



## **Internal Audit Report for February 2013**

### **Summary**

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Five reports were issued during the month:

- **Water LabSheet System Audit Report**
- **Recycled Water Projects Audit Report**
- **Weymouth Oxidation Retrofit - Archer Western Contractors, LLC Contract 1741 Audit Report**
- **ERS Industrial Services, Incorporated Contract 1722 Audit Report**
- **Quarterly Consulting Contracts Report Review**

### **Discussion Section**

This report highlights the significant activities of the Internal Audit Department during February 2013. In addition to presenting background information and the opinion expressed in the audit reports, a discussion of findings noted during the examinations is also provided.

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## **Water LabSheet System Audit Report**

### **Background**

The Water Quality (WQ) Section of the Water System Operations (WSO) Group is responsible for ensuring that water supplies meet or exceed federal and state water quality regulations. These water standards and guidelines were established to protect water for designated uses such as drinking, agricultural irrigation, or protection of aquatic life.

In order to ensure ongoing compliance with these standards, the WQ Section staff obtains thousands of water samples from the treatment plants, distribution system, and source waters and performs analytical tests for inorganic and organic compounds, physical properties, and other constituents. In addition, the WQ Section also obtains data for review and analysis from on-line instruments located throughout the conveyance and distribution system.

In 2001, the WQ Section developed the Water LabSheet System (WLSS) to serve as the repository for water quality data related to drinking water standards. Water treatment plant analysts and operators use the WLSS to compute test results and monitor compliance with water quality regulations. The analysts and operators also utilize data from the WLSS for the preparation of monthly California Department Public Health (CDPH) compliance reports and the WSO Group water quality reports.

### **Opinion**

In our opinion, the general and application control procedures over the Water LabSheet System include those practices usually necessary to provide for a generally satisfactory internal control structure. The degree of compliance with such policies and procedures provided effective control for the period between January 1, 2010 and November 30, 2012.

### **Comments and Recommendations**

#### **WLSS USER ROLE, PROFILE, AND ACCESS CONTROLS**

Access controls should be established to protect against the unauthorized destruction, disclosure, or modification of computer-stored data. This control is achieved by limiting access to computer systems based on an analysis of staff duties and responsibilities. In this regard, management should differentiate between the functions allowed, ranging from an inquiry capability for most users to an override and correction capability for a few supervisory personnel. In addition, user profiles should create segregation of duties that validate data accuracy via multiple levels of review and approval of data.

During our review, we were unable to locate documentation for the assignment of roles and profiles of staff who work with WLSS. We noted that 54 of 66 selected WLSS user identifications were assigned as the lab technician and approval roles, enabling these users to have data entry and approval control. Management indicated that the assignment of these conflicting roles was due to staffing availability for the nightshift.

We recommend that WQ Section staff prepare WLSS access procedures to document roles and responsibilities, and specify minimum requirements for the review and approval of data entry processes to ensure accuracy of WLSS data.

#### **WLSS COMPLETENESS AND ACCURACY OF DATA**

The WLSS is used as the repository for water quality data related to drinking water standards. Data contained in this system is obtained from two sources. First, water quality and plant flow data are captured from online instrumentation by the Supervisory Control and Data Acquisition (SCADA) system and exported to WLSS. Second, WQ Section staff performs chemical, physical, and microbial analyses which are manually input into WLSS. The WQ Staff utilizes compliance data from WLSS for the preparation of monthly CDPH compliance reports and WSO Group water quality reports.

For automated input, validation tests should be established to ensure WLSS operates on clean, correct, and useful data. These tests use routines often called "validation rules" that check for correctness, meaningfulness, and security of data that are entered into the system. For manual input, review and approval controls should be established to ensure completeness and accuracy of the data entry process.

During our review we noted:

1. High and low data values specified in the WLSS Test Attributes Tables have not been reviewed or updated, resulting in many false positive alerts at the data entry level. These tables are used as the validation rules to test for correct and meaningful data.
2. Flow data value comparisons between WLSS and SCADA systems revealed discrepancies in 366 of 911 items tested. We noted that data from three F. E. Weymouth Treatment Plant SCADA devices captured between October 21, 2012 and December 6, 2012, were not in agreement with the values input into the WLSS. Furthermore, we could not locate policies and procedures for the reconciliation of these systems.
3. The Water Quality analytical results entered into the WLSS did not always agree to the source documentation (handwritten labsheets). Specifically, data elements containing discrepancies included CT Ratio values (3 of 252 tested), Wash Water Reclamation Plant Turbidity values (2 of 504), and Plant Effluent pH values (1 of 504).
4. Peak Settled Water Turbidity values reported on the Interim Enhanced Surface Water Treatment Rule Compliance Report did not match the Daily Lab Report in one instance.

It should be noted that we did not find evidence indicating that the water treatment plants were in violation of CDPH drinking water standards, during the period under review.

