

STANDARD OPERATING PROCEDURES

GROUNDWATER EXTRACTION MONITORING PROGRAM METER INSTALLATION, METER READING, and MAINTENANCE & CALIBRATION PROCEDURES

Revised June 28, 2004

PROGRAM OVERVIEW

The Groundwater Extraction Monitoring Program involves the metering of wells producing 25 or more acre-feet of groundwater per year. In conjunction with groundwater level and quality monitoring, accurate metering of groundwater extractions will allow for a better understanding of how groundwater conditions are changing and will provide data for quantification of stresses on the basins. The purpose of this monitoring program is to collect groundwater production data to develop an understanding of how conditions in local basins are changing and how groundwater pumping, quality, and water levels are related.

The goal of this voluntary program is to directly measure or estimate all groundwater extracted from the subbasins. Groundwater extraction data will be developed from a variety of sources including:

- Meters installed and monitored by EMWD;
- Existing, privately owned meters read by EMWD personnel; and
- Extraction estimates based on land use, i.e., acreage under cultivation and type of crop or numbers of livestock in the case of dairies. This method is used for those local producers that do not participate in the monitoring program.

Available data on groundwater extractions can also be obtained from the California Division of Water Rights compiled database on the annual reporting of groundwater extractions. However, total groundwater production in most areas is expected to be higher than the State figures because not all groundwater producers file the annual recordation notices with the State. The State has microfiche records of recordations from 1947 through 1985. From 1985 forward, the records are kept as hard copy. A database has also been generated. Unfortunately, a serious problem developed with that database in the early 1990's. The quality/accuracy of the information in an electronic format for 1994 to the present is questionable. All well owners are encouraged to keep copies and maintain files of their recordation notices. EMWD has developed its own database based on the microfiche and hard copy records. Since 1998, EMWD personnel have spent up to one week per year in Sacramento researching groundwater production data in the California

Division of Water Rights files to update extraction data.

POLICIES

All meter installation activities will be scheduled at the convenience of the well owner. Installed meters shall remain the property of EMWD. Well owners agree to provide access to EMWD staff for meter maintenance and the monthly reading of the meters. EMWD will periodically schedule meter maintenance and calibration with the well owner. Such activities will be at the well owners' convenience and will not impact agricultural operations.

Well owners wishing to maintain their own meters may do so. Upon the request of the well owner, EMWD will consider providing maintenance and calibration of privately owned meters, contingent upon the needs of the program and the availability of funding.

When installation of a meter on a well is not physically possible or when a well cannot be metered for other reasons, groundwater production from that well will be estimated using acreage, crop type, or number of animals in the case of dairies. These estimates will be compared with metered groundwater usage at sites of similar size with similar usage as a quality control/quality assurance measure.

METER INSTALLATION PROCEDURES

1. Verify well owner's permission to install meter.
2. Conduct a pre-installation site inspection to review piping and well configuration and determine equipment and supplies needed.
3. Prepare an installation design.
4. Meet with well owner for approval/acceptance of design.
5. Requisition materials needed based on design and site review.
6. Schedule fabrication so there is little or no inconvenience to the owner. As much as possible, off-site fabrication should be done to minimize interruption to the owner's operation of the well.
7. Scheduled installation and gain well owner's concurrence/approval.
8. Conduct a site inspection for potential hazards.
9. Wear appropriate PPE.
10. Clear a 30' diameter area to eliminate potential of grass fire and have a water source available.
11. Close any necessary pipeline valving.
12. Shut down main on electrical panel if there is any potential of automatic activation.
13. Check water system to verify system pressure.
14. Do not open piping unless pressure is zero.
15. Install meter.
16. Adjust all piping appurtenances back to normal operation.
17. Turn on electrical main if it was shut down.
18. Conduct a final site inspection for normal activation and general cleanliness.

METER READING PROCEDURES

Meters will be read on a monthly basis, on or about the tenth of each month, and groundwater usage will be entered into the Regional Water Resources Database for review and analysis. Prior to going out to read meters, an Owner Meter Read Sheet should be obtained from the Water Resources Planning Analyst (Analyst). At the site:

1. Conduct an initial site inspection for potential hazards (golfers, farm equipment, animals, and equipment apt to start automatically, etc.)
2. If a lid or cover is over the meter vault, remove the lid in a safe manner using proper lifting techniques.
3. If possible, read the meter using binoculars to eliminate the necessity of entering the vault. Compare meter number with number on file on owner sheet. Proceed to Step # 9 below.
4. When vault entry is necessary, use Confined Air Space Entry Procedure for type of vault being entered (Class C).
5. Care is to be taken when ascending and/or descending stairs or ladders.
6. Compare meter number with number on file on the Owner Meter Read Sheet. If the meter number does not match, contact Water Resources Management Dept. field staff immediately.
7. Read meter and call out reading to second party.
8. Exit vault.
9. Record the reading on the proper form.

Meter Diameter	Number/Decimal Pattern
Meters reading in Acre Feet:	
5 inch or smaller	The number/decimal pattern is: ##.####
6 inch or larger	The number/decimal pattern is: ###.###
Meters reading in Gallons	No decimal point on gallon meters: #####

10. Report any broken meters or meters needing repair to Water Resources Management Dept. field staff.
10. Conduct a final site inspection for normal activation and general cleanliness.
11. Upon return to office, input reading into spreadsheet and check for accuracy or give completed Owner Meter Read Sheet to Analyst. Provide Analyst with a list of meters in need of attention.

METER MAINTENANCE & CALIBRATION

Each month, following the reading of the meters, the meter readers submit a list of meters in need of attention to the Water Resources Management Department. Meter maintenance is an on-going process, for example, meters are often physically damaged and/or have missing meter lids, cracked register hoods, etc. These repairs and replacement of damaged meters are handled on an as-needed basis. However, routine preventative meter maintenance, which involves the refurbishing and replacement of working meters, is also an element.

At the present time, the recommended time for replacement of a meter on a privately owned well is approximately five years, unless the meter is subject to exceptional corrosion in areas with high TDS water. In that instance, the meter would be replaced more often. By comparison, the recommended time for replacement of a meter on one of EMWD's production wells is two years because the wells pump almost continuously.

Meters are calibrated by the manufacturer at the time of manufacture or refurbishing prior to installation by EMWD personnel. Therefore, staff does not calibrate meters.

METER/MAINTENANCE RECORDKEEPING

Field staff maintains a Meter Maintenance Book that contains a form for each well on which EMWD personnel installed a meter as part of the Extraction Monitoring Program (see *Attachment A*). These forms chronicle the meter and maintenance history of every well including meter serial number, type, size, and manufacturer; dates installed and removed; and register read at removal and installation. This information is then entered into the Regional Water Resources Database by the Water Resources Planning Analyst.

When the Extraction Monitoring Program began and the meters were initially installed, staff estimated maintenance frequency considering factors such as well usage and water quality. At that time, it was decided that meters deemed to be low maintenance would be replaced every 5 years; those considered medium maintenance, every 4 years; and those requiring high maintenance, every 3 years. This information also appears on the Meter Maintenance forms. The forms also contain information with regard to the well owner's name and address, permission status, contact person, well location, meter location, access conditions, whether or not confined space conditions apply, etc.

STANDARD OPERATING PROCEDURES

GROUNDWATER MONITORING PROGRAM PUMPING METHODS FOR OBTAINING A WQ SAMPLE

Revised July 21, 2003

OPERATIONAL WELLS (With Existing Pumping Equipment)

1. Conduct a site investigation for potential hazards including open drive shafts, motor operations including farm equipment, golfers, automatic machinery, etc.
2. Confirm status of well (pumping or static) with owner when necessary.
3. Locate sampling port on well
4. Open port and flush or purge sampling port; measure field EC (electrical conductivity) and water temperature. Record EC and temperature.
5. Obtain water sample using standard methods/proper protocol for the constituents to be sampled
6. Conduct a final site check for general cleanliness

NON-OPERATIONAL WELLS (Without Pumping Equipment)

1. Conduct a site investigation for potential hazards including open drive shafts, motor operations including farm equipment, golfers, automatic machinery, etc.
2. All persons on site must wear PPE (hard hat).
3. Back sampling rig to well using a second person to [spot] the rig
4. Measure water level to determine pump setting depth
5. Determine total existing well depth by sounding bottom of well; this will prevent setting pump in sanded region
6. Calculate water volume in casing to determine length of time necessary to purge for a minimum of two full well casing exchanges
7. Set outriggers or support legs depending upon type of rig
8. Set pump using either continuous reel or column pipe.
9. Connect all electrical and discharge lines
10. Pump a minimum of two casing volumes of water (#6 above) or until EC and temperature stabilizes to within 10%. Record EC and temperature.
11. Obtain water sample using standard methods/proper protocol for the constituents to be sampled
12. Disconnect electrical and piping and pull pump
13. Retract outriggers
14. Close/seal well
15. Conduct a final site check for general cleanliness

STANDARD OPERATING PROCEDURES

INACTIVE WELL CAPPING/SEALING PROGRAM

Revised July 8, 2003

BACKGROUND

Inactive, unused wells are a potential source of groundwater contamination. Open casings are especially vulnerable to contamination from surface flows or vandalism - such as the dumping of oil or other waste products. Large open casings, 16 to 18 inches in diameter, also present a hazard to small children and animals. It is not known how many open casings or unused wells exist within the District.

In 2000, as part of the activities under the West San Jacinto Groundwater Management Plan, the Inactive Well Capping/Sealing Program was initiated. Many of these wells were discovered by staff while carrying out the activities of the Water Level and Water Quality Groundwater Monitoring Programs. Many were covered by brush, wood, and dirt - not visible to the casual observer. Frequently, the property owner did not own the property at the time the well was drilled and was unaware of its existence. Generally, once an old well was discovered, the property owner was agreeable to having the casing capped. The well is then used as a monitoring well. The same year, interest spread into the East Valley area with well owners whose wells are monitored by District staff.

