Tulare Irrigation District

Groundwater Elevation Monitoring Plan

December 2011

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DISTRICT BACKGROUND

History

The Tulare Irrigation District (District) is a political subdivision of the State of California, which operates as an independent agency under the California Water Code. The District was formed in 1889 as one of the first irrigation districts in the state of California to manage the supply of irrigation water to farmers within the District. The use of surface water within the basin is on a conjunctive use basis where water supplies from the Kaweah River and the Friant Unit of the Central Valley Project help offset groundwater pumping. The District received its Federal contract from the United States Bureau of Reclamation in 1950 for an imported water supply to bolster conjunctive user operations within the District. Over the last 50 plus years the District has been monitoring depth to groundwater levels and providing conjunctive use operations for farmers and residents within the District.

Location

The District is located in western Tulare County on the eastern part of the San Joaquin Valley, about 20 miles west of the Sierra Nevada foothills, approximately 50 miles southeast of the City of Fresno and approximately 65 miles northwest of the City of Bakersfield. The District covers approximately 77,000 acres (120 square miles) and is completely within Tulare County. The total service area within the District is approximately 65,000 acres, with 62,000 being irrigable. Recently as the City of Tulare has grown, some areas that were crops have been converted to urban development and have detached from the District. Also, a significant number of dairies have been developed in the District. Both of these developments have reduced the cropped acreage within the District.

Water Supplies

The District's average annual surface water supply from 1988 to 2008 was approximately 163,400 acre-feet of water, which is comprised of entitlements on the Kaweah River and contract water from the Friant division of the Central Valley Project (CVP). The average yield of Kaweah River rights is approximately 75,000 acre-feet. The District has a Class 1 contract with the Bureau of Reclamation for 30,000 acre-feet and a Class 2 contract for 141,000 acre feet of water annually. The District's surface water supplies can vary widely from year to year. In the

recent past, supplies have ranged from a low of about 40,000 acre-feet in 2007 to a high of 340,000 acre-feet in 2011. It is in such wetter years that the District is heavily engaged in groundwater efforts, devoting more than half of its water supplies to such direct recharge program through utilization of groundwater recharge facilities

The agricultural demands within the District were estimated to be approximately 221,500 acre-feet per year in 2002. However, in recent years, the District has experienced a significant shift in cropped acreage away from cotton and towards crops that support the dairy industry. These crops typically require more water therefore the average annual water demand within the District may be increasing. Agricultural demand that is beyond the surface water supplied by the District is met by groundwater pumping. The District does not operate any groundwater wells as a source of irrigation supply to landowners. Each individual landowner must provide his/her own groundwater well(s) to sustain irrigation practices when surface water supplies are not available.

In addition to landowner extraction wells, the City of Tulare own and operates a municipal well field to serve its inhabitants. This well field is situated within the confines of the District's service area and the City extracts approximately 18,000 acre-feet annually for residential, commercial and industrial uses.

District Facilities

The District operates a vast system of unlined earthen channels with reinforced concrete control structures and road crossings. Collectively the District owns and operates over 300 miles of earthen canals and ditches. The District also owns and operates approximately 30 miles of pipeline. The diversions points from the Kaweah River System and the Friant-Kern Canal that the District utilizes are located approximately 15 miles northeast of the District. Water from the Kaweah system and the Friant system are generally diverted into the District Main Intake Canal. The water is brought into the District at the northeast corner of the District. A system of canals and pipelines has been established within the District that serve water to a vast majority of the landowners within the District. The District utilizes approximately 535 farm gate turnouts to

deliver water to landowners. This District also operates approximately 12 recharge basins (approximately 1,200 acres).

DISTRICT GROUNDWATER MONITORING HISTORY

Groundwater Management Plan

The Tulare Irrigation District (District) was one of the first public districts to adopt a Groundwater Management Plan (GWMP) in 1992. The original GWMP was prepared in accordance with the requirements prescribed in Assembly Bill No. 255 (California Water Code Section 10750 et seq.). In September 2010 the District adopted an updated GWMP that satisfies the requirements of Senate Bill No. 1938 which was passed in 2002 and amended Sections 10753 and 10795 of the California Water Code. This GWMP outlines the framework under which the District conducts its groundwater efforts. Within this document the District describes the geology, hydrology, basin management objectives and activities that are carried out to sustain groundwater within the District.

