

**AGENDA**  
**WATER ISSUES COMMITTEE MEETING**  
**WITH BOARD OF DIRECTORS \***  
**ORANGE COUNTY WATER DISTRICT**  
**18700 Ward Street, Fountain Valley, CA 92708**  
**Wednesday, June 10, 2015, 8:00 a.m. - Boardroom**

- \* The OCWD Water Issues Committee meeting is noticed as a joint meeting with the Board of Directors for the purpose of strict compliance with the Brown Act and it provides an opportunity for all Directors to hear presentations and participate in discussions. Directors receive no additional compensation or stipend as a result of simultaneously convening this meeting. Items recommended for approval at this meeting will be placed on the **June 17, 2015** Board meeting Agenda for approval.

**ROLL CALL**

**ITEMS RECEIVED TOO LATE TO BE AGENDIZED**

**RECOMMENDATION:** Adopt resolution determining need to take immediate action on item(s) and that the need for action came to the attention of the District subsequent to the posting of the Agenda (requires two-thirds vote of the Board members present, or, if less than two-thirds of the members are present, a unanimous vote of those members present.)

**VISITOR PARTICIPATION**

Time has been reserved at this point in the agenda for persons wishing to comment for up to three minutes to the Board of Directors on any item that is not listed on the agenda, but within the subject matter jurisdiction of the District. By law, the Board of Directors is prohibited from taking action on such public comments. As appropriate, matters raised in these public comments will be referred to District staff or placed on the agenda of an upcoming Board meeting.

At this time, members of the public may also offer public comment for up to three minutes on any item on the Consent Calendar. While members of the public may not remove an item from the Consent Calendar for separate discussion, a Director may do so at the request of a member of the public.

**CONSENT CALENDAR (ITEMS NO. 1 – 6)**

All matters on the Consent Calendar are to be approved by one motion, without separate discussion on these items, unless a Board member or District staff request that specific items be removed from the Consent Calendar for separate consideration.

1. MINUTES OF WATER ISSUES COMMITTEE MEETING HELD MAY 13, 2015

**RECOMMENDATION:** Approve minutes as presented

2. REQUEST FOR PROPOSALS FOR LABORATORY INFORMATION MANAGEMENT SYSTEM PROJECT (LIMS)

**RECOMMENDATION:** Agendize for June 17 Board meeting: Authorize issuance of Request for Proposals for a Laboratory Information Management System (LIMS) for the Advanced Water Quality Assurance Laboratory

3. DESTRUCTION OF OCWD-BS09 MONITORING WELLS AND CONSTRUCTION OF REPLACEMENT MONITORING WELL OCWD-BS24

RECOMMENDATION: Agendize for June 17 Board meeting:

1. Authorize filing of a Categorical Exemption for the construction of one monitoring well in compliance with the California Environmental Quality Act (CEQA) guidelines;
2. Authorize destruction of monitoring wells BSO9A, BSO9B and BSO9C, and construction of replacement monitoring well OCWD-BS24; and
3. Authorize issuance of Amendment No. 2 to Agreement No. 0958 with CDM Smith in the amount of \$56,550 for additional field inspection services required for the destruction of BSO9A, BSO9B and BSO9C, and construction of replacement nested monitoring well OCWD-BS24

4. CONTRACT NO. B-2014-1: BURRIS PUMP STATION PROJECT PHASE 2 CONSTRUCTION: AMENDMENTS TO AGREEMENTS WITH TETRA TECH INC., BUTIER ENGINEERING, INC. AND BEAVENS SYSTEMS, INC.

RECOMMENDATION: Agendize for June 17 Board meeting:

1. Authorize issuance of Amendment No. 2 to Agreement No. 0878 with Tetra Tech, Inc. for an amount not to exceed \$92,200 for additional construction engineering services;
2. Authorize issuance of Amendment No. 1 to Agreement No. 0982 with Butier Engineering Inc. for an amount not to exceed \$96,000 for additional construction management, inspection and material testing services; and
3. Authorize issuance of a no cost Amendment No. 1 to Agreement No. 0920 with Beavens Systems, Inc. to reallocate \$25,224 to Burris Pump Station SCADA Support and extend the expiration date of Agreement for On-Call Services for control system design review integration through June 30, 2017

