		3		4
13	51	43		4		4
14	51	47				4
15	25	20		5	2	2
16	39	14	20	5	2	2
17	27	3	20	4	2	2
18	19	13	0	5	2	3
19	22	11		7		4
20	22	11		7		4
21	23	21			2	4
22	24	22			2	4
23	47	26	17	4	2	2
24	53	16	23	13	2	3
25	42	5	23	13	2	3
26	34	20		12	2	4
27	49	12	21	17	3	2
28	47	13	21	9		4
29	49	17	22	8	2	4
30	50	17	23	8	2	4
31						
	1365	632	406	263	31	95 CFS

1/2 CFS = 47.5
Ac Ft = 94
At $34.00 per Ac Ft = $3,196.00

	Inflow	Outflow	Deliv	Wells	Total Seepage
	+	-	-	+	=
1	24	41	8	33	8
2	3	20	9	33	7
3	0	24		32	8
4	0	22		31	9
5	0	25		32	7
6	0	17		25	8
7	0	18		25	7
8	0	18		25	7
9	2	16	6	25	5
10	0	14	7	25	4
11	0	7	12	24	5
12	5	20	5	25	5
13	0	11		17	6
14	0	10		17	7
15	0	8	2	17	7
16	4	11	2	17	8
17	13	20	2	16	7
18	6	16	2	17	5
19	7	16	2	17	6
20	24	20	15	18	7
21	38	34	16	17	5
22	42	45	10	17	4
23	42	46		10	6
24	51	41	15	9	4
25	47	50		9	6
26	47	40	11	8	4
27	34	24	13	9	6
28	32	26	10	9	5
29	27	21	8	9	7
30	20	22		9	7
31	20	22		9	7
	488	725	155	586	194 CFS

1/2 CFS = 97
Ac. Ft = 192
At $34.00 per Ac. Ft = $6,528.00

	Inflow	Outflow	AE Turnout	Deliv	Wells	Total Seepage
	+	-	-	-	+	=
1	52	21	21	8	2	4
2	42	16	21	3	2	4
3	45	22	21		2	4
4	30	27		1	2	4
5	16	14			2	4
6	42	16	20	5	2	3
7	46	7	20	24	8	3
8	45	3	20	19		3
9	45	35	0	13	6	3
10	41	24		17	2	2
11	36	23		11	2	4
12	33	23		8	2	4
13	21	16		3	2	4
14	18	17			2	3
15	17	1		13	2	5
16	22	10		11	2	3
17	22	18		2	2	4
18	21	11		9	2	3
19	23	19				4
20	25	21				4
21	19	16				3
22	19	16				3
23	15	13			2	4
24	18	16			2	4
25	12	8		3	2	3
26	10	7				3
27	10	3		4		3
28	10	2		6		2
29	11	9				2
30	13	5		6		2
31	11	8				3
	790	447	123	166	50	104 CFS

1/2 CFS = 52
Ac Ft = 103
At $34.00 per Ac Ft = $3,502.00

	Inflow	Outflow	Deliv	Wells	Total Seepage
	+	-	-	+	=
1	34	15	12		7
2	42	26	10		6
3	47	30	9		8
4	48	33	8		7
5	51	42			9
6	14	7			7
7	13	6			7
8	14	9			5
9	20	15			5
10	18	7	5		6
11	25	15	5		5
12	28	21			7
13	28	20			8
14	20	9	5		6
15	15	9			6
16	14	6	5		3
17	5	3			2
18	17	7	5		5
19	21	13	5		3
20	21	17			4
21	43	36	5		2
22	43	31	10		2
23	43	35	5		3
24	40	29	9		2
25	40	29	9		2
26	37	25	9		3
27	37	24	9		4
28	38	27	9		2
29	75	60	13		2
30	76	73			3
31					
	967	679	147	0	141 CFS

1/2 CFS = 70.5
Ac. Ft = 140
At $34.00 per Ac Ft = $4,760 00

	Inflow	Outflow	AE Turnout	Deliv	Wells	Total Seepage
	+	-	-	-	+	=
1	8	5				3
2	7	5				2
3	6	1		3		2
4	9	4		3		2
5	11	10			3	4
6	15	10		6	3	2
7	18	14		4	3	3
8	18	14				4
9	17	16		2	5	4
10	13	16			7	4
11	18	11		5		2
12	20	12		7		1
13	14	9		3		2
14	13	5		14	7	1
15	19	16				3
16	18	14				4
17	18	15		5	5	3
18	20	9		9		2
19	18	11		6		1
20	15	12				3
21	15	11				4
22	15	11				4
23	15	11				4
24	11	5		2		4
25	10	7				3
26	10	7				3
27	11	9				2
28	26	9		13		4
29	23	7		13		3
30	25	9		12		4
31						
	456	295	0	107	33	87 CFS

1/2 CFS = 43 5
Ac Ft.= 86
At $34 00 per Ac Ft = $2,924.00

Central - December 2009

	Inflow	Outflow	Deliv	Wells	Total Seepage
	+	-	-	+	=
1	75	65	5		5
2	131	112	11		8
3	144	125	11		8
4	136	128	1		7
5	70	65			5
6	71	64			7
7					
8					
9					
10					
11					
12					
13					
14					
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21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
	627	559	28	0	40 CFS

1/2 CFS = 20
Ac Ft = 40
At $34 00 per Ac Ft = $1,360 00

Central - December 2009

	Inflow	Outflow	AE Turnout	Deliv	Wells	Total Seepage
	+	-	-	-	+	=
1	19	5		11		3
2	43	30		9		4
3	44	35		6		3
4	31	21		6		4
5	37	30		3		4
6	37	32				5
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
	211	153	0	35	0	23 CFS

1/2 CFS = 11 5
Ac Ft = 23
At $34 00 per Ac Ft = $782 00