The objectives of the GWMP are as follows:

1. Address potential changes in local hydrology brought about by surface water losses (i.e. San Joaquin River Restoration), urban development and drought.
2. Preclude surface water groundwater exports that would reduce the long-term reliability of groundwater.
3. Coordinate groundwater management efforts between regional water users.
4. Maintain local management of the groundwater resources.
5. Implement a groundwater-monitoring program to provide an “early warning” system to future problems.
6. Stabilize groundwater levels in order to minimize pumping costs and energy use, and provide groundwater reserves for use in droughts.
7. Develop groundwater storage facilities to reduce stress on local groundwater reserves during droughts.
8. Maximize the use of all surface water sources, including available flood water, for beneficial use and groundwater recharge, and thus reduce stress on groundwater resources.

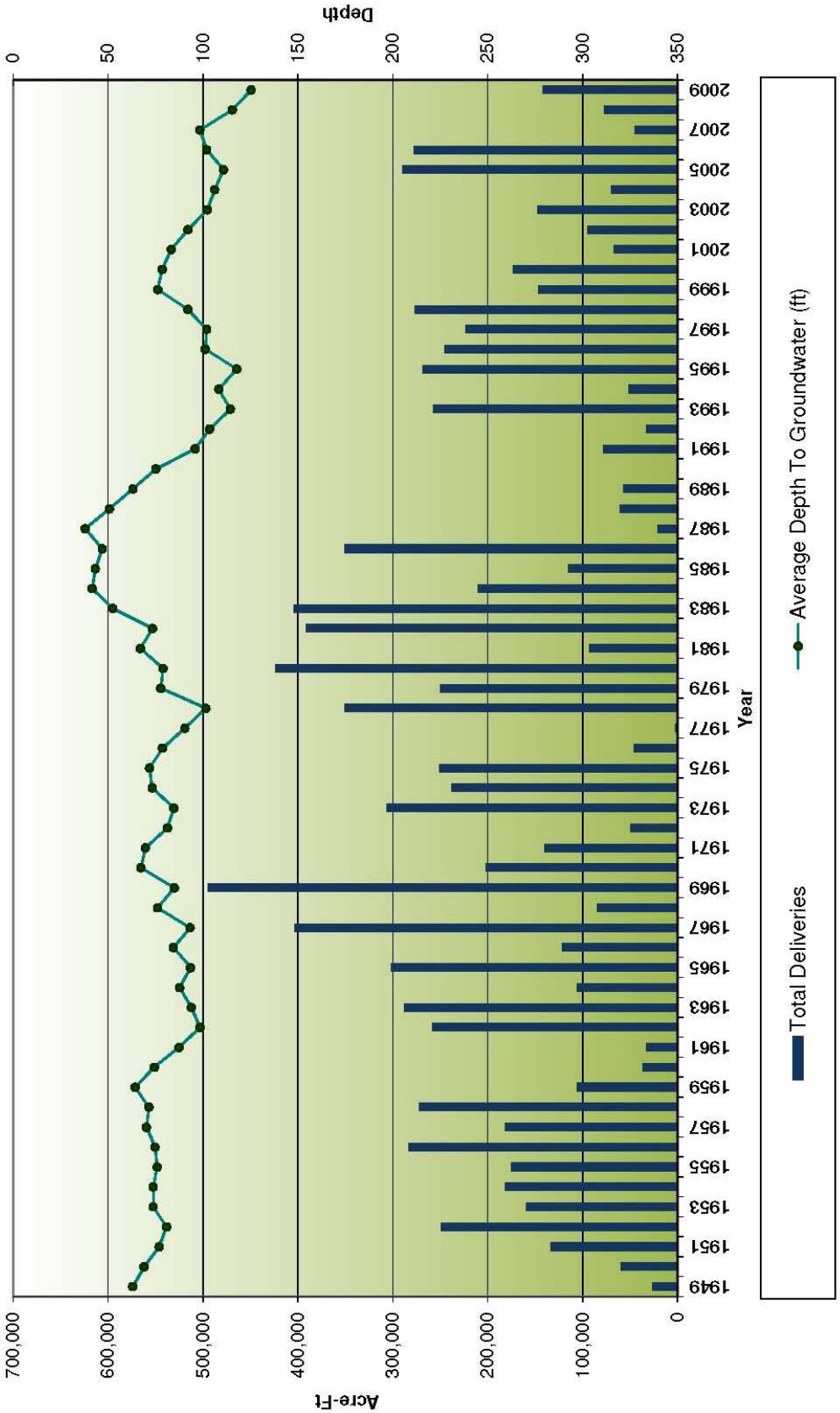
9. Increase knowledge of the local geology and hydrogeology to better understand threats to groundwater quality and quantity.
10. Minimize future land subsidence caused by groundwater pumping through in-lieu groundwater recharge, and wise and conservative use of pumped groundwater.
11. Prevent groundwater degradation by protecting groundwater quality, importing clean surface water, and preventing intrusion of poor quality groundwater from neighboring areas.