5. AGREEMENT TO CINNABAR FOR HALLWAY CONSTRUCTION AND EGRESS LIGHTING SUPPORT SERVICES

RECOMMENDATION: Agendize for June 17 Board meeting: Authorize issuance of Agreement to Cinnabar for an amount not to exceed \$27,868.50 for hallway construction and egress lighting support services

6. AGREEMENT TO OLIVER TWIST CHIMNEY SWEEP FOR ADMINISTRATION BUILDING HVAC DUCT CLEANING

RECOMMENDATION: Agendize for June 17 Board meeting: Authorize issuance of an Agreement to Oliver Twist Chimney Sweep for an amount not to exceed \$24,750 for the Administration Building HVAC duct cleaning

**END OF CONSENT CALENDAR**

**MATTERS FOR CONSIDERATION**

7. AGREEMENT TO TETRA TECH INC. FOR MID-BASIN INJECTION: CENTENNIAL PARK PROJECT DESIGN SERVICES

RECOMMENDATION: Agendize for June 17 Board meeting: Authorize issuance of Agreement to Tetra Tech, Inc. for an amount not to exceed \$911,639 for the Mid-Basin Injection: Centennial Park Project Design Services

8. CONTRACT NO SG-2014-1: SUNSET GAP SEAWATER INTRUSION INVESTIGATION PROJECT: AMENDMENT TO SERVICES AGREEMENT NO. 0958 WITH CDM SMITH AND AGREEMENT TO NINYO & MOORE FOR GEOTECHNICAL INVESTIGATION

RECOMMENDATION: Agendize for June 17 Board meeting:

1. Authorize issuance of Amendment No. 1 to Agreement No. 0958 with CDM Smith in the amount of \$127,935 for additional field inspection services required for the Sunset Gap Project; and
2. Authorize issuance of a Agreement to Ninyo & Moore for geotechnical investigation services at the OCWD-BS13 well site for an amount not to exceed \$58,078

9. FINAL DRAFT GROUNDWATER MANAGEMENT PLAN 2015 UPDATE

RECOMMENDATION: Agendize for June 17 Board meeting:

1. Adopt the Groundwater Management Plan 2015 Update; and
2. Authorize the filing of a Notice of Exemption

**INFORMATIONAL ITEM**

10. DROUGHT RESPONSE OUTREACH PROGRAM FOR SCHOOLS (DROPS) GRANT AWARDS TO RIO VISTA ELEMENTARY AND KATELLA HIGH SCHOOLS

**CHAIR DIRECTION AS TO WHICH ITEMS IF ANY TO BE AGENDIZED AS A MATTER FOR CONSIDERATION AT THE JUNE 17 BOARD MEETING**

**DIRECTORS' ANNOUNCEMENTS/REPORTS**

**GENERAL MANAGER'S ANNOUNCEMENTS/REPORTS**

**ADJOURNMENT**

## WATER ISSUES COMMITTEE MEMBERS

Denis Bilodeau - Chair  
Philip Anthony - Vice Chair  
Dina Nguyen  
Shawn Dewane  
Roman Reyna

Alternates

Steve Sheldon - Alternate 1  
Jan Flory - Alternate 2  
Harry Sidhu - Alternate 3  
Roger Yoh - Alternate 4  
Cathy Green - Alternate 5

In accordance with the requirements of California Government Code Section 54954.2, this agenda has been posted in the main lobby of the Orange County Water District, 18700 Ward Street, Fountain Valley, CA not less than 72 hours prior to the meeting date and time above. All written materials relating to each agenda item are available for public inspection in the office of the District Secretary. Backup material for the Agenda is available at the District offices for public review and can be viewed online at the District's website: [www.ocwd.com](http://www.ocwd.com)

Pursuant to the Americans with Disabilities Act, persons with a disability who require a disability-related modification or accommodation in order to participate in a meeting, including auxiliary aids or services, may request such modification or accommodation from the District Secretary at (714) 378-3233, by email at [idurant@ocwd.com](mailto:idurant@ocwd.com) by fax at (714) 378-3373. Notification 24 hours prior to the meeting will enable District staff to make reasonable arrangements to assure accessibility to the meeting.

As a general rule, agenda reports or other written documentation has been prepared or organized with respect to each item of business listed on the agenda, and can be reviewed at [www.ocwd.com](http://www.ocwd.com). Copies of these materials and other disclosable public records distributed to all or a majority of the members of the Board of Directors in connection with an open session agenda item are also on file with and available for inspection at the Office of the District Secretary, 18700 Ward Street, Fountain Valley, California, during regular business hours, 8:00 am to 5:00 pm, Monday through Friday. If such writings are distributed to members of the Board of Directors on the day of a Board meeting, the writings will be available at the entrance to the Board of Directors meeting room at the Orange County Water District office.