The program that evolved is quite simple. As a public service and to protect groundwater supplies, EMWD staff cap and seal an inactive well or open casing at no charge to the well owner. This is done by welding a bolted or locking cap onto the well casing. These wells may still be used for water level and, in some cases, water quality monitoring. Priority is given to those wells that are potentially dangerous open holes (16-18" casings) or those located in areas where flooding resulting from precipitation might carry manure, fertilizers, or other contaminants into the well.

STANDARD OPERATING PROCEDURE

Once a well is identified and located, if the well is on private property, determine ownership. Contact the property owner, inform of the well status, and gain permission to cap/seal the well. If owner is unresponsive or refuses to have the hazard eliminated, the County Department of Environmental Health is to be contacted and the matter is turned over to them. They have the authority to

correct the problem and bill the owner for the work. This has only been necessary one time. If permission is granted, proceed as below.

Initial Procedure:

1. Survey condition of well and determine equipment and supplies needed.
2. Requisition necessary materials and supplies.
3. Schedule a time to cap/seal well.

For Open Casings:

4. Don appropriate PPE.
5. Check for and monitor gas if present: refer to JSA for Hot Work on Wells with Potential for Flammable Gas. Log all gas monitoring on District form SA-30 (Record of Gas Analysis). Forward form to Risk Management at close of each day. The form may be used for multiple well sites during a single day.
6. On [gasser] wells, relieve casing pressure.
7. Proceed to cap well with ring flange/blind flange or adapt appurtenances as necessary

-or-

For Sealed Wells:

4. Don appropriate PPE.
5. Drill initial pilot hole using a low speed air drill with continuous application of non-flammable lubricant
6. Test for presence of gas with gas detector: refer to JSA for Hot Work on Wells with Potential for Flammable Gas. Log all gas monitoring on District form SA-30 (Record of Gas Analysis). Forward form to Risk Management at close of each day. The form may be used for multiple well sites during a single day.
7. Proceed to cap well with ring flange/blind flange or adapt appurtenances as necessary.

Then:

8. Close or seal well.
9. Conduct final site check for general cleanliness.
10. Report work to Senior Water Resources Planning Analyst for inclusion in program records.

MAINTENANCE PROCEDURES REGIONAL WATER RESOURCES DATABASE

Revised April 4, 2012

BACKGROUND

The Eastern Municipal Water District (EMWD) Water Resources Management Department (WRM) and other EMWD entities have amassed and are currently collecting a considerable amount of groundwater and groundwater-related data. This data is the result of the Monitoring Programs of the Hemet/San Jacinto Water Management Plan and the West San Jacinto Basin Groundwater Management Plan, other EMWD groundwater monitoring, and data accumulated during the Super-fund cleanup efforts at March AFB. In addition, there is a tremendous amount of non-groundwater data such as precipitation amounts, surface water flows, recycled water use and quality, imported water use and quality, and lithologic and well information available from other sources. This voluminous amount of data is compiled from various formats such as Quattro Pro, Excel, and ASCII spreadsheet files. Data sources include EMWD, the U.S. Geological Survey, State of California, Riverside County Flood Control and Conservation District, cities and local agencies, hydrogeological reports, and the public. Ultimately, all data will reside in the WRM database, the Regional Water Resources Database (RWRD).

This procedure manual covers how the data is generated, who and/or how the data is collected, what happens to the data, and how it ultimately ends up in the RWRD.

GROUNDWATER LEVEL DATA

Water level data, as depth to groundwater in feet (ft) and groundwater elevation in feet above mean sea level (ft/MSL), are collected and maintained on essentially four categories of wells. They are EMWD production wells, EMWD monitoring or inactive wells, other water purveyors' wells, and privately owned wells. Following is an outline of the current sources of data, responsible entities, how the data is handled, and where the data is stored.

1. EMWD Production Wells

- A. Depending on operation, EMWD Water Operations Department (Water Ops) field staff measure monthly pumping and/or static depth to groundwater levels on these wells. Groundwater elevation is calculated as reference point elevation minus depth to groundwater. Pumping groundwater levels also require an associated flow amount in gallons per minute (GPM). The data is entered into Water Ops' Facilities Database on a monthly basis.
QA/QC: Unknown.
- B. WRM office staff retrieves the static groundwater levels, pumping groundwater levels with associated flow, and groundwater elevations from the Facilities Database and enters them into the RWRD.
QA/QC: WRM field staff checks the data entry.

2. EMWD Monitoring/Inactive Wells

- A. WRM field staff measure semi-annual (spring and fall) static depth to groundwater levels on these wells. In the field, the date and depth to groundwater is noted on the Field Spreadsheet.
QA/QC: WRM field staff checks previous levels for comparison and consistency.
- B. WRM field staff enters the static depth to groundwater into the RWRD, and the groundwater elevations are calculated automatically.
QA/QC: WRM office staff checks the data entry.

3. Other Water Purveyors' Wells

- A. Lake Hemet Municipal Water District, the City of Hemet, the City of San Jacinto, the City of Perris, March Air Reserve Base, and the Soboba Band of Luiseno Indians each measure monthly or semi-annual static depth to groundwater levels on their wells depending on operation.
QA/QC: Unknown
- B. WRM office staff receives the data by fax or email from each entity and enters it into the RWRD.
QA/QC: WRM field staff checks the data entry.

4. Privately Owned Wells

- A. WRM field staff measure semi-annual (spring and fall) static depth to groundwater levels on these wells. In the field, the date and depth to groundwater is noted on the Field Spreadsheet.
QA/QC: WRM field staff checks previous levels for comparison and consistency.
- B. WRM field staff enters the static depth to groundwater levels into the RWRD, and groundwater elevations are calculated automatically.
QA/QC: WRM office staff checks the data entry.

GROUNDWATER QUALITY DATA

Groundwater quality data is collected and maintained on the same four categories of wells as for groundwater level data. The number of constituents tested for may vary depending on well use; for instance, a municipal production well will be tested more stringently than a privately owned agricultural well. The minimum suite of constituents tested for include Alkalinity, Ammonia as Nitrogen, Bicarbonate, Boron, Calcium, Carbonate, Chloride, Copper, Fluoride, Hardness, Hydroxide, Iron, Magnesium, Manganese, Nitrate, Nitrate as Nitrogen, Nitrite as Nitrogen, pH, Potassium, Silica, Sodium, Sulfate, Total Dissolved Solids, Total Inorganic Nitrogen, Total Organic Carbon, and Zinc. Following is an outline of how the water quality samples are collected and how the resulting data is tracked and then entered into the database.

1. EMWD Production Wells

- A. Water Ops field staff collects annual groundwater quality samples every August for these wells and delivers them to the EMWD Laboratory (LAB).
- B. The LAB staff provides WRM office staff with a list of the Laboratory Numbers assigned to each sample in EMWD's Laboratory Information Management System (LIMS).
- C. Once the analyses are completed in the LAB, WRM office staff query the LIMS Datamart using the Laboratory Numbers provided. Data is then imported into the RWRD.
QA/QC: The data is reviewed by WRM office staff prior to import into RWRD.

2. EMWD Monitoring/Inactive Wells

- A. Throughout the year, WRM field staff collects annual groundwater quality samples on these wells and delivers them to the LAB. The LAB assigns a Laboratory Number to each sample and provides the number to WRM office and field staff.
QA/QC: WRM field staff matches the samples with the Laboratory Numbers at the time the samples are delivered to the LAB.
- B. WRM field staff provides WRM office staff with Laboratory Numbers for the samples delivered to the LAB.
- C. Once the analyses are completed in the LAB, WRM office staff query the LIMS Datamart using the Laboratory Numbers provided. Data is then imported into the RWRD.
- D. QA/QC: The data is reviewed by WRM office staff prior to import into RWRD.

3. Other Water Purveyors' Wells

- A. Lake Hemet Municipal Water District, the City of Hemet, the City of San Jacinto, the City of Perris, and the Nuevo Water Company collect annual groundwater quality samples every August for these wells and deliver the samples to the LAB.
- B. The LAB staff provides WRM office staff with a list of the Laboratory Numbers assigned to each sample in EMWD's Laboratory Information Management System (LIMS).
- C. Once the analyses are completed in the LAB, WRM office staff query the LIMS Datamart using the Laboratory Numbers provided. Data is then imported into the RWRD.
- D. QA/QC: The data is reviewed by WRM office staff prior to import into RWRD.

4. Privately Owned Wells

- A. Throughout the year, WRM field staff collects annual groundwater quality samples on these wells and delivers them to the LAB. The LAB assigns a Laboratory Number to each sample and provides the number to WRM office and field staff.
QA/QC: WRM field staff matches the samples with the Laboratory Numbers at the time the samples are delivered to the LAB.
- B. WRM field staff provides WRM office staff with Laboratory Numbers for the samples delivered to the LAB.

- C. Once the analyses are completed in the LAB, WRM office staff query the LIMS Datamart using the Laboratory Numbers provided. Data is then imported into the RWRD.
- D. QA/QC: The data is reviewed by WRM office staff prior to import into RWRD.

GROUNDWATER EXTRACTION DATA

Groundwater extraction data, in acre-feet (AF), are collected and maintained on essentially five categories of wells. They are EMWD production wells, other water purveyors' and entities wells, privately owned wells, State Annual Notices of Groundwater Extraction, and estimated groundwater extractions. Following is an outline of the current sources of data, responsible entities, how the data is handled, and where the data is stored.

1. EMWD Production Wells

- A. Water Ops staff collects monthly meter reads on these wells and the data is entered into EMWD's billing system, the COINS database.
QA/QC: Unknown.
- B. Water Ops enters the monthly meter read data into the Well Production Spreadsheet (M:\opsanlst\reports\wellprod\wellprod.xls).
QA/QC: Unknown
- C. WRM office staff retrieves these extraction data and imports them into the RWRD.
QA/QC: Direct import from Operations spreadsheet.