Historic Groundwater Levels

Groundwater levels throughout the District have fluctuated seasonally and according to climatic conditions. According to historical records, when the District began recording average depth to groundwater levels in 1949, the average depth to groundwater was 63.0 feet. Prior to 1977, the District had seen the average groundwater levels fluctuate from 63.0 feet to 98.5 feet, with an average of 78.4 feet. Beginning in 1977, the driest recorded year on record, the District saw a two-year decline of 22.9 feet; which brought groundwater levels to an average all-time low of 101.6 feet below ground surface.

In 1979, the District recorded a one-year rise of 23.8 feet, bringing groundwater levels close to their pre-1977 level of 77.8 feet. Between 1979 and 1987 groundwater levels rose approximately 40 feet to a District average of 38.0 feet. Historic hydrographs show that from 1987 to 1995, the region experienced a 7-year drought that saw groundwater levels decline approximately 80 feet, with most wells seeing an average depth to water decline from 40 feet to around 120 feet. Between 1995 and 1999, the District saw a five-year rise in water levels of 41.6 feet. However, from 1999 to 2009, the average depth to groundwater declined 49.2 feet to an all-time low of 125.4 feet. From 1995 to 2009, the District saw five years that can be classified from their percent of water year, as considerably-above average; two years that can be considered average; three years below average; and five years of considerably below average. Figure 1 depicts the historical depth to groundwater levels in the District along with the surface water deliveries within the District.

Figure 1. Depth to Groundwater Plotted with Surface Water Deliveries to the District



MONITORING PLAN

WELL NETWORK

The District has had a long history of monitoring groundwater levels within the District. The measurement of groundwater dates back to the late 1940's within the District. The District currently does not own or operate any dedicated monitoring wells, and utilizes existing groundwater deepwells to obtain depth to groundwater readings. The District currently reads over 100 deepwells within the District, however for the purposes of reporting under CASGEM the District has established a network of wells as depicted in 2012 California Statewide Groundwater Elevation Monitoring (CASGEM) Well Location Map included in Appendix A. This reporting network represents a system that utilizes one deepwell reading for every 4 square miles. Where possible the District will take a reading in the center of the 4 square miles, however in certain circumstances it is not feasible to obtain a reading in the center and an alternate well has been selected. At this time the District does not have a full access to CASGEM wells to cover a network that covered a reading for every 4 square miles, however the District intends to provide its coverage through supply voluntary well information within the CASGEM reporting system. These voluntary wells will not have well depth or screening information, however will provide a depth to groundwater reading. Included in Appendix B is a Well Database, which is a list of the wells that are part of the monitoring network and certain characteristics of each well.

At this time the District does not own or operate any dedicated monitoring wells. The District recognizes that the monitoring network as presented in Appendix A has a combination of wells where the District has depth information and wells where we do not have depth information. The District also does not have or report on wells located within the City of Tulare due to laws which restrict the District from reporting this information. However, the District is currently working on identifying locations and designs on dedicated monitoring wells for future installations. Future monitoring wells will be constructed such that the exact depth and screening information is obtained and provided in the CASGEM monitoring system. Future grant funding will be pursued to identify, design and install future dedicated groundwater monitoring wells. The District will utilize the network established for CASGEM when locating

new monitoring wells such that the District can maintain a monitoring well centrally located within 4 square miles.

Data gaps that exist in and around the City of Tulare will be addressed by dedicated monitoring wells that will be cited and installed in coordination with the City of Tulare. These dedicated monitoring wells are contingent upon City of Tulare approval and grant funding availability. The network of monitoring wells within the City will maintain the consistency of approximately 1 monitoring well for every 4 square miles.

The current well locations were selected based upon the following criteria:

- Location of the well in relations to a 4 square mile grid pattern;
- Adequate access to the well to accomplish a consistent yearly depth to groundwater reading;
- A long-term history of well readings and the continued availability of the well for readings;
- Ability to make a representative determination of local groundwater conditions; and
- Coordination with neighboring agencies also conducting groundwater level monitoring.

Currently, the District measures depth in private irrigation wells, which are volunteered as monitoring sites for the District. In time these irrigation wells become abandoned or destroyed, therefore causing the District to lose monitoring sites. As groundwater wells are destroyed or abandoned and/or new monitoring wells are constructed, the District will adjust the Well Network to meet the criteria set forth above and amend this Groundwater Elevation Monitoring Plan as needed.