**MINUTES OF BOARD OF DIRECTORS MEETING  
WITH WATER ISSUES COMMITTEE  
ORANGE COUNTY WATER DISTRICT  
May 13, 2015 @ 8:00 a.m.**

Water Issues Committee member Director Dina Nguyen called the meeting to order in the Boardroom of the District office located in Fountain Valley, CA. Following the Pledge of Allegiance to the Flag, the Recording Secretary called the roll and reported a quorum as follows.

**Committee**

Denis Bilodeau (arrived at 8:15 a.m.)  
Philip Anthony (not present)  
Dina Nguyen  
Shawn Dewane  
Roman Reyna (arrived at 8:10 a.m.)

**OCWD Staff**

Mike Markus - General Manager  
Joel Kuperberg - General Counsel  
Judy-Rae Karlsen - Assistant District Secretary  
Dan Bott, Ryan Bouley, Paula Bouyounes,  
Darla Cirillo, Dan Cohen, Jason Dadakis,  
Bruce Dosier, Bill Dunivin, Randy Fick,  
Roy Herndon, Bill Hunt, Adam Hutchinson,  
John Kennedy, Pat Lewis, Dave Mark,  
Thong Nguyen, Chris Olsen, Mehul Patel,  
Audrey Perry, Ben Smith, Dan Sullivan,  
Karen Underhill, Marsha Westropp, Greg Woodside

**Alternates**

Steve Sheldon (not present)  
Jan Flory (not present)  
Harry Sidhu  
Roger Yoh (not present)  
Cathy Green

**Others**

Steve Conklin, Marc Marcantonio -Yorba Linda Water District  
Howard Johnson , Betsy Egash- Brady & Associates  
Keith Lyon – Municipal Water District of Orange County  
Nabil Saba – City of Santa Ana  
Paul Shoenberger, Phil Lauri – Mesa Water District  
Peer Swan – Irvine Ranch Water District  
Ken Vecchiarelli - Golden State Water Company

**CONSENT CALENDAR**

The Consent Calendar was approved upon motion by Director Dewane, seconded by Director Green and carried [4-0] as follows.

[Yes – Nguyen, Dewane, Sidhu, Green/No – 0]

**1. Minutes of Previous Meeting**

**The Minutes of the Water Issues Committee meeting held April 8, 2015 are approved as presented.**

**2. Agreement to Total Western Inc. for the Replacement of HVAC Boiler Heat Exchanger Coils**

**Recommended by Committee for approval at the May 20 Board meeting: Authorize issuance of Agreement to Total-Western Inc. in the amount not to exceed \$31,750 to replace two HVAC Patterson Kelly N1500 boiler heat exchanger coils.**

**3. Amendment to Agreement No. 0936 to TerraCosta Consulting Group, Inc. for Design of the Santiago Basins Saddle Repair Project**

**Recommended by Committee for approval at the May 20 Board meeting: Authorize execution of Amendment No. 1 to Agreement No. 0936 with TerraCosta Consulting Group, Inc. in the amount of \$46,000 for modified design of the Santiago Basins Saddle Repair Project.**

4. Amendment to Agreement No. 0867 to Carollo Engineers, Inc. for Design, Bid and Construction Phase Services of Imperial Headgates and Weir Pond Rehabilitation Project

**Recommended by Committee for approval at the May 20 Board meeting: Authorize issuance of Amendment No. 3 to Agreement No. 0867 with Carollo Engineers, Inc. for \$38,532 for additional design work and construction phase support on the Imperial Headgates and Weir Pond Rehabilitation Project.**

5. Ratification of Public Right-of-Way Encroachment Permits to Access District-Owned Monitoring Wells and Alamitos Barrier Injection Well

**Recommended by Committee for approval at the May 20 Board meeting: Ratify execution of six public right-of-way encroachment permits with the Cities of Huntington Beach and Santa Ana for one-year terms, a 6-month permit with the City of Placentia, and a 3-month permit with the City of Seal Beach for continued access to District-owned wells for a total cost of \$3,559.31.**