2. Other Water Purveyors' and Entities' Wells

- A. Lake Hemet Municipal Water District, City of Hemet, City of San Jacinto, City of Perris, Golden Era Productions, and the Soboba Band of Luiseno Indians collect monthly meter reads on their wells and fax or email the data to WRM office staff.
QA/QC: Unknown.
- B. WRM office staff enters these extraction data into the RWRD.
QA/QC: WRM field staff review the data.

3. Groundwater Extraction Monitoring Program Participants' Wells

- A. WRM field staff collects monthly meter reads on all monitoring program participants' wells including local agencies, large agriculture, sod

farms, Department of Fish and Game, golf courses, and other private wells. In the field, they enter the date and meter reads into the Private Well Meter Read Book.

QA/QC: WRM office staff checks the data entry.

- B. WRM office staff calculates monthly groundwater extraction from the difference in meter reads and enters these extraction data into the RWRD.

QA/QC: WRM field staff checks the data entry.

4. State Annual Notices of Groundwater Extraction Wells

- A. In 2005, EMWD was designated by the State of California as the lead agency to send and receive State Annual Notices of Groundwater Extraction for all groundwater producers in the San Jacinto Watershed.
- B. WRM office staff prepares and mail State Annual Notices of Groundwater Extraction prior to the end of May each year.
- C. WRM office staff collect and compile State Annual Notices of Groundwater Extraction returned.
- D. WRM office staff enters the data into RWRD and the State's required Excel template.

QA/QC:

5. Estimated Groundwater Extraction Wells

- A. WRM office and field staff identifies wells that are not metered, did not file a State Annual Notice of Groundwater Extraction, but have physically observed groundwater extraction.
- B. WRM office and field staff estimates annual groundwater extraction based on number of cows, irrigated acreage, crop type, months of activity, and amount of rainfall for the year.
- C. Monthly groundwater extraction amounts are calculated using a historical monthly usage curve developed from metered wells in the area.
- D. WRM office staff enters these groundwater extraction data into the RWRD

SURFACE WATER DATA

1. EWMD Surface Water Diversions

- A. When diverting, WRM field staff collect daily height readings in the Parshall Flume of the inlet channel to the Grant Ave. Ponds.
- B. WRM office staff calculate flow amounts in cubic feet per second and acre-feet per day and enters them into the current annual diversion spreadsheet (T:_Field_Activities\SJR Diversions\SJR Diversions "YYYY".xls)
- A. Annually, WRM office staff files the Report of Licensee for EMWD's surface water diversions with the Division of Water Rights.

2. LHMWD Surface Water Diversions

- A. At the end of each year, LHMWD sends monthly diversion amounts in AF for each diversion point to WRM office staff.
- B. WRM office staff collect and compile

3. Surface Water Flows

- A. At the end of each year, WRM office staff retrieves daily surface water flows in cubic feet per second from the USGS website for gauging stations in the San Jacinto Watershed.
- B. WRM office staff calculates daily flows in AF per day.

RECYCLED WATER DATA

1. Recycled Water Usage and Flows

- A. Water Ops collects monthly meter reads for recycled water users, plant flows, system meters, storage pond meters, and discharge point meters.
- B. Water Ops compiles all the recycled water data in AF per month in the Annual Recycled Water Report. (K:\sprdstat\excel\shared\ "YYYY" Recycled Usage.xls)
- C. WRM office staff queries the Annual Recycled Water Report to retrieve data as needed.

2. Recycled Water Quality

- B. Water Ops collects periodic samples of the recycled water system and delivers the sample to the LAB.
- C. WRM office staff query the LIMS Datamart to retrieve data as needed.

IMPORTED WATER DATA

1. Imported Water Purchases

- A. EMWD Finance collects monthly imported water purchases in AF from Metropolitan Water District of Southern California (MWD) from the Colorado River and State Water Project for each connection.
- B. EMWD Finance compiles the data into the Imported Water Purchase spreadsheet. (K:\sprdstat\excel\reports\MWD Water Deliveries.xls)
- C. WRM office staff queries the Imported Water Purchase spreadsheet to retrieve data as needed.

2. Imported Water Quality

- A. MWD collects monthly samples from District Water Supplies to analyze imported water quality.
- B. MWD compiles the data into Table D - Monthly Analyses of the District Water Supplies, from Metropolitan Water District.
- C. WRM office staff collects Table D - Monthly Analyses of the District Water Supplies, from Metropolitan Water District and compiles them into the Source Water Quality spreadsheet. (D:\master\source water quality.xls)

3. Imported Water Recharge

- A. WRM field staff collects daily reads in AF of raw imported delivered to groundwater recharge ponds.
- B. WRM office staff compile the data into the Conjunctive Use spreadsheet.

CLIMATE DATA

1. Precipitation Data

- A. The Riverside County Flood Control and Conservation District (RCFC) collect daily rainfall in inches from multiple rain gauges in the San Jacinto Watershed including Idyllwild, Hurkey Creek, San Jacinto, Hemet, Moreno Valley, Lake Perris, Menifee, and Winchester. RCFC delivers the data to EMWD upon request.
- B. WRM office staff compiles the data and enters it into the RWRD

2. Evaporation Pan Data

- A. The California Department of Water Resources (DWR) MWD collects daily evaporation pan data in inches at Lake Perris. DWR delivers this data to EMWD upon request.
- B. WRM office staff compiles the data into the Evaporation Pan spreadsheet.

Target Wells Measured for Elevation by Groundwater Management Zone

Highlighted wells are municipal potable/desalter wells that are consistently sampled & measured on a regular basis. Best efforts are made to sample & measure as many of the other listed wells as possible.

	Groundwater Management Zone	Station ID	State Well ID	Coordinates	
				x83	y83
1	SJ Upper Pressure	10119	03S02W36R01	6322582	2258011
2	SJ Upper Pressure	25429	04S01E31N01	6356682	2226014
3	SJ Upper Pressure	10193	04S01E31P01	6358069	2225844
4	SJ Upper Pressure	10196	04S01W07A01	6327988	2252107
5	SJ Upper Pressure	10201	04S01W07E01	6324663	2250882
6	SJ Upper Pressure	14437	04S01W07H	6328976	2249627
7	SJ Upper Pressure	10202	04S01W07L01	6326097	2248513
8	SJ Upper Pressure	10208	04S01W08C01	6331369	2251765
9	SJ Upper Pressure	14025	04S01W08E01	6330132	2249688
10	SJ Upper Pressure	14026	04S01W08E02	6330416	2249643
11	SJ Upper Pressure	10205	04S01W08F01	6332676	2250297
12	SJ Upper Pressure	14303	04S01W15N01	6339702	2242476
13	SJ Upper Pressure	12113	04S01W15N02	6340413	2242729
14	SJ Upper Pressure	14029	04S01W16B01S	6337815	2245813
15	SJ Upper Pressure	10213	04S01W16B02	6337136	2246496
16	SJ Upper Pressure	14030	04S01W16B03S	6337767	2246761
17	SJ Upper Pressure	12119	04S01W16E01	6334551	2245625
18	SJ Upper Pressure	10215	04S01W16F01S	6336276	2244211
19	SJ Upper Pressure	14422	04S01W16H01	6338968	2244206
20	SJ Upper Pressure	14031	04S01W16H01S	6339304	2245031
21	SJ Upper Pressure	10217	04S01W16Q01	6338354	2241988
22	SJ Upper Pressure	12129	04S01W16R01	6339526	2242577
23	SJ Upper Pressure	10221	04S01W17C01	6330738	2245897
24	SJ Upper Pressure	10220	04S01W17F05	6331690	2245129
25	SJ Upper Pressure	25382	04S01W17F07	6331651	2244453
26	SJ Upper Pressure	14441	04S01W17F08	6331095	2244353
27	SJ Upper Pressure	14440	04S01W18A02	6328346	2245614
28	SJ Upper Pressure	10229	04S01W18C01	6325865	2246906
29	SJ Upper Pressure	10242	04S01W20J01	6333744	2238761
30	SJ Upper Pressure	14491	04S01W20J02	6334349	2238515
31	SJ Upper Pressure	10243	04S01W20L01	6331581	2238594
32	SJ Upper Pressure	10194	04S01W20L01	6328734	2239866
33	SJ Upper Pressure	12161	04S01W20P01S	6331012	2237300
34	SJ Upper Pressure	10247	04S01W21B01S	6338310	2241300
35	SJ Upper Pressure	13502	04S01W21E02	6335398	2240006
36	SJ Upper Pressure	10255	04S01W21N02S	6335229	2237200
37	SJ Upper Pressure	10260	04S01W21Q01S	6337797	2237548
38	SJ Upper Pressure	10266	04S01W22Q02S	6343356	2236560
39	SJ Upper Pressure	12206	04S01W23R01S	6349340	2236540
40	SJ Upper Pressure	10272	04S01W25D02S	6350338	2235601
41	SJ Upper Pressure	10273	04S01W25G01S	6353236	2234083
42	SJ Upper Pressure	10274	04S01W25M01S	6351437	2233425
43	SJ Upper Pressure	10276	04S01W25N02S	6350390	2230964
44	SJ Upper Pressure	12229	04S01W26H01	6348987	2234208
45	SJ Upper Pressure	10288	04S01W26R01	6349480	2231675
46	SJ Upper Pressure	10329	04S01W34C03S	6341040	2229745
47	SJ Upper Pressure	10336	04S01W34N01	6341031	2226314
48	SJ Upper Pressure	12297	04S01W35A01	6338330	2232258
49	SJ Upper Pressure	10346	04S01W35J02S	6349464	2228232
50	SJ Upper Pressure	10349	04S01W35Q01S	6348403	2226744
51	SJ Upper Pressure	10350	04S01W35Q02S	6348122	2226568