MEASUREMENT FREQUENCY

The District currently measures depth to groundwater twice a year (semi-annual basis), to provide such measurements to the United State Department of the Interior Bureau of Reclamation (USBR). A reading is taken each year in early spring (January to February) to reflect groundwater conditions prior to the summer irrigation season and to reflect the amount of

recharge that had occurred in the previous winter. A late fall reading (September to October) is taken, which coincides with the end of the irrigation season for District landowners and will reflect the amount of groundwater extracted during the summer months. The readings that are taken are carefully planned to allow for sufficient time to elapse between usage of a deep well and a reading taken in that well to prevent skewed data due to operating wells that may reflect drawdown conditions and thus not indicate static levels. The well readings are also typically taken within a two-week window.

	Spring Reading	Fall Reading
Measurement Frequency	January - February	September - October

ESTABLISHING THE REFERENCE POINT

A critical component to the consistent measurement of groundwater levels is the identification and usage of a Reference Point (RP) for each monitoring well. The District does not currently utilize any dedicated monitoring wells, however in the future will include a mark on each monitoring well that is used to indicate the Reference Point (mark with a "RP"). Production wells that are utilized are typically accessed via the top of the access tube or a hole in the well casing. The District will identify the reference point on each DWR Form 429, which will be carried into the field to ensure a consistent use of reference points (see Appendix C for a DWR Form 429). A picture of each RP will be kept with each DWR Form 429 and an attempt to permanently mark the reference point on each monitoring location will be made. The District will survey each reference point to establish an elevation using the North American Datum of 1988 (NAD88).

The land-surface datum (LSD) is established in the field at the time of the reading. The LSD represents the average elevation of the ground around the well. Because the LSD around the well may change over time, the distance between the RP and the LSD should be verified every 3

to 5 years. If available, the District will utilize a fixed structure nearby such as the well pad to establish a more permanent surface of measure.

The District will provide a clearly displayed Reference Mark (RM) near each monitoring location where appropriate. The RM must be a fixed structure that can be used in the future to check the RP or re-establish the RP if it is destroyed or moved. The RP and the RM will be documented with a photograph and diagram to be kept in each Well Monitoring Folder (WMF).

A WMF will be created for each site and include the site specific information and historical depth to groundwater readings for that site. This information will be used to maintain consistency and reliability between readings.

WELL MEASURMENT GUIDELINES

Depth to groundwater readings are typically conducted by District's Engineering Technician or another employee who has been trained in groundwater measurement techniques. Since the inception of collecting groundwater measurement data the District has utilized a standard depth to water measurement consistent with most current measuring practices. Based on location, the District utilizes a combination of steel tape measurements and electric sounding tape measurements. The following discussion describes the techniques and procedures followed during the collection of depth to groundwater measurements.

Equipment

The District utilizes the two following measurement devices for depth to groundwater readings:

- Steel Tape – The District utilizes a standard surveyor steel tape which is 300 feet in length mounted on a manually retractable spool.
- Well Sounder – The District utilizes a Powers Well Sounder which is 200 feet in length.
- An Equipment Maintenance Log (EML) will be kept with each measuring device to record any maintenance or issues with the equipment.

Guidelines - Steel Tape Method

The District typically utilizes this method on wells that have restricted access where a thin steel tape is the only form of access available. The District typically monitors depth to groundwater from 75' to 150', which makes this type of measurement appropriate. The District utilizes the following equipment:

- 300-foot steel tape
- Chalk or dust
- Towels

During the measurement the District will note any of the following issues in the WMF:

- Water dripping into the well or condensing on the well casing, which may cause a erroneous reading.
- If the well casing is angled the reading may need to be corrected. A correction will be noted in the WMF.
- If the tape becomes obstructed or stuck it will be noted.

The District will conduct the following pre-measurement steps to ensure a reliable reading:

- Maintain the steel measuring tape in good working condition. Check the tape for any rust, breaks, kinks, or any possible signs of stretch. Verify the calibration and maintenance data for the tape to ensure that the tape is in proper calibration.
- If a new steel tape is purchased, ensure that the black coating on the tape has been dulled with steel wool to ensure that the tape will hold chalk or dust.
- Prepare all field forms, including DWR Form 1213 (Sample provided in Appendix D). Ensure that all previous material that has been recorded for the monitoring site is included in the WMF.
- Verify that the RP is clearly marked or identifiable on the monitoring site and verify that it is the proper RP as identified in the WMF.

