

Quality Assurance Program

For propose *Real-Time Groundwater Level Monitoring Network* project
Yolo County Flood Control and Water Conservation District

July 13, 2012

Appropriate and well-defined quality assurance and quality control measures will be used in each task. For example, there will be:

QA/QC Measures

The proposed project will be managed and overseen according to clearly delineated lines of authority. The District Manager will have overall responsibility for management of the proposed project. The District Manager will report to the District's General Manager and be responsible for:

- Coordination of project activities
- Day-to-day direction of project staff and contractors
- Formal and informal communications and reporting to DWR
- Coordination of public outreach
- Overall quality and quantity of the information obtained

Personnel with professional registration, certifications, and/or experience qualifications will be performing and overseeing the work. All project activities involving collection, interpretation, reporting, managing, and presentation of hydrogeologic data will be performed under the direct supervision of trained and experienced personnel. Personnel biographies and qualifications are included at the end of this section.

Standard methodologies will be used such as District construction standards and health and safety standards, and standard laboratory analysis QA/QC. Standardized procedures will be used whenever possible in the proposed project to ensure consistent data quality and compatibility with other projects in the region.

Groundwater level data will be collected consistent with the following guidance documents and equipment manufacturer's specification and guidelines during aquifer testing: *Aquifer-Test Design, Observation, and Data Analysis: Techniques of Water Resource Investigations of the United States Geological Survey* (Stallman, 1971)

Additional guidelines for level monitoring will be sought from *Methods of Measuring Water Levels in Deep Wells: Techniques of Water Resource Investigations of the United States Geological Survey* (Garber and Koopman, 1968). The data collected will be compatible with DWR formats.

Data Quality Objectives

Monitoring equipment used in the aquifer testing and water level monitoring and sampling will be calibrated and tested prior to each test event according to the manufacturer's specifications.

Installed real-time water level sensors will be calibrated and offset at a minimum of twice per year, once in spring and once in fall during the regular spring/fall measurements for the 165 manually measured wells in the program. When measured water levels are different from the sensor readings by 0.2 feet or more, the sensor is offset to match. Annotations of offsets and corrections are made in the SCADA database for permanent record.

All manual water level measurements are quality controlled by printing a hydrograph for the period of record for each well. Typos and errors are identified visually as obvious outliers. Large errors of 5 feet or more are corrected or re-measured.

All spring/fall measurements are submitted to the CASGEM program and receive an additional amount of QC through the CASGEM program.

Qualifications of the Applicants and Cooperators

Max Stevenson, Assistant General Manager – Resources YCFCWCD

Max has almost 20 years experience in automated data collection devices and database management. With a PhD in Plant Physiology from UC Davis, Max began work in hydrology in 2002 as the Staff Scientist for The Bay Institute, an environmental non-profit. He has been with the Yolo County Flood Control and Water Conservation District since 2004.

Max, with the assistance of other District staff, serves as the lead for the Yolo Water Resources Association Groundwater Monitoring Program. This program has 11 agency participants and coordinates the monitoring of groundwater levels and ground water quality in the Yolo County area. The program has an on-line database of groundwater data with over 190,000 records dating back to the 1950's.

Max has also performed as the Biologically Integrated Farming Systems Coordinator for the UC Sustainable Ag program and was the Staff Scientist for the Biologically Integrated Orchard Systems program. Max serves on various technical advisory committees relating to water quality, groundwater, and geomorphology.

Tim O'Halloran, General Manager, YCFCWCD

Project guidance will also be provided by the District's General Manager, Tim O'Halloran, an engineer with over 20 years experience in the irrigation field. Tim O'Halloran has been a statewide leader for the past several decades in California's ongoing efforts to manage our precious water supplies to serve both economic purposes and environmental stewardship. During this time, he has held key water leadership positions in the Sacramento, San Joaquin and Imperial Valleys. Working with diverse interests, he has helped to develop innovative and holistic water resources management programs to meet California's 21st Century water challenges.

He currently serves as the General Manager for the Yolo County Flood Control & Water Conservation District, which manages water supplies for a significant part of Yolo County. This region has been at the forefront of efforts to preserve farms, rural communities and the environment. For the past seven years, Tim and the public agency

have forged partnerships throughout the region to provide reliable and affordable water for farms and ranches, while preserving the natural resources of the Cache Creek watershed. He has also developed innovative programs to improve efficiency, water quality and habitat, and creatively manage the groundwater resources in the region.

Manoj Desai, PE Websoft Developers, Inc. www.websoftdev.com

Mr. Desai has over 13 years of experience as a consultant for local agencies. He is a registered civil engineer in California and has a background in utilities engineering. He has expertise in GIS planning and deployment, infrastructure planning and modeling, web application development, software development, database programming, web design, and network administration. He has provided consulting services on numerous projects for clients ranging from small business to large corporations and governmental agencies. His projects have included everything from GIS Planning to advanced database programming, infrastructure master planning, and hydraulic modeling. He has managed projects ranging in size from \$10,000 to over \$350,000.

Mr. Desai is a member of the Sacramento Chapter of the American Public Works Association (APWA) and a member of the Bay Area Automated Mapping Association. Mr. Desai has a wide variety of expertise in computer software and hardware including the use of AutoCAD software, ESRI software, and a variety of programming languages and database applications. In addition, Mr. Desai is also the principal of WSD's Internet Services division and has a thorough knowledge of internet technology, server technology and routing.

Mr. Desai has served as project manager on all WSD projects and plays a large role in completing projects including hands on data conversion, programming and documentation.