6. Amendment to Agreement No. 1056 to A2z Construct, Inc. for Hallway Demolition and Construction of Walls and Doorway

**Recommended by Committee for approval at the May 20 Board meeting: Authorize issuance of Amendment No. 2 to Agreement No.1056 with A2Z Construct, Inc. for an amount not to exceed \$1,110 for hallway demolition and construction of walls and doorway.**

7. Contract No. FV-2015-1, Chemical Resistant Protective Coatings Project: Award Contract to SoCal Pacific Construction Corp. dba National Coating & Lining Co. and Approve Budget

**Recommended by Committee for approval at the May 20 Board meeting: 1) Receive and file Affidavit of Publication of Notice Inviting Bids for Contract FV-2015-1, Chemical Resistant Protective Coatings Project; 2) Ratify issuance of Addendum Nos. 1 and 2; 3) Reject non-responsive bids from Industrial Coatings and Restoration Services, Inc. and Murphy Industrial Coatings, Inc.; 4) Accept bid and award contract to the lowest responsive bidder, SoCal Pacific Construction Corp. dba National Coating & Lining Co., in the amount of \$587,850; and 5) Approve proposed project budget in the amount of \$650,000.**

8. State Revolving Fund Loan - Reimbursement Resolution for La Palma Recharge Basin Project and Notice Inviting Bids

**Recommended by Committee for approval at the May 20 Board meeting: 1) Adopt Reimbursement Resolution for the State Revolving Fund Loan application for La Palma Recharge Basin Project; and 2) Authorize publication of Notice Inviting Bids for Contract No. LPRB-2015-1: La Palma Recharge Basin Project.**

9. Proposition 84 Round 3 Watershed-Wide Grant Funding Proposal and Memorandum of Understanding

**Recommended by Committee for approval at the May 20 Board meeting: 1) Approve and authorize execution of Memorandum of Understanding for the Santa Ana River Conjunctive Use Project, subject to approval as to form by District legal counsel; and 2) Authorize payment of \$17,830 to the San Bernardino Valley Municipal Water District for the District's cost share in the Santa Ana River Watermaster Action Team evaluation of watershed-scale conjunctive use projects and water use efficiency and preparation of Proposition 84 grant funding submittal, bringing the District's total contribution to \$67,120.**

10. Amendment to Agreement No. 0744 to Parsons for Additional Construction Management Services for the GWRS Initial Expansion Project
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**Recommended by Committee for approval at the May 20 Board meeting: Authorize issuance of Amendment No. 5 to Agreement No. 0744 to Parsons for an amount not to exceed \$145,220 for additional construction management services required for the GWRS Initial Expansion project.**

11. Agreement to Interloc Solutions, Inc. for Programming Services for Maximo Computerized Maintenance Management System Upgrade
- 

**Recommended by Committee for approval at the May 20 Board meeting: 1) Increase 2015/2016 Capital Improvement Budget line item C11002 by \$127,100 to \$497,100; and 2) Authorize issuance of Agreement to Interloc Solutions for an amount not to exceed \$497,100 for Programming Services for the Maximo Computerized Maintenance Management System Upgrade.**

## MATTER FOR CONSIDERATION

Director Reyna arrived at 8:10 a.m. and Director Bilodeau arrived at 8:15 a.m. during the following discussion.

12. Arundo Donax Control in the Prado Basin following the April 2015 Highway Fire

Director of Natural Resources Dick Zembal distributed a revised staff report with an update on the highway fire that cleared 1,000 acres of habitat and approximately 321 acres of Arundo donax (Arundo) behind Prado Dam. He noted the District has a unique access opportunity and a limited window of time to control the regrowth of Arundo in the burn area, therefore, staff has prepared and issued a Request for Proposals for a five-year contract to spray the burn area as a method of controlling the aggressive regrowth of Arundo. Mr. Zembal reported the District evaluated the three proposals submitted and recommends issuance of an Agreement to the lowest apparent bidder, ACS Habitat Management, for an amount not to exceed \$889,000 for a five-year period. He presented potential grant funding opportunities after the first year of spraying. Mr. Zembal reported that Arundo eradication provides a real water savings of 3.75 acre feet of water per year for every acre of Arundo that is eradicated. The Committee then took the following action.