Field measurements will be carried out in the following manner:

1. Clean the lower 5 feet of the steel tape with a disinfectant wipe and rinse the tape with de-ionized water or tap water. Immediately dry the tape with a cloth towel.
2. Where required, attach a weight to the end of the tape. The weight should be made of a material that will not cause a contamination issue in the well. The weight should be cleaned with a disinfectant wipe and rinsed with de-ionized water or tap water. When measuring production wells **DO NOT ATTACH WEIGHTS.**
3. Utilize information in the MWF to determine what depth was last read at the measurement well. Utilizing the previous reading determine the estimated length that should be lowered into the well. The reading used should be the last measurement taken in that same season or year.
4. Chalk the lower few feet (operator is to make a field determination on length to be chalked) by pulling the tape across a piece of blue carpenter's chalk or sidewalk chalk.
5. Slowly lower the measuring tape into the well to avoid splashing and potential erroneous readings. The operator should be cautious to feel resistance on the tape, which would indicate an obstruction or the tape is sticking to the well casing. Once the depth of water is reached by estimation or resistance in tape, lower the end of the tape an extra foot into the water until and even increment can be marked on the RP. Once this number is determined record the footage on DWR Form 1213 next to the "Tape at RP" column.
6. Retract the steel tape back to the surface being cautious to avoid any obstruction or snags. Record the number on the tape where the chalk mark is to the nearest 0.01 foot in the column labeled "Tape at WS" in DWR Form 1213.
7. If there is an oil layer present, read the tape at the top of the oil mark to the nearest 0.01 foot and use this value for the "Tape at WS" instead of the wetter chalk mark. This will require the recording of an "8" in the QM column of DWR Form 1213, which indicates that there is a questionable measurement due to the presence of oil in the well.
8. Subtract the "Tape at WS" from the "Tape at RP" number and record the difference (to the nearest 0.01foot) as "RP to WS". This reading represents the depth to water below the RP.
9. Wipe the water and excess chalk form the steel tape and re-chalk the tape based on the first reading.

10. Repeat the above steps 5 to 8 and record the time of the second measurement on the line below the first measurement on DWR Form 1213. The second measurement should be made using a different "Tape at RP" than what was used for the first reading. If the first and second reading do not agree within 0.02 feet (0.20 for production wells), make a third measurement. The third measurement should be recorded below the second reading. If more than two readings are taken, average all reasonable readings.
11. After all measurements are complete wipe any excess chalk from the steel tape, wipe with a disinfectant wipe and rinse with de-ionized water or tap water. DO NOT STORE STEEL TAPE WILE DIRTY OR WET. Review all paperwork in the WMF to ensure that all pertinent information has been recorded.

Guideline - Electronic Sounder Method

The District typically utilizes this method on wells that have access for a cable, which typically is an access port. The District typically monitors depth to groundwater from 75' to 150', which makes this type of measurement appropriate. The District utilizes the following equipment:

- Well Sounder
- Towels

During the measurement the District will note any of the following issues in the well monitoring folder:

- If the well casing is angled the reading may need to be corrected. A correction will be noted in the WMF.
- If the tape becomes obstructed or stuck it will be noted.
- If oil is noted in the well, the Steel Tape Method shall be used to minimize damage to the electronic sounder.

The District will conduct the following pre-measurement steps to ensure a reliable reading:

- Maintain the well sounding equipment in good working condition. Check the sounding tape and electrode for any wear in the tape, kinks, frayed electrical connections and any

possible stretching of the tape. Ensure that all batteries are charged and that a replacement set is available.

- Check the distance from the electrode probe's sensor to the nearest foot marker on the tape, to ensure that this distance puts the sensor at the zero foot mark for the tape. If it does not, a correction must be applied to all depth to water measurements. The correction should be noted in WMF and also included in the equipment logs stored with the electronic sounder.
- Prepare all field forms, including DWR Form 1213. Ensure that all previous material that has been recorded for the monitoring site is included in the WMF.
- Verify that the RP is clearly marked or identifiable on the monitoring site and verify that it is the proper RP as identified in the well monitoring folder.
- Check the circuitry of the electric sounder prior to lowering the electrode probe into the well. Dip the electrode probe into tap water to ensure that the indicator needle is reading and the beeper is working.

Field measurements will be carried out in the following manner:

Clean the lower 5 feet of the well sounding tape with a disinfectant wipe and rinse the tape with de-ionized water or tap water. Immediately dry the tape with a cloth towel.