We recommend that WQ Section staff review and revise the high and low values specified in the WLSS Test Attributes Tables to minimize “false positive” alerts. In addition, we recommend that management establish procedures to ensure that data entered into WLSS is correct and accurate and conduct periodic tests to ensure compliance.

#### WLSS CONTINGENCY AND RECOVERY PLAN

The Business Continuity Planning (BCP) should outline priorities and procedures to ensure that critical business operations and functions will be available in the event of a disaster such as a fire, earthquake, or other unplanned outage. BCP prioritizes resources to provide effective disaster prevention and recovery for processes, functions, and systems while maintaining service reliability and functional integrity.

Metropolitan’s BCP should include a recovery plan for WLSS. During our review, we were unable to locate a written WLSS Recovery Plan to provide guidance to the WQ Section staff in the event of an emergency. Lack of sufficient and documented contingency planning may result in failure to respond effectively to an emergency.

We recommend that WQ Section staff work with the Information Technology Section and the Business Continuity Program staff to document the WLSS Recovery Plan. Such a plan should include consideration of the following elements: procedures to move processing to backup servers in the event of a disaster near Metropolitan; a tested backup CT Ratio calculator installed on the

SCADA Network with written procedures available at the water treatment plants in case of failure of the backup site; emergency response strategies in the event of a major disruption to the SCADA Network; sufficient training and exercise of capturing lab results and reporting processes under various level of incidents; and well-documented manual operation procedures in the event of a major disaster.

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## **Recycled Water Projects Audit Report**

### **Background**

Metropolitan established the Local Resources Program (LRP) in 1998, as an incentive program for water recycling and groundwater recovery projects to help achieve regional water supply reliability goals. The LRP replaced the Local Projects Program (1981) which incentivized water recycling projects, and the Groundwater Recovery Program (1991) which established incentives for groundwater recovery projects.

In June 1998, Metropolitan issued Request for Proposals (RFPs) for the development of 53,000 acre-feet (AF) per year of new water recycling and groundwater recovery projects to help achieve regional water supply reliability goals identified by the Integrated Resource Plan (IRP). By April 2000, Metropolitan had executed 14 agreements with member agencies that provided financial incentive payments up to \$250 per AF of production for agreement terms up to 25 years.

In April 2003, Metropolitan issued the second round of RFPs for the development of an additional 65,000 AF per year of new recycled water and recovered groundwater projects. By December 2005, Metropolitan had executed 13 new agreements with member agencies to provide financial assistance payments up to \$250 per AF of production for agreement terms up to 25 years. Lastly, in April 2007, the Board authorized a new LRP that provided for a sliding scale incentive of up to \$250 per AF, with the goal of increasing recycled and recovered water to 174,000 AF per year in order to help meet IRP targets.

Currently, Metropolitan has 79 water recycling projects consisting of 55 in operation, 8 under construction, 11 that have expired, and 5 that have been terminated. From program inception through February 1, 2013, Metropolitan has paid \$320 million in incentives for 1.8 million AF of recycled water at a cost of \$177 per AF. This review included three water recycling projects. Incentive payments for these three projects totaled \$30.7 million for 240,630 AF of recycled water through December 2012.

1. **Rancho California Reclamation Expansion Project** – This is an expansion of the Rancho California Water District’s existing recycled system located in the southern portion of Riverside County and portions of Temecula and Murrieta. This expanded distribution system has a total storage capacity of 1,248 AF of recycled water. From January 2010 through December 2012, incentive payments for this project totaled \$1.2 million for 7,900 AF of recycled water (\$152 per AF).

2. Inland Empire Utilities Agency Regional Recycled Water Distribution System – This is an expansion of two outfall lines that distribute 3,500 AF yield for irrigation and industrial uses. From January 2010 through December 2012, incentive payments for this project totaled \$6.2 million for 40,549 AF of recycled water (\$153 per AF).
3. Groundwater Replenishment System Seawater Barrier Project – This project consists of an Advanced Water Treatment Facility to treat effluent from the Sanitation District of Orange County. It is the world’s largest advanced wastewater purification system for indirect potable reuse. It takes highly treated wastewater that would have normally been discharged into the Pacific Ocean, and purifies it using a three-step advanced treatment process consisting of microfiltration, reverse osmosis, and ultraviolet light with hydrogen peroxide. From January 2010 through December 2012, incentive payments for this project totaled \$23.3 million for 192,182 AF of recycled water (\$121 per AF).

### **Opinion**

In our opinion, the accounting and administrative procedures over the Recycled Water Projects include those practices usually necessary to provide for a satisfactory internal control structure. The degree of compliance with such policies and procedures provided effective control for the period January 2010 through December 2012.

### **Comments and Recommendations**

There were no material findings to report.

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## **Weymouth Oxidation Retrofit - Archer Western Contractors, LLC Contract 1741 Audit Report**

### **Background**

The F. E. Weymouth Treatment Plant (Weymouth plant) was placed into service in 1941, with an initial capacity of 100 million gallons per day (mgd) and expanded twice to its current capacity of 520 mgd. The Weymouth plant delivers a blend of water from the Colorado River Aqueduct and State Water Project to Metropolitan’s Central Pool portion of the distribution system.