Target Wells Measured for Elevation by Groundwater Management Zone

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	Groundwater Management Zone	Station ID	State Well ID	Coordinates	
				x83	y83
52	SJ Upper Pressure	25366	04S01W36B01	6353221	2229972
53	SJ Upper Pressure	10356	04S01W36G02S	6353961	2228600
54	SJ Upper Pressure	22881	04S01W36M01S	6351042	2228022
55	SJ Upper Pressure	25659	04S01W36Q03	6353158	2226521
56	SJ Upper Pressure	10365	04S01W36R01S	6355526	2226982
57	SJ Upper Pressure	14426	04S02W01L02	6320617	2254404
58	SJ Upper Pressure	12321	04S02W01M01S	6318383	2254222
59	SJ Upper Pressure	12322	04S02W01N01S	6319575	2253114
60	SJ Upper Pressure	14086	04S02W01R01	6322770	2252549
61	SJ Upper Pressure	10367	04S02W01R02	6322634	2252643
62	SJ Upper Pressure	10371	04S02W02G01	6316320	2255178
63	SJ Upper Pressure	12327	04S02W02J02	6318420	2254317
64	SJ Upper Pressure	10375	04S02W02P01S	6315621	2252356
65	SJ Upper Pressure	12342	04S02W02R01S	6318419	2252763
66	SJ Upper Pressure	11019	04S02W11B01S	6315802	2251890
67	SJ Upper Pressure	11020	04S02W11B02S	6316414	2251621
68	SJ Upper Pressure	14331	04S02W11C01S	6315696	2251218
69	SJ Upper Pressure	12362	04S02W11J01	6318259	2249471
70	SJ Upper Pressure	14099	04S02W12G01	6322304	2249851
71	SJ Upper Pressure	25661	05S01E06D01	6356150	2225297
72	SJ Upper Pressure	10409	05S01E06E02S	6355951	2223705
73	SJ Upper Pressure	25663	05S01E06F01	6357585	2223923
74	SJ Upper Pressure	14425	05S01E06J02S	6359575	2221774
75	SJ Upper Pressure	10413	05S01E06K03S	6358792	2222874
76	SJ Upper Pressure	25368	05S01E06K05S	6358977	2222782
77	SJ Upper Pressure	10414	05S01E06L03S	6357102	2222618
78	SJ Upper Pressure	12494	05S01E06P01S	6357865	2220757
79	SJ Upper Pressure	12499	05S01E07Q02S	6358524	2215118
80	SJ Upper Pressure	12505	05S01E08D02S	6361955	2220124
81	SJ Upper Pressure	12529	05S01E16M01	6366310	2211810
82	SJ Upper Pressure	12531	05S01E16M02	6366210	2211470
83	SJ Upper Pressure	12532	05S01E16N01	6366845	2210999
84	SJ Upper Pressure	14180	05S01E16N02	6367124	2209980
85	SJ Upper Pressure	10435	05S01E17H01	6365340	2212857
86	SJ Upper Pressure	12538	05S01E17Q01S	6363758	2210412
87	SJ Upper Pressure	14170	05S01E17R02	6365846	2209818
88	SJ Upper Pressure	14178	05S01E17R03	6364819	2209927
89	SJ Upper Pressure	12542	05S01E18A01S	6360399	2213778
90	SJ Upper Pressure	10438	05S01E18C01S	6358032	2213811
91	SJ Upper Pressure	12543	05S01E18F01S	6356896	2213092
92	SJ Upper Pressure	10439	05S01E18K02	6359456	2211669
93	SJ Upper Pressure	25380	05S01E20H03	6365944	2207170
94	SJ Upper Pressure	10451	05S01E21D02	6366176	2209669
95	SJ Upper Pressure	14179	05S01E21D03	6366499	2209651
96	SJ Upper Pressure	14421	05S01E21R01	6370684	2205747
97	SJ Upper Pressure	10464	05S01E27E01	6371518	2203305
98	SJ Upper Pressure	10459	05S01E27F01	6373162	2202746
99	SJ Upper Pressure	10455	05S01E27F01S	6373123	2202228
100	SJ Upper Pressure	10460	05S01E27G01	6374723	2201723
101	SJ Upper Pressure	10463	05S01E28A01	6370891	2203858
102	SJ Upper Pressure	10465	05S01E28A01S	6370245	2204140

Target Wells Measured for Elevation by Groundwater Management Zone

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	Groundwater Management Zone	Station ID	State Well ID	Coordinates	
				x83	y83
103	SJ Upper Pressure	10472	05S01W01C01S	6351991	2225581
104	SJ Upper Pressure	14188	05S01W01J01S	6355449	2222662
105	SJ Upper Pressure	10480	05S01W01Q01S	6352894	2221400
106	SJ Upper Pressure	10484	05S01W02A02S	6350098	2225444
107	SJ Upper Pressure	10492	05S01W03K01S	6343231	2222521
108	SJ Upper Pressure	10479	05S01W11A01S	6350224	2219224
109	SJ Upper Pressure	10516	05S01W12A01	6355328	2219828
110	SJ Upper Pressure	10515	05S01W12D01S	6350245	2219384
111	SJ Lower Pressure	13002	02S03W34C01S	6278811	2293416
112	SJ Lower Pressure	12003	02S03W34G01	6279909	2292614
113	SJ Lower Pressure	10091	03S02W07R01	6297325	2279202
114	SJ Lower Pressure	12009	03S02W08E01S	6297708	2282463
115	SJ Lower Pressure	12904	03S02W18R02	6296757	2273724
116	SJ Lower Pressure	12903	03S02W19A01	6297181	2273532
117	SJ Lower Pressure	10099	03S02W28L01	6305078	2265368
118	SJ Lower Pressure	10100	03S02W28Q02	6306041	2263604
119	SJ Lower Pressure	14403	03S02W29P01	6299604	2263154
120	SJ Lower Pressure	14402	03S02W29P02	6299503	2263715
121	SJ Lower Pressure	12017	03S02W29Q01	6300612	2264184
122	SJ Lower Pressure	12018	03S02W29Q02	6300643	2264124
123	SJ Lower Pressure	10106	03S02W33R01	6307092	2257835
124	SJ Lower Pressure	10107	03S02W34E01	6308540	2260886
125	SJ Lower Pressure	25372	03S02W34E02	6308513	2260901
126	SJ Lower Pressure	10110	03S02W35E01	6314257	2261322
127	SJ Lower Pressure	10112	03S02W35E02	6314447	2261047
128	SJ Lower Pressure	14423	03S02W35E03	6313615	2261829
129	SJ Lower Pressure	12039	03S02W35Q01	6315779	2259180
130	SJ Lower Pressure	12323	04S02W02C01	6314712	2256979
131	SJ Lower Pressure	10368	04S02W02C02	6314928	2257079
132	SJ Lower Pressure	10370	04S02W02D01	6313543	2256155
133	SJ Lower Pressure	10377	04S02W03K01	6311776	2254350
134	SJ Canyon	14430	05S01E05E01	6361304	2223847
135	SJ Canyon	12485	05S01E05E02	6362060	2223996
136	SJ Canyon	10392	05S01E05F01	6363191	2223445
137	SJ Canyon	14431	05S01E05F02S	6362733	2223727
138	SJ Canyon	10395	05S01E05L02S	6362527	2222441
139	SJ Canyon	10397	05S01E05M02S	6362078	2222576
140	SJ Canyon	10398	05S01E05M03S	6361849	2222507
141	SJ Canyon	10399	05S01E05M04S	6361924	2222386
142	SJ Canyon	10401	05S01E05M06S	6362624	2222396
143	SJ Canyon	10402	05S01E05M07S	6362216	2222530
144	SJ Canyon	10404	05S01E05P01S	6363461	2221109
145	SJ Canyon	12503	05S01E08C01S	6363459	2219721
146	SJ Canyon	10415	05S01E08R01	6365393	2215341
147	SJ Canyon	12509	05S01E09D01S	6366212	2219777
148	SJ Canyon	12511	05S01E09G01S	6368849	2217715
149	SJ Canyon	12514	05S01E09J03S	6370298	2217595
150	SJ Canyon	12517	05S01E09R01	6371402	2215759
151	SJ Canyon	12518	05S01E10M02S	6371521	2216860
152	SJ Canyon	10419	05S01E10M03S	6371563	2216936
153	SJ Canyon	10420	05S01E10M05S	6371535	2216993

