TASK ORDER NO. 9

HEMET-SAN JACINTO WATERMASTER SUPPORT SERVICES
2017 Water Resources Monitoring Program Support

This Task Order is issued by the Hemet-San Jacinto Watermaster ("Watermaster"), a judicial creation of the Superior Court of the State of California in and for the County of Riverside through the Judgment entered on April 18, 2013, and accepted by EASTERN MUNICIPAL WATER DISTRICT ("EMWD"), a California municipal water district pursuant to the mutual covenants and conditions contained in the AGREEMENT between the above named parties dated 5/22, 2017 in connection with the Hemet-San Jacinto Watermaster Support Services.

PURPOSE

The purpose of this Task Order is to describe EMWD's 2017 Water Resources Monitoring Program Support services, time of performance, payment, and effective date to provide such services for the Watermaster.

SCOPE OF SERVICES

The purpose of the Water Resources Monitoring Program ("Monitoring Program") is to collect, analyze, and compile groundwater level, water quality, and groundwater production data to meet the reporting requirements of the Judgment. The Monitoring Program provides the information necessary for a comprehensive view of the groundwater management zones and includes the following elements:

- Groundwater Extraction Monitoring
- Groundwater Level Monitoring
- Water Quality Monitoring
- Inactive Well Capping and Sealing
- Meter Installation, Repair, and Replacement
- Data Management, Documentation, and Reporting

Groundwater level and groundwater extraction data will be used to quantify basin stresses and to provide data for estimation of overdraft conditions within any given year and to provide the basis for replenishment in the following year. Water quality information will be used to track basin water quality trends. Such data allows for characterization of basin hydrology, evaluation of groundwater flow conditions, and monitoring of water quality improvement or degradation. In addition, inactive or unused wells will be capped and sealed as they are potential sources of groundwater contamination and present hazardous conditions. The groundwater level and extraction monitoring will allow for a more accurate estimation of the amount of groundwater in storage, changes in storage, and the identification of overdraft conditions. The information gained from these efforts will be used to support the Watermaster Board decisions.

In conjunction with existing and planned groundwater level and quality monitoring, accurate monitoring of groundwater extraction will allow participants to understand how groundwater conditions are changing and make informed decisions on how best to manage and replenish the groundwater resources. To improve the records of pumped groundwater, meters will be replaced on the private wells that are no longer working.

Data management, documentation, and reporting are also key elements. All water level and groundwater extraction data collected will be recorded on Field Data Sheets by EMWD field staff. The Field Data Sheets will be provided to the Watermaster Advisor ("Advisor") at the end of each calendar month and contain data collected during the preceding month (may be rounded to the nearest week). The field data shall be read from the Field Data Sheets and entered into EMWD's Data Entry Form by Watermaster consultants after performing various quality assurance/quality control ("QA/QC") checks on the data. The completed Data Entry Form shall be returned to EMWD for upload into EMWD's Regional Water Resources Database ("RWRD") after performing various quality assurance/quality control ("QA/QC") checks on the data. Watermaster consultants shall return the completed Data Entry Form (with the field data entered and checked) to EMWD staff within two (2) weeks of receipt of the Field Data Sheets and Data Entry Form. All of the data will be made accessible to the Watermaster. An annual report will summarize the monitoring activities and results of the analyses of the monitoring data, as well as provide other pertinent information regarding activities in the local groundwater management zones.

By undertaking an extensive data gathering effort, all parties involved in the Watermaster can be assured that operational yield estimates are based on the best available information. Continuation of the current monitoring effort will augment the database used in decisions made by the Watermaster and contribute to successful management of the groundwater management zones.

TASK 1.0 – Groundwater Extraction Monitoring Program

Groundwater extraction monitoring involves metering of wells producing 25 or more acre-feet of groundwater per year. In conjunction with groundwater level and water quality monitoring, accurate metering of groundwater extraction will allow for a better understanding of how groundwater conditions are changing and can be used by the Watermaster to quantify basin stresses.