1. Utilize information in the MWF to determine what depth was last reading at the measurement well. Utilizing the previous reading determine the estimate length that should be lowered into the well. The reading used should be the last measurement taken in that same season or year.
2. Slowly lower the sounding tape into the well to avoid splashing and potential erroneous readings. The operator should be cautious to feel resistance on the tape, which would indicate an obstruction or the tape is sticking to the well casing. Once the depth of water is reached by an indication that the circuit is closed, the operator shall place the tip or nail of the index finger on the insulated wire at the RP and read the depth to water to the nearest 0.01 feet. Once this number is determined record the footage on DWR Form 1213 next to the "Tape at RP" column.
3. Retract the sounding tape back a few feet and make a second measurement by repeating step 2 and recording the second measurement with the time in the row below the first

measurement. Make all reading using the same deflection point on the indicator scale, light intensity, or sound so that water levels will be consistent between measurements. If the second reading does not agree with the first measurement within 0.02 of a foot (0.2 in production wells), make a third measurement. If more than two readings are taken, record the average of all reasonable readings.

4. After all measurements are complete wipe any excess water from the sounding tape, wipe with a disinfectant wipe and rinse with de-ionized water or tap water. DO NOT STORE SOUNDING TAPE WILE DIRTY OR WET. Review all paperwork in the WMF to ensure that all pertinent information has been recorded.

Quality Assurance Measures

Monitoring Equipment

In order to maintain consistent and reliable depth to groundwater readings the District shall maintain and operate equipment as detailed in instructions provided by the manufacturer of all equipment. All equipment shall be kept and stored in a dry state and calibrated as required. Any indication of rust and wear shall be documented in an Equipment Maintenance Log (EML), which shall be kept with each piece of equipment.

Well Readings

In order to maintain consistent and reliable depth to groundwater readings the District shall follow all guidelines for measurement as set forth in the section titled Well Measurement Guidelines. Each well will be measured at least two times at each reading interval in order to provide a comparison of results. If the results do not agree within the tolerances allowed in the Well Measurement Guidelines, a third measurement will be taken and the results of the closest values shall be averaged. If the results are not consistent a note shall be added to the DWR Form 1213. The District will also compare readings with historical depths in the field to provide an indication of any discrepancies.

Data Entry

Once all field data is collected, the District will enter all depth to groundwater readings into an electronic spreadsheet or database. The readings shall be proofed by a second person to ensure accuracy of entry. Once the data is entered, should a suspicious reading be determined, another field reading shall be taken to ensure consistency and reliability.

APPENDIX A

RANGE 23 EAST

RANGE 24 EAST

RANGE 25 EAST

TOWNSHIP 19 SOUTH

TOWNSHIP 20 SOUTH

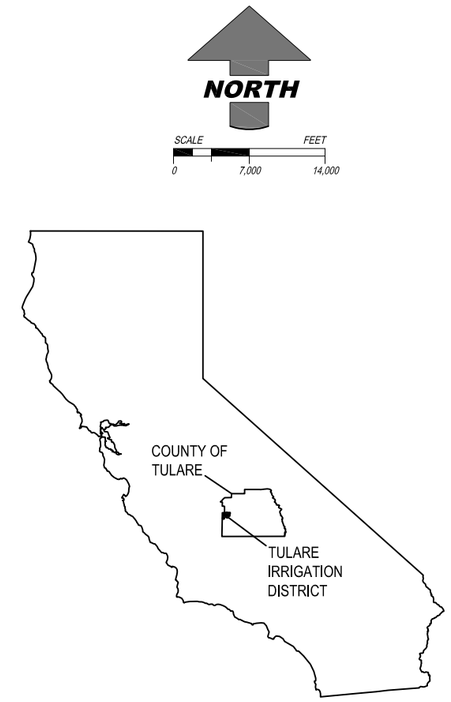
TOWNSHIP 21 SOUTH

RD. 20 | 28 | 36 | 44 | 52 | RD. 60 | 68 | 76 | 84 | 92 | RD. 100 | 108 | 116 | 124 | 132

272 | AVE. 264 | 256 | 248 | 240 | 232 | AVE. 224 | 216 | 208 | 200 | 192 | AVE. 184 | 176

192320C1
192321P1 Depth = 325'
192324L1
192418R1 Depth = 112'
192422C2
192423D1
192519B1
192425D1 Depth = 111'
192530C1
192330H2 Depth = 145'
192327P1 Depth = 150'
192430J1
192335H1 Depth = 132'
192433H1
202404E1
202303L1 Depth = 200'
202312A1 Depth = 160'
202307H3
202407G1 Depth = 472'
202313E2 Depth = 395'
202316J1
202318R1
202417P1 Depth = 229'
202416H1
202414R1
202327D1
202330R1
202430J2
202326R1
202428L1
212303N1
212308F2