The Oxidation Retrofit Program (ORP) was established to upgrade Metropolitan’s water treatment plants to use ozone as the primary disinfectant to comply with drinking water regulations, control taste and odor, and reduce the level of disinfection byproducts in finished water at all five water treatment plants. The Weymouth plant is the final facility to receive the ozone disinfection process.

On June 12, 2012, the Board awarded Archer Western Contractors, LLC (Archer) \$95.5 million to construct ozonation facilities at Weymouth plant, with the goal of removing water blend restrictions and enhancing Weymouth plant’s ability to treat water of variable quality. During this construction phase, Archer will construct the main ozonation facility including an ozone generation building, ozone contactors, contactor inlet and outlet conduits, and liquid oxygen

storage and feed system. The remaining contracts will address work including chemical feed systems, site paving, and security systems. Archer has completed approximately 11 percent of the work and has received \$10.3 million in payment as of January 2013. Construction is scheduled to be completed by June 2016.

### **Opinion**

In our opinion, the accounting and administrative procedures over the Archer Western Contractor, LLC Contract 1741 include those practices usually necessary to provide for a satisfactory internal control structure. The degree of compliance with such policies and procedures provided effective control for the period August 2012 through January 2013.

### **Comments and Recommendations**

There were no material findings to report.

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## **ERS Industrial Services, Incorporated Contract 1722 Audit Report**

### **Background**

The Robert B. Diemer Water Treatment Plant (Diemer plant) was placed into service in 1962 to treat water received from the Colorado River. Diemer plant currently treats a blend of Colorado River and State Water Project and delivers it to the Central Pool portion of the distribution system. Originally sized at a capacity of 200 million gallons per day (mgd), Diemer plant was expanded to its current capacity of 520 mgd in order to meet the increased demands from member agencies.

Traditionally, Metropolitan has used ferric chloride as a coagulant in its water treatment process. However, ferric chloride contains manganese as a trace constituent, which accumulates in the filter media over time. As the treatment plants convert to ozonation for primary disinfection and operate under the biological filtration mode, the accumulated manganese could be released producing color and turbidity in the water.

Although these levels may not exceed health-based primary drinking water standards, they may result in complaints from consumers. Tests have indicated that filter media replacement at the water treatment facilities, along with switching the coagulant from ferric chloride to aluminum sulfate, is the best method to remove the manganese and prevent a reoccurrence of these operating concerns.

In addition to switching to aluminum sulfate for coagulation in 2004, the Board approved Contract 1722 for \$3,599,285 in June 2011 with ERS Industrial Services, Incorporated (ERS) to replace the filter media at the Diemer plant in all 48 filters with new anthracite coal and silica sand. As of December 2012, ERS has completed 100 percent of the work and Metropolitan has paid \$3,556,696, including \$74,456 in approved extra work orders to ERS under this contract.

### **Opinion**

In our opinion, the accounting and administrative procedures over the ERS Industrial Services, Incorporated Contract 1722 include those practices usually necessary to provide for a satisfactory internal control structure. The degree of compliance with such policies and procedures provided effective control for the period July 2011 through December 2012.

### **Comments and Recommendations**

There were no material findings to report.

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## **Quarterly Consulting Contracts Report Review**

### **Scope and Purpose of Review**

We reviewed the Quarterly Report for Consulting and Professional Service Agreements published by the Professional Services Contracting Team for the first quarter fiscal year 2012/13. The purpose of this review is to gain reasonable assurance that information included on the quarterly report is accurate, complete, timely, and in compliance with the Administrative Code.

### **Background**

Administrative Code Section 2720(a) requires that the General Manager report to the Engineering and Operations Committee on the employment of any professional and technical consultant, the extension of any professional and technical consulting agreement, and on the exercise of authority under Sections 8121(c) and 8122(h), during the preceding calendar quarter. The report covering the last calendar quarter of the year may be combined with and included in the annual report. Each report shall indicate when a consultant is a former employee of Metropolitan.

During the first quarter of fiscal year 2012/13, the amount paid for consulting and professional services totaled \$9.2 million. This amount includes \$8.6 million paid on agreements administered by the Department of the General Manager, and \$556,400 paid on agreements administered by the Legal Department. The General Manager reported 343 active agreements with 171 terminations and the Legal Department reported 28 active agreements with one termination.

### **Testing Procedures Performed**

Our procedures included cursory reviews of the reasonableness of professional services expenditures and consultants with multiple active agreements to determine whether an agreement was split into smaller contract amounts to override the established approval authority limits. Finally, we evaluated whether statistics in the report were adequately supported.

### **Testing results**

Our review did not reveal any contracts which appeared to be unreasonable or split to avoid established approval authority limits. In addition, our review did not reveal any material differences between the reported amounts and supporting documentation.

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