The program participants must provide permission for meter installation and access to their wells. EMWD staff will work closely with the private well owners' representatives to acquire necessary permissions from the existing private well owners in the Management Plan area to install and maintain meters and to read the meters. All meter installation activities will be scheduled at the convenience of the well owner. Installed meters shall remain the property of EMWD as a representative of the Watermaster. Meters are to be read monthly and 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 one or more of the following: acreage, crop type, number of animals in the case of dairies, or electricity usage. These estimates will be compared with metered groundwater usage at sites of similar size with similar usage as a QA/QC measure.

Extraction data from sixty (60) wells with meters installed by EMWD will be monitored monthly by EMWD under this Task Order.

Extraction data from forty-three (43) wells will be monitored monthly by other entities and reported to EMWD under this Task Order.

Extraction data for thirty-nine (39) wells will be estimated monthly by EMWD under this Task Order.

All data collected will be entered by Watermaster consultants after performing various QA/QC checks on the data and forwarded to EMWD for various QA/QC checks and upload into EMWD's RWRD.

TASK 2.0 – Groundwater Level Monitoring Program
Groundwater levels are to be measured twice a year, during the spring and fall, to capture the high and low groundwater levels and to determine seasonal effects on groundwater levels. The measurements will be taken prior to warm weather when groundwater production is low, and following warm weather when groundwater production is high. General steps that are required for measuring groundwater levels are as follows:

- A site inspection for potential hazards including open drive shafts, automatic machinery, and motor operations including farm equipment is conducted
- The status of the well pump, i.e., pumping or static, is confirmed. The well should have been in static mode (non-operational) for at least 12 hours, preferably 24 hours, prior to measuring the level
- The depth to groundwater is measured using an electric water level indicator
- The measured depth to groundwater is recorded with the status of the pump
- If the well pump is running and cannot be turned off, then no level is recorded and collection of the level may be attempted at another time
- The recorded depth is compared with previous levels for data quality control
- A final site inspection is performed

Three-hundred eighty (380) groundwater levels will be measured by EMWD from one-hundred ninety (190) wells semi-annually following the above protocol under this Task Order.

Six-hundred twelve (612) groundwater levels will be measured by other entities from fifty-one (51) wells monthly and reported to EMWD following the above protocol under this Task Order.

Selected static level data collected will be entered by Watermaster consultants after performing various QA/QC checks on the data and forwarded to EMWD for various QA/QC checks and upload into EMWD's RWRD.

TASK 3.0 –Water Quality Monitoring Program
Water quality samples are to be collected once a year from the groundwater management zones within the San Jacinto Basin, generally in the warmer months when the wells are operating. Constituents to be routinely monitored include total dissolved solids and nitrate as nitrogen as described in Table 1.

Table 1: Constituents Tested in a Typical Water Quality Sample

Type	Constituent:	Type	Constituent:
Cations	Calcium (Ca)	Metals	Boron (B)
	Magnesium (Mg)		Copper (Cu)
	Potassium (K)		Iron (Fe)
	Silica (SiO_3)		Manganese (Mn)
	Sodium (Na)		Zinc (Zn)
	Hardness (Calculated from Ca/Mg)	Alkalinity	Bicarbonate (HCO_3)
Anions	Chloride (Cl)		Carbonate (CO_3)
	Fluoride (F)		Hydroxide (OH)
	Nitrate as Nitrogen (NO_3-N)		Total Alkalinity as Ca CO_3
	Sulfate (SO_4)	Misc.	Electrical Conductance (EC)
Nitrogen	Ammonia as Nitrogen (NH_3-N)		Temperature at Collection
	Nitrite as Nitrogen (NO_2-N)		pH
			Total Dissolved Solids (TDS)

The procedures for taking water quality samples differ depending on whether the well has existing pumping equipment or not. The sampling procedure is lengthier and more complicated if the well does not have an existing pump.