GUINN BASIN 160 ac.
#3 BASIN 168 ac.
#8 BASIN 157 ac.
Anderson Basin 160ac.
8 Basin 81 ac.
WATTE BASIN
Tagus Basin 75ac.
Enterprise Basin 20ac.
Cream Inc Basin 140ac.
Shell Basin 140ac.
Abercrombie Basin 20ac.



LEGEND

- TULARE IRRIGATION DISTRICT SERVICE AREA
- CITY OF TULARE CITY LIMITS
- 4 SQUARE MILE MONITORING GRID
- 202416H1 — CASGEM GROUNDWATER MONITORING SITE
- 202416H1 — VOLUNTARY GROUNDWATER MONITORING SITE

TULARE IRRIGATION DISTRICT
TULARE, CALIFORNIA

2012 CALIFORNIA STATEWIDE GROUNDWATER ELEVATION MONITORING (CASGEM) WELL LOCATION MAP

TULARE IRRIGATION DISTRICT
FORMED IN 1889

APPENDIX B

Tulare Irrigation District

CASGEM Well Monitoring Network

Local Well Designation	Well Classification	Refence Point Elevation	Reference Point Description	Ground Surface Elevation	Latitude	Longitude	Well Depth	Well Screening
192320C1	Voluntary	247.16	Well Casing	246.82	36.2690	119.5013	Unknown	Unknown
192321P1	CASGEM	250.63	Sounding Tube	250.00	36.2547	119.4836	325	Unknown
192324L1	Voluntary	269.48	Well Casing	268.71	36.2616	119.4337	Unknown	Unknown
192418R1	CASGEM	281.89	Sounding Tube	281.36	36.2726	119.4075	112	Unknown
192422C2	Voluntary	297.13	Well Casing	297.49	36.2682	119.3575	Unknown	Unknown
192423D1	Voluntary	304.86	Sounding Tube	303.77	36.2691	119.3446	Unknown	Unknown
192330H2	CASGEM	241.51	Sounding Tube	239.21	36.2484	119.5146	145	Unknown
192327P1	CASGEM	255.13	Pump Base	254.42	36.2438	119.4660	150	Unknown
192335H1	CASGEM	261.09	Well Casing	261.12	36.2347	119.4391	132	Unknown
192430J1	Voluntary	276.18	Pump Base	274.95	36.2439	119.4030	Unknown	Unknown
192433H1	Voluntary	286.47	Pump Base	279.38	36.2396	119.3680	Unknown	Unknown
192425D1	CASGEM	309.32	Pump Base	302.59	36.2535	119.3030	111	Unknown
192519B1	Voluntary	315.15	Pump Base	314.34	36.2540	119.3053	Unknown	Unknown
192530C1	Voluntary	310.17	Pump Base	309.58	36.2540	119.3053	Unknown	Unknown
202404E1	Voluntary	276.07	Pump Base	275.63	36.2184	119.3834	Unknown	Unknown
202407G1	CASGEM	260.11	Pump Base	259.74	36.2044	119.4075	472	Unknown
202312A1	CASGEM	254.78	Pump Base	254.28	36.2102	119.4259	160	Unknown
202303L1	CASGEM	248.04	Pump Base	246.29	36.2169	119.4662	200	Unknown
202307H3	Voluntary	230.30	Pump Base	229.58	36.2049	119.5134	Unknown	Unknown
202318R1	Voluntary	220.06	Pump Base	218.76	36.1741	119.5129	Unknown	Unknown
202316J1	Voluntary	236.67	Pump Base	236.48	36.1882	119.4756	Unknown	Unknown
202313E2	CASGEM	246.40	Sounding Tube	244.94	36.1907	119.4365	395	Unknown
202417P1	CASGEM	249.51	Pump Base	249.36	36.1818	119.3932	229	Unknown
202416H1	Voluntary	264.42	Pump Base	263.48	36.1894	119.3666	Unknown	Unknown
202414R1	Voluntary	272.86	Pump Base	271.52	36.1856	119.3313	Unknown	Unknown
202428L1	Voluntary	245.87	Pump Base	245.13	36.1594	119.4040	Unknown	Unknown
202430J2	Voluntary	243.82	Pump Base	242.82	36.1594	119.4040	Unknown	Unknown
202326R1	Voluntary	237.34	Pump Base	236.48	36.1559	119.4403	Unknown	Unknown
202327D1	Voluntary	230.98	Pump Base	229.76	36.1665	119.4735	Unknown	Unknown
202330R1	Voluntary	218.36	Pump Base	218.59	36.1601	119.5113	Unknown	Unknown
212308F2	Voluntary	209.95	Pump Base	208.81	36.1197	119.5098	Unknown	Unknown
212303N1	Voluntary	218.65	Pump Base	217.69	36.1269	119.4774	Unknown	Unknown