Target Wells Measured for Elevation by Groundwater Management Zone

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	Groundwater Management Zone	Station ID	State Well ID	Coordinates	
				x83	y83
154	SJ Canyon	10423	05S01E13D01	6382369	2214079
155	SJ Canyon	10428	05S01E13R01	6386910	2209929
156	SJ Canyon	10427	05S01E13R02	6385944	2209608
157	SJ Canyon	12525	05S01E14D01	6377514	2214195
158	SJ Canyon	14157	05S01E14D03	6377832	2214613
159	SJ Canyon	13105	05S01E16F01S	6367726	2214545
160	SJ Canyon	25545	05S01E16R01	6371304	2209689
161	Perris South	12446	04S03W26C02S	6282673	2235509
162	Perris South	25364	04S03W26K05	6284565	2232460
163	Perris South	12447	04S03W26M01S	6282321	2233515
164	Perris South	12448	04S03W26N01S	6282089	2231405
165	Perris South	25425	04S03W26Q03S	6283785	2231421
166	Perris South	12454	04S03W29Q01S	6268978	2231808
167	Perris South	25419	04S03W32A04S	6270338	2230318
168	Perris South	14497	04S03W33D	6270544	2230723
169	Perris South	12466	04S03W33E01S	6270408	2229890
170	Perris South	12467	04S03W33Q01S	6273388	2226309
171	Perris South	11089	04S03W35B01	6283692	2230488
172	Perris South	14400	05S02W19N01S	6292637	2204691
173	Perris South	11118	05S02W30A01S	6296975	2203821
174	Perris South	11119	05S02W30B01S	6295717	2204495
175	Perris South	11120	05S02W30B02S	6294546	2204452
176	Perris South	12697	05S02W30G02S	6294766	2202049
177	Perris South	12698	05S02W30G03S	6294552	2203133
178	Perris South	12699	05S02W30H01S	6297105	2202662
179	Perris South	12700	05S02W30H02S	6296981	2202051
180	Perris South	12701	05S02W30H03S	6296215	2202047
181	Perris South	12722	05S03W03C01S	6278937	2225078
182	Perris South	25413	05S03W03C02S	6278954	2225770
183	Perris South	12724	05S03W03K01	6280209	2222233
184	Perris South	12726	05S03W03L01S	6278886	2222632
185	Perris South	12727	05S03W03N01S	6276308	2220680
186	Perris South	25411	05S03W03P02S	6278775	2220730
187	Perris South	12730	05S03W03R01S	6280226	2220732
188	Perris South	12731	05S03W03R02S	6280241	2221309
189	Perris South	12732	05S03W04A01S	6275817	2225342
190	Perris South	25415	05S03W04A02S	6276270	2225729
191	Perris South	12733	05S03W04M01S	6272349	2221840
192	Perris South	12742	05S03W09E01S	6272296	2218081
193	Perris South	14355	05S03W09F02	6273498	2218006
194	Perris South	12743	05S03W09H02S	6275704	2219396
195	Perris South	12744	05S03W09H03S	6275953	2218022
196	Perris South	25407	05S03W11M03S	6281545	2217500
197	Perris South	12757	05S03W13A01	6292110	2215084
198	Perris South	12759	05S03W13C01	6288238	2215112
199	Perris South	12761	05S03W13H01S	6292107	2213678
200	Perris South	14433	05S03W15A01S	6277981	2215003
201	Perris South	25427	05S03W15C01S	6277981	2215107
202	Perris South	14429	05S03W16K01S	6273479	2212569
203	Perris South	12765	05S03W16L01S	6273519	2211528
204	Perris South	11141	05S03W16P01S	6273141	2210618

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	Groundwater Management Zone	Station ID	State Well ID	Coordinates	
				x83	y83
205	Perris South	12774	05S03W23C01	6283933	2210059
206	Perris South	11157	05S03W24C01S	6289411	2209716
207	Perris South	14357	05S03W28M01	6272118	2201515
208	Perris South	12795	05S03W32A01S	6270773	2199190
209	Perris South	12796	05S03W32B01S	6269440	2198438
210	Perris South	12797	05S03W32C01S	6267904	2198440
211	Perris South	12798	05S03W32G01S	6268837	2197433
212	Perris South	12799	05S03W32H01S	6270302	2197855
213	Perris South	25417	05S03W32H02S	6270793	2197839
214	Perris South	12800	05S03W32L01S	6267516	2196251
215	Perris South	14428	05S03W33G02S	6274138	2196875
216	Perris South	12802	05S03W33K01S	6274045	2196887
217	Perris North	10081	02S04W36R02S	6260093	2290032
218	Perris North	12046	03S03W02L01S	6282542	2286499
219	Perris North	14352	03S03W02L02	6283450	2286066
220	Perris North	12047	03S03W02L02S	6283969	2286427
221	Perris North	12050	03S03W06D02S	6260464	2289147
222	Perris North	10123	03S03W06D04S	6260472	2289283
223	Perris North	12052	03S03W06N03S	6261289	2285163
224	Perris North	14350	03S03W06N05S	6261121	2285176
225	Perris North	10140	03S03W14L01	6282577	2275370
226	Perris North	10141	03S03W14M01	6281800	2275239
227	Perris North	10154	03S03W21A01S	6274655	2272221
228	Perris North	12077	03S03W22D01S	6276061	2272140
229	Perris North	25515	03S03W32B	6268208	2262680
230	Perris North	25517	03S03W32Q	6268583	2257659
231	Perris North	10178	03S04W10A01S	6248647	2283231
232	Perris North	25354	04S03W06C03S	6262497	2256455
233	Perris North	11044	04S03W06Q01S	6263537	2253002
234	Perris North	11046	04S03W06Q04S	6263307	2253613
235	Perris North	11048	04S03W07H01	6265144	2250366
236	Perris North	11049	04S03W07J01S	6264874	2249618
237	Perris North	12404	04S03W07J02S	6264187	2248612
238	Perris North	25356	04S03W09H01	6275701	2250263
239	Perris North	25358	04S03W09H02	6275710	2250077
240	Perris North	11058	04S03W09P01S	6272999	2247983
241	Perris North	25360	04S03W10E04	6276892	2250119
242	Perris North	25362	04S03W10M01	6276537	2249636
243	Perris North	11060	04S03W16B01S	6273380	2246979
244	Perris North	12414	04S03W16B02S	6273225	2246906
245	Perris North	11067	04S03W18J02S	6265124	2244081
246	Perris North	11068	04S03W18J03S	6264982	2244031
247	Perris North	12430	04S03W19A01	6264976	2240487
248	Perris North	11070	04S03W19A01S	6265118	2241546
249	Perris North	25378	04S03W19A02	6265070	2241211
250	Perris North	12471	04S04W01A01S	6258663	2256926
251	Perris North	12474	04S04W01G01S	6258329	2256310
252	Menifee	14498	05S03W34Q	6279548	2194242
253	Menifee	12807	05S03W35N02S	6282188	2194209
254	Menifee	12809	05S03W35Q01S	6285402	2194233
255	Menifee	14432	05S03W36N03	6287403	2194231

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	Groundwater Management Zone	Station ID	State Well ID	Coordinates	
				x83	y83
256	Menifee	12816	05S03W36P02S	6289195	2194373
257	Menifee	11175	06S02W05N01	6297199	2188854
258	Menifee	14359	06S02W09E02	6302494	2186172
259	Menifee	11191	06S03W01H01	6291616	2191582
260	Menifee	12836	06S03W01H02	6290966	2191459
261	Menifee	12837	06S03W01J01	6291555	2190972
262	Menifee	12840	06S03W02A01S	6286626	2194004
263	Menifee	12841	06S03W02D01S	6282391	2193615
264	Menifee	12842	06S03W02E01S	6281793	2192345
265	Menifee	12845	06S03W02G02	6285026	2192120
266	Menifee	12846	06S03W02G03	6284309	2192180
267	Menifee	12847	06S03W02H01	6286466	2191735
268	Menifee	12848	06S03W02J01	6285413	2191202
269	Menifee	14358	06S03W12A01	6291820	2188655
270	Lakeview/Hemet North	14407	03S02W31L01	6294379	2260590
271	Lakeview/Hemet North	14404	03S02W32E01	6297308	2261483
272	Lakeview/Hemet North	12026	03S02W33P01	6304730	2257894
273	Lakeview/Hemet North	10230	04S01W18E01	6324213	2245046
274	Lakeview/Hemet North	10233	04S01W18N02	6323785	2242198
275	Lakeview/Hemet North	10234	04S01W18N03	6324774	2241696
276	Lakeview/Hemet North	10236	04S01W19M01	6324579	2238415
277	Lakeview/Hemet North	14420	04S01W29D01S	6330113	2235652
278	Lakeview/Hemet North	10310	04S01W29G01S	6331798	2234225
279	Lakeview/Hemet North	10311	04S01W30F01	6324984	2234653
280	Lakeview/Hemet North	12905	04S01W30M01	6323677	2233626
281	Lakeview/Hemet North	10314	04S01W30R02	6328988	2231016
282	Lakeview/Hemet North	11001	04S02W04J01	6307376	2254486
283	Lakeview/Hemet North	11004	04S02W07J02	6296083	2249237
284	Lakeview/Hemet North	11005	04S02W07N01	6292870	2247224
285	Lakeview/Hemet North	11006	04S02W07P01S	6294436	2247295
286	Lakeview/Hemet North	12349	04S02W07Q01	6295516	2247290
287	Lakeview/Hemet North	11007	04S02W08C01	6299409	2252229
288	Lakeview/Hemet North	12350	04S02W08E01	6297765	2250845
289	Lakeview/Hemet North	11008	04S02W08H01	6301297	2250868
290	Lakeview/Hemet North	12354	04S02W08Q01	6300403	2248085
291	Lakeview/Hemet North	11012	04S02W09A01	6307130	2251186
292	Lakeview/Hemet North	14409	04S02W09H01	6307247	2250171
293	Lakeview/Hemet North	11017	04S02W10C01	6310020	2252136
294	Lakeview/Hemet North	11018	04S02W10D01	6308131	2251625
295	Lakeview/Hemet North	14332	04S02W11D01	6314311	2251261
296	Lakeview/Hemet North	11024	04S02W11F01S	6315677	2249617
297	Lakeview/Hemet North	12365	04S02W12N01	6319040	2247045
298	Lakeview/Hemet North	14334	04S02W12N02	6318457	2247747
299	Lakeview/Hemet North	10380	04S02W13B01	6321100	2245927
300	Lakeview/Hemet North	12367	04S02W13C01	6320307	2246075
301	Lakeview/Hemet North	12901	04S02W13C02	6320428	2246242
302	Lakeview/Hemet North	10382	04S02W13H02	6323128	2244685
303	Lakeview/Hemet North	10383	04S02W13J01	6323318	2242793
304	Lakeview/Hemet North	12902	04S02W13R01	6323311	2242595
305	Lakeview/Hemet North	11028	04S02W18A01S	6295969	2246544
306	Lakeview/Hemet North	12371	04S02W18B01S	6295103	2246477