TASK 3.1 – Water Quality Sampling of Operating Wells
When the well to be sampled has a pump and is operating, the sampling procedure will be as follows:

- A site inspection for potential hazards including open drive shafts, automatic machinery, and motor operations including farm equipment is conducted
- The status of the well, i.e., pumping or static, is confirmed. If the well is not operating, it is turned on with the permission of the well owner
- The sampling port on the well is located, opened, and flushed or purged

- The water sample is taken using standard methods and proper protocol for the constituents to be sampled
- A final site inspection is conducted

Eighty-nine (89) water quality samples will be taken by EMWD from wells with existing pumping equipment following the above protocol and analyzed by EMWD's Laboratory under this Task Order.

Twenty-nine (29) water quality samples will be taken by other entities from wells with existing pumping equipment following the above protocol and delivered to EMWD for analysis by EMWD's Laboratory under this Task Order.

All data collected will be entered after various QA/QC checks into EMWD's RWRD from the EMWD LIMS system.

TASK 3.2 – Water Quality Sampling of Non-operating Wells
When the well does not have an existing pump, a mobile pump must be set in the well and the procedure is as follows:

- A site inspection for potential hazards including open drive shafts, automatic machinery, and motor operations including farm equipment is conducted
- The depth to groundwater in the well is measured to determine the pump setting depth
- The water volume in the casing is calculated to determine the length of time necessary to purge the well for a minimum of three full well volumes
- The pump is set using either continuous reel or column pipe and all electrical and discharge lines connected
- The well is purged a minimum of three well volumes
- The water sample is taken using standard methods and proper protocol for the constituents being sampled
- Electrical and discharge lines are disconnected and the pump is pulled
- The well is closed or sealed
- A final site inspection is conducted

Forty-five (45) water quality samples will be taken by EMWD from wells without existing pumping equipment following the above protocol and analyzed by EMWD's Laboratory under this Task Order.

All data collected will be entered after various QA/QC checks into EMWD's RWRD from the EMWD LIMS system.

TASK 4.0 – Inactive Well Capping and Sealing Program
The purpose of this program is to prevent groundwater contamination and eliminate hazards by capping and sealing inactive and/or unused wells. 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 in the area. To protect groundwater supplies, EMWD staff will use available monitoring program funds to cap and seal inactive wells or open casings at no charge to the well owner. Priority will be given to those wells that are potentially dangerous open holes to small children and animals, 16 to 18 inches in diameter, or those located in areas where flooding resulting from precipitation might carry manure, fertilizers, or other contaminants into the well. These wells may still be used for water level and, in some cases, water quality monitoring.

Two (2) wells are estimated to be capped and sealed by EMWD under this Task Order.

TASK 5.0 – Meter Installation, Repair, and Replacement
The program participants must provide permission for meter installation and access to their wells. EMWD staff works closely with the private well owners' representatives to acquire necessary permissions from the existing private well owners in the Management Plan area to install and maintain the meters. All meter installation activities will be scheduled at the convenience of the well owner. Installed meters shall remain the property of EMWD as a representative of the Watermaster. The procedure for meter installation and replacement by EMWD will be as follows:

- Well owner's permission for meter installation is verified
- A preliminary site inspection is conducted to review piping and well configuration to determine equipment and supplies needed
- An installation design is prepared and a meeting is held with the well owner for approval/acceptance of the design
- As much as possible, off-site fabrication is prepared to minimize inconvenience to the owner's operation of the well
- The installation is approved by the well owner and scheduled for a time that is convenient to the well owner
- The meter is installed and all piping appurtenances are returned to normal operation
- A final site inspection is conducted

Seven (7) meters are estimated to be replaced by EMWD under this Task Order.