APPENDIX C

State of California | DEPARTMENT OF WATER RESOURCES | California Natural Resources Agency

WELL DATA

State Well No. _____

Region _____

OWNER			SITE ID	
ADDRESS			WELL NAME	
TENANT			OTHER NO.	
ADDRESS				
TYPE OF WELL ☐ SPECIAL STUDIES ☐ MONTHLY ☐ SEMI ANNUAL ☐ WATER QUALITY				
LOCATION COUNTY	BASIN		NO.	
U.S.G.S. QUAD.			QUAD NO.	
1/4 1/4 SECTION	TWP.	RGE.	☐MD ☐SB ☐H BASE & MERIDIAN	
COORDINATES (NAD83) LONGITUDE	LATITUDE		SOURCE	
DESCRIPTION				
REFERENCE POINT DESCRIPTION				
WHICH IS FT. ABOVE ☐ BELOW ☐	LAND SURFACE DATUM	GROUND ELEVATION	FT.	
REFERENCE POINT ELEVATION FT.	DETERMINED FROM			
WELL USE	CONDITION	DEPTH FT.		
CASING, SIZE IN.,	PERFORATIONS			
MEASUREMENTS BY ☐ DWR ☐ USGS ☐ USBR ☐ COUNTY ☐ IRR. DIST. ☐ WATER DIST. ☐ CONS. DIST. ☐ OTHER				
GRAVEL PACK? ☐ YES ☐ NO	DEPTH TO TOP GR.	DEPTH TO BOT GR.		
TYPE OF MATERIAL	PERM. RATING	THICKNESS		
CHIEF AQUIFER	DEPTH TO TOP AQ.	DEPTH TO BOT. AQ.		
SUPP. AQUIFER	DEPTH TO TOP AQ.	DEPTH TO BOT. AQ.		
DRILLER	DATE DRILLED	LOG NUMBER (DWR 188)		
WELL PUMP TYPE	MAKE	MODEL	SERIAL NO.	
WATER ANALYSIS MIN.	SAN.	H.M.		
POWER SOURCE	WATER LEVELS AVAILABLE? ☐ YES ☐ NO			
H.P.	MOTOR SERIAL NO	PERIOD OF RECORD BEGIN	END	
ELEC. METER NO.	TRANSFORMER NO.	COLLECTING AGENCY		
SIZE OF DISCHARGE PIPE IN.				
YIELD G.P.M.	PUMPING LEVEL FT.	PROD. REC.	PUMP TEST	YIELD

SKETCH

REMARKS

RECORDED BY

DATE

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APPENDIX D

GROUNDWATER LEVEL DATA FORM
MANUAL MEASUREMENTS

WELL ID NUMBER	WELL NAME	STATE WELL NUMBER	COUNTY	B-118 BASIN OR SUBBASIN	MEASURING AGENCY	LAND SURFACE DATUM (LSD) ELEV.	RP TO LAND SURFACE DATUM (LSD), IN FT	REFERENCE POINT (RP) ELEV.

NO MEASUREMENT (NM)

0. Measurement discontinued
1. Pumping
2. Pump house locked
3. Tape hung up
4. Can't get tape in casing
5. Unable to locate well
6. Well has been destroyed
7. Special
8. Casing leaky or wet
9. Temporarily inaccessible

QUESTIONABLE MEASUREMENT (QM)

0. Caved or deepened
1. Pumping
2. Nearby pump operating
3. Casing leaky or wet
4. Pumped recently
5. Air or pressure gauge measurement
6. Other
7. Recharge operation at or nearby well
8. Oil in casing

MEASUREMENT METHOD (MM)

0. Steel tape
1. Electric sounding tape
2. Other

DATE	TIME	N M	Q M	MM	TAPE at RP	TAPE at WS	RP to WS	LSD to WS	OBS	COMMENTS

[For explanation of terms, see figure 1.]