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	Groundwater Management Zone	Station ID	State Well ID	Coordinates	
				x83	y83
307	Lakeview/Hemet North	12372	04S02W18C01S	6294159	2246517
308	Lakeview/Hemet North	13069	04S02W18D01	6292207	2245714
309	Lakeview/Hemet North	12374	04S02W18G01	6295002	2244584
310	Lakeview/Hemet North	12377	04S02W18K01	6294738	2244190
311	Lakeview/Hemet North	10387	04S02W24A01	6323506	2240340
312	Lakeview/Hemet North	10388	04S02W24H01S	6323554	2239238
313	Lakeview/Hemet North	10389	04S02W24H03S	6323493	2239275
314	Lakeview/Hemet North	14149	04S03W07P	6294484	2247302
315	Lakeview/Hemet North	14408	04S03W12J01	6290939	2248491
316	Lakeview/Hemet North	11059	04S03W13Q01S	6290358	2243112
317	Lakeview/Hemet North	12920	04S03W13R01	6290303	2241639
318	Lakeview/Hemet North	13089	04S03W24B01S	6289578	2240789
319	Lakeview/Hemet North	12444	04S03W25C01	6287710	2236287
320	Lakeview/Hemet North	13090	04S03W25D01S	6287219	2235979
321	Lakeview/Hemet North	25423	04S03W25D03S	6287463	2236181
322	Lakeview/Hemet North	25352	04S03W26A01	6286275	2235604
323	Lakeview/Hemet North	25567	05S01W05B	6333018	2224413
324	Hemet South	13108	05S01E18Q02	6359452	2210409
325	Hemet South	12546	05S01E19A01S	6360756	2209650
326	Hemet South	10442	05S01E20D01	6361594	2209471
327	Hemet South	10443	05S01E20E02	6361856	2208242
328	Hemet South	12547	05S01E20G01	6363499	2207236
329	Hemet South	14419	05S01E20J01	6365974	2206959
330	Hemet South	10444	05S01E20K01	6364048	2206936
331	Hemet South	12553	05S01E20K02	6364506	2206502
332	Hemet South	25587	05S01E20K03	6364058	2206946
333	Hemet South	12554	05S01E20M01S	6361435	2206155
334	Hemet South	10447	05S01E21P01	6368766	2205065
335	Hemet South	10448	05S01E21P02	6368331	2204926
336	Hemet South	12560	05S01E21P04	6367450	2204917
337	Hemet South	25481	05S01E27E	6371839	2202667
338	Hemet South	10456	05S01E27E02	6371637	2202678
339	Hemet South	25370	05S01E27E03	6372392	2202403
340	Hemet South	14411	05S01W03N01S	6339764	2220534
341	Hemet South	10495	05S01W04N01	6335755	2220475
342	Hemet South	10499	05S01W08G01	6332796	2218918
343	Hemet South	10500	05S01W08G02	6332647	2218861
344	Hemet South	10504	05S01W09C01S	6336912	2219376
345	Hemet South	10508	05S01W10B02S	6342869	2219969
346	Hemet South	10509	05S01W10E01S	6340930	2217915
347	Hemet South	10510	05S01W10G01S	6342624	2218813
348	Hemet South	14415	05S01W10K01	6343357	2217654
349	Hemet South	10512	05S01W10K01S	6343126	2217647
350	Hemet South	10514	05S01W10P01S	6341139	2215706
351	Hemet South	12593	05S01W13C01S	6352772	2214358
352	Hemet South	10518	05S01W14K01S	6348775	2211400
353	Hemet South	12598	05S01W14P01S	6347528	2210169
354	Hemet South	10520	05S01W16J01S	6339572	2211440
355	Hemet South	12603	05S01W16L01S	6336169	2211894
356	Hemet South	10521	05S01W17C01S	6331592	2215086
357	Hemet South	10522	05S01W17J01S	6333590	2211299

Target Wells Measured for Elevation by Groundwater Management Zone

Highlighted wells are municipal potable/desalter wells that are consistently sampled & measured on a regular basis. Best efforts are made to sample & measure as many of the other listed wells as possible.

	Groundwater Management Zone	Station ID	State Well ID	Coordinates	
				x83	y83
358	Hemet South	14496	05S01W17J02S	6333668	2211171
359	Hemet South	10523	05S01W17P01S	6331328	2210602
360	Hemet South	12613	05S01W18P01S	6326183	2209915
361	Hemet South	10525	05S01W20N01	6329276	2205541
362	Hemet South	10528	05S01W21A03S	6339529	2209719
363	Hemet South	12621	05S01W21C02S	6336103	2209750
364	Hemet South	25332	05S01W21D02	6334442	2209745
365	Hemet South	10530	05S01W22D02S	6340941	2209633
366	Hemet South	10531	05S01W22D03S	6339747	2209637
367	Hemet South	12624	05S01W27L01S	6341376	2201962
368	Hemet South	14412	05S01W30D01	6323766	2203684
369	Hemet South	10542	05S01W30E02S	6323753	2202573
370	Hemet South	11114	05S02W22G02	6311341	2207416
371	Hemet South	14401	05S02W22G03	6311339	2207383
372	Hemet South	25543	05S02W22K01	6311391	2207205
373	Hemet South	12676	05S02W25H01	6322417	2202072
374	Hemet South	12677	05S02W25J01	6322385	2201877
375	Hemet South	12678	05S02W25K01	6320928	2200452
376	Hemet South	12681	05S02W25P03S	6320720	2200555

Targeted Wells Sampled for Water Quality by Groundwater Management Zone

Highlighted wells are municipal potable/desalter wells that are consistently sampled & measured on a regular basis.
Best efforts are made to sample & measure as many of the other listed wells as possible.

	Groundwater Management Zone	Station ID	State Well ID	Coordinates	
				x83	y83
1	SJ Upper Pressure	10193	04S01E31P01	6358069	2225844
2	SJ Upper Pressure	10206	04S01W06Q01	6327548	2252181
3	SJ Upper Pressure	10196	04S01W07A01	6327988	2252107
4	SJ Upper Pressure	25611	04S01W15N05	6339692	2242466
5	SJ Upper Pressure	14029	04S01W16B01S	6337815	2245813
6	SJ Upper Pressure	10213	04S01W16B02	6337136	2246496
7	SJ Upper Pressure	14030	04S01W16B03S	6337767	2246761
8	SJ Upper Pressure	12119	04S01W16E01	6334551	2245625
9	SJ Upper Pressure	10215	04S01W16F01S	6336276	2244211
10	SJ Upper Pressure	14422	04S01W16H01	6338968	2244206
11	SJ Upper Pressure	14031	04S01W16H01S	6339304	2245031
12	SJ Upper Pressure	10217	04S01W16Q01	6338354	2241988
13	SJ Upper Pressure	10219	04S01W17D01	6330340	2246041
14	SJ Upper Pressure	25346	04S01W17E02	6329945	2244596
15	SJ Upper Pressure	13042	04S01W17F03S	6330983	2244243
16	SJ Upper Pressure	10220	04S01W17F05	6331690	2245129
17	SJ Upper Pressure	14440	04S01W18A02	6328346	2245614
18	SJ Upper Pressure	10229	04S01W18C01	6325865	2246906
19	SJ Upper Pressure	10194	04S01W20L01	6328734	2239866
20	SJ Upper Pressure	10247	04S01W21B01S	6338310	2241300
21	SJ Upper Pressure	10266	04S01W22Q02S	6343356	2236560
22	SJ Upper Pressure	10272	04S01W25D02S	6350338	2235601
23	SJ Upper Pressure	10273	04S01W25G01S	6353236	2234083
24	SJ Upper Pressure	25386	04S01W25K01	6353245	2233142
25	SJ Upper Pressure	10276	04S01W25N02S	6350390	2230964
26	SJ Upper Pressure	10288	04S01W26R01	6349480	2231675
27	SJ Upper Pressure	10329	04S01W34C03S	6341040	2229745
28	SJ Upper Pressure	10336	04S01W34N01	6341031	2226314
29	SJ Upper Pressure	12297	04S01W35A01	6338330	2232258
30	SJ Upper Pressure	10350	04S01W35Q02S	6348122	2226568
31	SJ Upper Pressure	10353	04S01W36A01S	6354277	2230835
32	SJ Upper Pressure	25366	04S01W36B01	6353221	2229972
33	SJ Upper Pressure	10356	04S01W36G02S	6353961	2228600
34	SJ Upper Pressure	22881	04S01W36M01S	6351042	2228022
35	SJ Upper Pressure	25659	04S01W36Q03	6353158	2226521
36	SJ Upper Pressure	10365	04S01W36R01S	6355526	2226982
37	SJ Upper Pressure	12321	04S02W01M01S	6318383	2254222
38	SJ Upper Pressure	12322	04S02W01N01S	6319575	2253114
39	SJ Upper Pressure	10371	04S02W02G01	6316320	2255178
40	SJ Upper Pressure	12327	04S02W02J02	6318420	2254317
41	SJ Upper Pressure	10375	04S02W02P01S	6315621	2252356
42	SJ Upper Pressure	12342	04S02W02R01S	6318419	2252763
43	SJ Upper Pressure	12362	04S02W11J01	6318259	2249471
44	SJ Upper Pressure	14099	04S02W12G01	6322304	2249851
45	SJ Upper Pressure	10403	05S01E05N01	6361478	2221574
46	SJ Upper Pressure	25661	05S01E06D01	6356150	2225297
47	SJ Upper Pressure	10409	05S01E06E02S	6355951	2223705
48	SJ Upper Pressure	25663	05S01E06F01	6357585	2223923
49	SJ Upper Pressure	14425	05S01E06J02S	6359575	2221774
50	SJ Upper Pressure	25368	05S01E06K05S	6358977	2222782
51	SJ Upper Pressure	10414	05S01E06L03S	6357102	2222618

*Please note that coordinates are in State Plane, NAD83, CA Zone 6, Feet.

Targeted Wells Sampled for Water Quality by Groundwater Management Zone

Highlighted wells are municipal potable/desalter wells that are consistently sampled & measured on a regular basis.
Best efforts are made to sample & measure as many of the other listed wells as possible.