TASK 6.0 – Data Management, Documentation, and Reporting
Combined with existing available data, new data generated by the Monitoring Program will be used by the Watermaster to analyze how conditions are changing in local groundwater management zones. All data collected will be used in the 2017 Annual Report. The data may be used in the following ways:

- Trend analyses of the relationship between groundwater pumping, groundwater levels, and water quality
- Analysis of the volume of groundwater contained in local groundwater management zones and determination of the rate of natural recharge of these management zones

- Preparation of mathematical models of groundwater systems for use in analyzing management alternatives
- Development of accurate water consumption figures for agricultural land use
- Protection of private water rights through the documentation of individual groundwater use
- Quantification of replenishment requirements for the following year

TASK 6.1 – 2017 Annual Report
Data reporting by EMWD to the Watermaster will include the 2017 Annual Report documenting groundwater level and water quality trends, and groundwater extraction quantities for each groundwater management zone. The 2017 Annual Report will contain the results of regional analyses performed on data collected during calendar year 2017 and a summation of any issues noted. The 2017 Annual Report will serve as the report required by the Judgment.

TASK 6.2 – Annual Well Owners' Reports
EMWD shall prepare and distribute Annual Well Owners' Reports to all private well owners participating in the Monitoring Program. These Annual Well Owners' Reports will include copies of water quality analyses, groundwater level measurements, and groundwater extraction amounts for their wells. Recordation of groundwater extraction with the State is a fundamental means of protecting private groundwater rights and all well owners are encouraged to participate.

TIME OF PERFORMANCE
EMWD shall prepare and distribute one (1) electronic copy of the Draft 2017 Annual Report to the Advisor by February 2, 2018 for review and comment. The Advisor shall provide comments on the Draft 2017 Annual Report to EMWD by February 9, 2018. EMWD shall prepare and distribute ten (10) hard copies of the Draft 2017 Annual Report to the Watermaster Board and Technical Advisory Committee (TAC) that addresses comments received from the Advisor by February 16, 2018. The TAC shall provide comments on the Draft 2017 Annual Report to EMWD by March 9, 2018. EMWD shall prepare twenty (20) copies of the Final 2017 Annual Report that addresses comments received from the TAC and Advisor by March 23, 2018 for filing with the Department of Water Resources and the Court. Backup information and files for the Final 2017 Annual Report will also be provided to the Advisor as part of this Task Order.

INVOICING
The costs of this Task Order will be borne by the Administrative Assessments of the Watermaster. The annual cost of the Monitoring Program is estimated at One-Hundred Fifty-Six Thousand Two-Hundred Eighteen Dollars ($156,218) based on the Fee Schedule (Exhibit A) and Estimated Work Effort (Exhibit B). Payment for the work under this Task Order shall be based on Table 2 which shall not exceed without prior written authorization from Watermaster. Invoices should show expenditures for each one of the categories shown on Table 2.

Table 2: Estimated Monitoring Program Costs

Category	Costs
1 – Groundwater Extraction Monitoring	$ 20,328
2 – Groundwater Level Monitoring	$ 19,376
3 – Water Quality Monitoring	$ 78,622
4 – Inactive Well Capping and Sealing	$ 3,450
5 – Meter Installation, Repair, and Replacement	$ 16,625
6 – Data Management, Documentation, and Reporting	$ 17,817
Total Monitoring Program Costs	$156,218

TERMINATION

Either Party may terminate this Task Order at any time by giving the other party thirty (30) days written notice. Upon termination, EMWD shall be paid for that portion of the work performed through termination of the Task Order.

EFFECTIVE DATE

This Task Order No. 9 is effective as of January 1, 2017.

IN WITNESS WHEREOF, duly authorized representatives of the Watermaster and of the EMWD have executed this Task Order No. 9 evidencing its issuance by Watermaster and acceptance by EMWD.

Hemet-San Jacinto Watermaster

By: _____
Linda Krupa
Chairperson

ATTEST:

By: _____
Phil Paule
Board Secretary-Treasurer

Approved as to Form:

By: _____
Thomas Bunn
General Counsel

EASTERN MUNICIPAL WATER DISTRICT

By: _____
Paul D. Jones II
General Manager

ATTEST:

By: _____
Sheila Zelaya
Board Secretary

Approved as to Form:

By: _____
Steven O'Neil
General Counsel