	Groundwater Management Zone	Station ID	State Well ID	Coordinates	
				x83	y83
52	SJ Upper Pressure	12505	05S01E08D02S	6361955	2220124
53	SJ Upper Pressure	12532	05S01E16N01	6366845	2210999
54	SJ Upper Pressure	14180	05S01E16N02	6367124	2209980
55	SJ Upper Pressure	10435	05S01E17H01	6365340	2212857
56	SJ Upper Pressure	10439	05S01E18K02	6359456	2211669
57	SJ Upper Pressure	10451	05S01E21D02	6366176	2209669
58	SJ Upper Pressure	14179	05S01E21D03	6366499	2209651
59	SJ Upper Pressure	10466	05S01E27D01	6371516	2204272
60	SJ Upper Pressure	10464	05S01E27E01	6371518	2203305
61	SJ Upper Pressure	10455	05S01E27F01S	6373123	2202228
62	SJ Upper Pressure	10460	05S01E27G01	6374723	2201723
63	SJ Upper Pressure	10463	05S01E28A01	6370891	2203858
64	SJ Upper Pressure	10465	05S01E28A01S	6370245	2204140
65	SJ Upper Pressure	14188	05S01W01J01S	6355449	2222662
66	SJ Upper Pressure	10480	05S01W01Q01S	6352894	2221400
67	SJ Upper Pressure	10484	05S01W02A02S	6350098	2225444
68	SJ Upper Pressure	10492	05S01W03K01S	6343231	2222521
69	SJ Upper Pressure	10479	05S01W11A01S	6350224	2219224
70	SJ Upper Pressure	10516	05S01W12A01	6355328	2219828
71	SJ Upper Pressure	10515	05S01W12D01S	6350245	2219384
72	SJ Lower Pressure	13002	02S03W34C01S	6278811	2293416
73	SJ Lower Pressure	12009	03S02W08E01S	6297708	2282463
74	SJ Lower Pressure	12903	03S02W19A01	6297181	2273532
75	SJ Lower Pressure	10099	03S02W28L01	6305078	2265368
76	SJ Lower Pressure	14402	03S02W29P02	6299503	2263715
77	SJ Lower Pressure	10110	03S02W35E01	6314257	2261322
78	SJ Lower Pressure	14423	03S02W35E03	6313615	2261829
79	SJ Canyon	25680	04S01E28A01	6369489	2235592
80	SJ Canyon	14430	05S01E05E01	6361304	2223847
81	SJ Canyon	12485	05S01E05E02	6362060	2223996
82	SJ Canyon	10392	05S01E05F01	6363191	2223445
83	SJ Canyon	14431	05S01E05F02S	6362733	2223727
84	SJ Canyon	10395	05S01E05L02S	6362527	2222441
85	SJ Canyon	10399	05S01E05M04S	6361924	2222386
86	SJ Canyon	10402	05S01E05M07S	6362216	2222530
87	SJ Canyon	10404	05S01E05P01S	6363461	2221109
88	SJ Canyon	12503	05S01E08C01S	6363459	2219721
89	SJ Canyon	10415	05S01E08R01	6365393	2215341
90	SJ Canyon	12509	05S01E09D01S	6366212	2219777
91	SJ Canyon	12514	05S01E09J03S	6370298	2217595
92	SJ Canyon	12517	05S01E09R01	6371402	2215759
93	SJ Canyon	12518	05S01E10M02S	6371521	2216860
94	SJ Canyon	10420	05S01E10M05S	6371535	2216993
95	SJ Canyon	10423	05S01E13D01	6382369	2214079
96	SJ Canyon	12900	05S01E13Q01	6385469	2209900
97	SJ Canyon	10428	05S01E13R01	6386910	2209929
98	SJ Canyon	10427	05S01E13R02	6385944	2209608
99	SJ Canyon	12525	05S01E14D01	6377514	2214195
100	Perris South	12446	04S03W26C02S	6282673	2235509
101	Perris South	12447	04S03W26M01S	6282321	2233515
102	Perris South	12448	04S03W26N01S	6282089	2231405

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Targeted Wells Sampled for Water Quality by Groundwater Management Zone

Highlighted wells are municipal potable/desalter wells that are consistently sampled & measured on a regular basis.
Best efforts are made to sample & measure as many of the other listed wells as possible.

	Groundwater Management Zone	Station ID	State Well ID	Coordinates	
				x83	y83
103	Perris South	25425	04S03W26Q03S	6283785	2231421
104	Perris South	25419	04S03W32A04S	6270338	2230318
105	Perris South	14497	04S03W33D	6270544	2230723
106	Perris South	12466	04S03W33E01S	6270408	2229890
107	Perris South	12467	04S03W33Q01S	6273388	2226309
108	Perris South	11089	04S03W35B01	6283692	2230488
109	Perris South	11118	05S02W30A01S	6296975	2203821
110	Perris South	11119	05S02W30B01S	6295717	2204495
111	Perris South	11120	05S02W30B02S	6294546	2204452
112	Perris South	12697	05S02W30G02S	6294766	2202049
113	Perris South	12698	05S02W30G03S	6294552	2203133
114	Perris South	12699	05S02W30H01S	6297105	2202662
115	Perris South	12700	05S02W30H02S	6296981	2202051
116	Perris South	12701	05S02W30H03S	6296215	2202047
117	Perris South	12722	05S03W03C01S	6278937	2225078
118	Perris South	25413	05S03W03C02S	6278954	2225770
119	Perris South	12724	05S03W03K01	6280209	2222233
120	Perris South	12726	05S03W03L01S	6278886	2222632
121	Perris South	12727	05S03W03N01S	6276308	2220680
122	Perris South	25411	05S03W03P02S	6278775	2220730
123	Perris South	12730	05S03W03R01S	6280226	2220732
124	Perris South	12732	05S03W04A01S	6275817	2225342
125	Perris South	25415	05S03W04A02S	6276270	2225729
126	Perris South	12733	05S03W04M01S	6272349	2221840
127	Perris South	12742	05S03W09E01S	6272296	2218081
128	Perris South	14355	05S03W09F02	6273498	2218006
129	Perris South	12743	05S03W09H02S	6275704	2219396
130	Perris South	12744	05S03W09H03S	6275953	2218022
131	Perris South	25407	05S03W11M03S	6281545	2217500
132	Perris South	12759	05S03W13C01	6288238	2215112
133	Perris South	25427	05S03W15C01S	6277981	2215107
134	Perris South	14429	05S03W16K01S	6273479	2212569
135	Perris South	11141	05S03W16P01S	6273141	2210618
136	Perris South	11157	05S03W24C01S	6289411	2209716
137	Perris South	12795	05S03W32A01S	6270773	2199190
138	Perris South	12796	05S03W32B01S	6269440	2198438
139	Perris South	12798	05S03W32G01S	6268837	2197433
140	Perris South	12799	05S03W32H01S	6270302	2197855
141	Perris South	25417	05S03W32H02S	6270793	2197839
142	Perris South	12800	05S03W32L01S	6267516	2196251
143	Perris South	14428	05S03W33G02S	6274138	2196875
144	Perris North	10081	02S04W36R02S	6260093	2290032
145	Perris North	12046	03S03W02L01S	6282542	2286499
146	Perris North	12047	03S03W02L02S	6283969	2286427
147	Perris North	12050	03S03W06D02S	6260464	2289147
148	Perris North	10123	03S03W06D04S	6260472	2289283
149	Perris North	12052	03S03W06N03S	6261289	2285163
150	Perris North	14350	03S03W06N05S	6261121	2285176
151	Perris North	25515	03S03W32B01S	6268208	2262680
152	Perris North	25517	03S03W32Q01S	6268583	2257659
153	Perris North	12089	03S04W01J01S	6259928	2286651

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Targeted Wells Sampled for Water Quality by Groundwater Management Zone

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	Groundwater Management Zone	Station ID	State Well ID	Coordinates	
				x83	y83
154	Perris North	10178	03S04W10A01S	6248647	2283231
155	Perris North	25354	04S03W06C03S	6262497	2256455
156	Perris North	11046	04S03W06Q04S	6263307	2253613
157	Perris North	12404	04S03W07J02S	6264187	2248612
158	Perris North	25356	04S03W09H01	6275701	2250263
159	Perris North	25358	04S03W09H02	6275710	2250077
160	Perris North	11058	04S03W09P01S	6272999	2247983
161	Perris North	25360	04S03W10E04	6276892	2250119
162	Perris North	25362	04S03W10M01	6276537	2249636
163	Perris North	11060	04S03W16B01S	6273380	2246979
164	Perris North	12414	04S03W16B02S	6273225	2246906
165	Perris North	11068	04S03W18J03S	6264982	2244031
166	Perris North	11070	04S03W19A01S	6265118	2241546
167	Perris North	12471	04S04W01A01S	6258663	2256926
168	Menifee	14498	05S03W34Q	6279548	2194242
169	Menifee	12809	05S03W35Q01S	6285402	2194233
170	Menifee	14432	05S03W36N03	6287403	2194231
171	Menifee	12816	05S03W36P02S	6289195	2194373
172	Menifee	11175	06S02W05N01	6297199	2188854
173	Menifee	11191	06S03W01H01	6291616	2191582
174	Menifee	12836	06S03W01H02	6290966	2191459
175	Menifee	12837	06S03W01J01	6291555	2190972
176	Menifee	12840	06S03W02A01S	6286626	2194004
177	Menifee	12841	06S03W02D01S	6282391	2193615
178	Menifee	12842	06S03W02E01S	6281793	2192345
179	Menifee	12845	06S03W02G02	6285026	2192120
180	Menifee	12846	06S03W02G03	6284309	2192180
181	Menifee	12847	06S03W02H01	6286466	2191735
182	Lakeview/Hemet North	14407	03S02W31L01	6294379	2260590
183	Lakeview/Hemet North	14495	03S02W32E	6297302	2262030
184	Lakeview/Hemet North	12026	03S02W33P01	6304730	2257894
185	Lakeview/Hemet North	10233	04S01W18N02	6323785	2242198
186	Lakeview/Hemet North	10234	04S01W18N03	6324774	2241696
187	Lakeview/Hemet North	10310	04S01W29G01S	6331798	2234225
188	Lakeview/Hemet North	10314	04S01W30R02	6328988	2231016
189	Lakeview/Hemet North	14490	04S01W31C	6326129	2230885
190	Lakeview/Hemet North	13501	04S01W32P01	6330477	2226684
191	Lakeview/Hemet North	10378	04S02W03L01	6309305	2254447
192	Lakeview/Hemet North	10379	04S02W03M01	6308688	2254425
193	Lakeview/Hemet North	11005	04S02W07N01	6292870	2247224
194	Lakeview/Hemet North	11006	04S02W07P01S	6294436	2247295
195	Lakeview/Hemet North	12352	04S02W08G01	6300614	2249758
196	Lakeview/Hemet North	12354	04S02W08Q01	6300403	2248085
197	Lakeview/Hemet North	11012	04S02W09A01	6307130	2251186
198	Lakeview/Hemet North	11014	04S02W09C01	6304361	2250901
199	Lakeview/Hemet North	12355	04S02W09D01	6302737	2250920
200	Lakeview/Hemet North	11015	04S02W09H03	6306965	2250887
201	Lakeview/Hemet North	11017	04S02W10C01	6310020	2252136
202	Lakeview/Hemet North	25631	04S02W11D02	6314349	2251248
203	Lakeview/Hemet North	14438	04S02W11J02	6318001	2248459
204	Lakeview/Hemet North	12364	04S02W12N01	6318684	2247311

*Please note that coordinates are in State Plane, NAD83, CA Zone 6, Feet.

Targeted Wells Sampled for Water Quality by Groundwater Management Zone

Highlighted wells are municipal potable/desalter wells that are consistently sampled & measured on a regular basis.
Best efforts are made to sample & measure as many of the other listed wells as possible.

	Groundwater Management Zone	Station ID	State Well ID	Coordinates	
				x83	y83
205	Lakeview/Hemet North	14102	04S02W12P02	6319780	2246959
206	Lakeview/Hemet North	10380	04S02W13B01	6321100	2245927
207	Lakeview/Hemet North	14439	04S02W13B02	6321095	2245881
208	Lakeview/Hemet North	12367	04S02W13C01	6320307	2246075
209	Lakeview/Hemet North	10381	04S02W13H01	6322724	2244552
210	Lakeview/Hemet North	10382	04S02W13H02	6323128	2244685
211	Lakeview/Hemet North	10383	04S02W13J01	6323318	2242793
212	Lakeview/Hemet North	12902	04S02W13R01	6323311	2242595
213	Lakeview/Hemet North	11028	04S02W18A01	6295969	2246544
214	Lakeview/Hemet North	12374	04S02W18G01	6295002	2244584
215	Lakeview/Hemet North	12377	04S02W18K01	6294738	2244190
216	Lakeview/Hemet North	10388	04S02W24H01S	6323554	2239238
217	Lakeview/Hemet North	10389	04S02W24H03S	6323493	2239275
218	Lakeview/Hemet North	14149	04S03W07P	6294484	2247302
219	Lakeview/Hemet North	12444	04S03W25C01	6287710	2236287
220	Lakeview/Hemet North	25423	04S03W25D03S	6287463	2236181
221	Lakeview/Hemet North	25352	04S03W26A01	6286275	2235604
222	Lakeview/Hemet North	25567	05S01W05B	6333018	2224413
223	Hemet South	25445	04S01W32M01	6329717	2227718
224	Hemet South	13108	05S01E18Q02	6359452	2210409
225	Hemet South	10442	05S01E20D01	6361594	2209471
226	Hemet South	10443	05S01E20E02	6361856	2208242
227	Hemet South	12547	05S01E20G01	6363499	2207236
228	Hemet South	12553	05S01E20K02	6364506	2206502
229	Hemet South	25587	05S01E20K03	6364058	2206946
230	Hemet South	12554	05S01E20M01S	6361435	2206155
231	Hemet South	10447	05S01E21P01	6368766	2205065
232	Hemet South	25481	05S01E27E	6371839	2202667
233	Hemet South	14411	05S01W03N01S	6339764	2220534
234	Hemet South	10500	05S01W08G02	6332647	2218861
235	Hemet South	10504	05S01W09C01S	6336912	2219376
236	Hemet South	10509	05S01W10E01S	6340930	2217915
237	Hemet South	10510	05S01W10G01S	6342624	2218813
238	Hemet South	10514	05S01W10P01S	6341139	2215706
239	Hemet South	12598	05S01W14P01S	6347528	2210169
240	Hemet South	10520	05S01W16J01S	6339572	2211440
241	Hemet South	12603	05S01W16L01S	6336169	2211894
242	Hemet South	10521	05S01W17C01S	6331592	2215086
243	Hemet South	14496	05S01W17J02S	6333668	2211171
244	Hemet South	12613	05S01W18P01S	6326183	2209915
245	Hemet South	10528	05S01W21A03S	6339529	2209719
246	Hemet South	12621	05S01W21C02S	6336103	2209750
247	Hemet South	25332	05S01W21D02	6334442	2209745
248	Hemet South	10531	05S01W22D03S	6339747	2209637
249	Hemet South	12907	05S01W28L01	6335710	2202323
250	Hemet South	25722	05S01W33G01	6337711	2196988
251	Hemet South	25726	05S01W33R03	6338877	2194839
252	Hemet South	12910	05S01W33R04	6338858	2194045
253	Hemet South	25724	05S01W34E01	6340375	2196660
254	Hemet South	11113	05S02W22G01	6311346	2207686
255	Hemet South	11114	05S02W22G02	6311341	2207416

*Please note that coordinates are in State Plane, NAD83, CA Zone 6, Feet.

Targeted Wells Sampled for Water Quality by Groundwater Management Zone

Highlighted wells are municipal potable/desalter wells that are consistently sampled & measured on a regular basis.
Best efforts are made to sample & measure as many of the other listed wells as possible.

	Groundwater Management Zone	Station ID	State Well ID	Coordinates	
				x83	y83
256	Hemet South	14401	05S02W22G03	6311339	2207383
257	Hemet South	25543	05S02W22K01	6311391	2207205
258	Hemet South	12909	06S01W04H04	6339692	2192013

STANDARD OPERATING PROCEDURES

WATER LEVEL MONITORING PROGRAM WATER LEVEL and TOTAL DEPTH MEASUREMENTS

Revised July 8, 2003

PURPOSE

To establish proper and standardized measurement techniques which are essential for obtaining meaningful data. Data collected in this program will help characterize basin hydrology, evaluate groundwater flow conditions; and monitor groundwater level changes. Water level measurements are generally taken biannually, in the spring and fall.

POLICIES

Always get prior permission before attempting anything involving private well sampling or sounding. It is best to have written rather than verbal permission. It should be remembered that anything that goes wrong with a well after or during data collection may be blamed on the person retrieving the samples. When permission has been granted, always try to get any additional information about the well, such as past water quality information, pumping data, water levels, driller's logs, or any known problems with water quality. Private well owners generally know a lot about the area and often have good information about the groundwater or wells.

Water level measurements should be taken with an electric water level sounder to the closest 1/10 of an inch. A steel tape should not be used as it may become tangled around the column and, if broken, may cause damage to the pump. If a wire sounder gets entangled, it is far less likely to damage the pump if broken. It is also easier to access a small diameter well casing containing pumps with an electric sounder. Airline water level measurements are not as accurate and it is possible to have unforeseen leaks in the airline that will make accurate depth measurements impossible.

COLLECTING WATER LEVEL MEASUREMENTS

1. Conduct an initial site inspection for potential hazards (golfers, farm equipment, automatically started equipment, etc.)
2. Confirm status of well, i.e., pumping or static. Well should have been in static mode (non-operational) for at least 12 hours, preferably 24 hours.
3. Determine if any other pumping is taking place in the area that may influence the static water level of the well.
4. Wear appropriate PPE (gloves).

5. If a lid or cover is over the meter vault, remove the lid in a safe manner.
6. When vault entry is necessary, use Confined Air Space Entry Procedure for type of vault being entered (Class C).
7. Care is to be taken when ascending and/or descending stairs or ladders.
8. Note previous sounding level for indication of anticipated depth.
9. Measure depth to water using an electric water level indicator.
10. Record depth to water on proper form; compare current depth to water with previous sounding to confirm accuracy. Also note how long the well has been off prior to sounding. Note what was used as a reference point (RP). If possible, surface elevation should also be noted.
11. Conduct a final site inspection for normal activation and general cleanliness
12. Upon return to office, input depth to water into spreadsheet.

TOTAL DEPTH MEASUREMENTS

After taking the static water level measurement, a total depth measurement may be taken. This should be done with an actual depth sounder. In an open casing, a steel tape with a weight attached to the end can be used, but it may be difficult for the novice to “feel” the bottom of the well. Do not attempt to use a depth sounder in a well that contains a pump. The chances of getting down the casing without getting the weight hung up are very low. If the use of a depth sounder is not possible, try to get total depth information from the well owner or from the driller’s log.

SPECIAL PROJECTS

1. Some well owners require additional measurement during the pumping season for well records (pumping depths) and EMWD provides this service, upon the owner’s request, when time permits.
2. Some well owners may require full efficiency tests, including electrical inputs, to determine the overall efficiency of the well. EMWD staff will also provide this service to the Groundwater Monitoring Program participants at no charge when time permits, on a case-by-case basis.
3. Staff will also service non-EMWD-owned meters for Groundwater Extraction Monitoring Program participants at no charge.

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