**Upon motion by Director Dewane, seconded by Director Reyna and carried [5-0], the Committee recommended that the Board at its May 20 Board meeting: Authorize issuance of Agreement to ACS Habitat Management for spraying of Arundo donax in the Prado Basin burn area over a five-year period for an amount not to exceed \$889,000.**  
[Yes – Bilodeau, Nguyen, Dewane, Reyna, Sidhu/No – 0]

## INFORMATIONAL ITEMS

13. Grand Jury Report – Increasing Water Recycling: A Win-Win for Orange County

Executive Director John Kennedy briefed the Committee on the recent Grand Jury Report that recommends maximizing the amount of wastewater that is recycled in Orange County. He advised the District is required to formally respond to Findings 1, 3, 7 and Recommendation 2. Mr. Kennedy advised the District's response would be presented for discussion at the July 9 Administration and Finance Issues Committee meeting.

**14. Annual Santa Ana River Watermaster Report**

District Chief Hydrogeologist Roy Herndon summarized the findings of the Santa Ana River Watermaster Report for the 2013-2014 water year ending September 30, 2014. Mesa Water District General Manager Paul Schoenberger requested additional information on the District's guaranteed water allotment in the Santa Ana River and adjustments for water quality issues, if any.

**ITEMS TO BE AGENDIZED ON THE CONSENT CALENDAR AT THE MAY 20 BOARD MEETING**

The Committee requested that Item Nos. 2-12 be agendized on the Consent Calendar at the May 20 Board meeting.

**ADJOURNMENT**

There being no further business, the meeting was adjourned at 8:55 a.m.

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Director Denis Bilodeau, Chair



## **AGENDA ITEM SUBMITTAL**

**Meeting Date:** June 10, 2015

**Budgeted:** Yes

**To:** Water Issues Committee  
Board of Directors

**Budgeted Amount:** \$500,000

**From:** Mike Markus

**Cost Estimate:** \$500,000

**Staff Contact:** M. Wehner/Lee Yoo

**Funding Source:** General Fund

**Program/ Line Item No.** 1038.57004

**General Counsel Approval:** N/A

**Engineers/Feasibility Report:** N/A

**CEQA Compliance:** N/A

**SUBJECT: REQUEST FOR PROPOSALS FOR LABORATORY INFORMATION MANAGEMENT SYSTEM (LIMS) PROJECT**

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### **SUMMARY**

The District's Advanced Water Quality Assurance Laboratory (AWQAL) uses a Laboratory Information Management System (LIMS) to store, manage, and report the water quality data generated by staff and their analytical instruments. The current LIMS has been in service for over 14 years, but is near the end of its lifecycle.

Attachment(s): Draft LIMS Project Request for Proposal

### **RECOMMENDATION**

Agendize for June 17 Board meeting: Authorize issuance of Request for Proposals for a Laboratory Information Management System (LIMS) for the Advanced Water Quality Assurance Laboratory

### **DISCUSSION/ANALYSIS**

Since 2012, through conversations with contacts at other water/environmental laboratories, meeting LIMS vendors at conventions, and viewing demonstrations by LIMS vendors; laboratory staff learned about the LIMS marketplace. Additionally, over the past year, laboratory staff worked with Astrix Technology Group, the District's LIMS Consultant, to understand how a prospective LIMS might meet AWQAL's numerous requirements in an effort to ensure a cost-effective and successful transition to the new LIMS. These efforts resulted in a list of objectives for the new LIMS, the most important of which are discussed below.

The new LIMS will be at the beginning of its lifecycle, it will use an enterprise database named Oracle, and it will provide administrative tools that enable laboratory staff to rapidly configure LIMS.

A LIMS at the beginning of its lifecycle is crucial because the LIMS upgrade path is well established. The selected LIMS vendor will periodically upgrade LIMS which allows the AWQAL to keep up with technological advances in the software industry and to implement new features cost effectively. There is no upgrade path for the current LIMS because the LIMS vendor is no longer in business.

Potential cost savings and efficiency improvements can be obtained through the use of Oracle because Oracle can store an enormous amount of data. This increased data storage will enable the AWQAL to utilize and store data in an electronic format rather than in a paper format. Data retrieval of electronic documents is much faster than retrieving data in the paper format. The move towards a ‘paperless’ lab will reduce the storage costs associated with paper documents. The current LIMS is limited in its data storage capabilities.

As workflows change, administrative tools will allow the AWQAL to efficiently configure LIMS to accommodate new research projects, new regulations and higher sample load. These administrative tools are another example of technological advances that provide features not available in the current LIMS.

District staff prepared an RFP for the new LIMS. Below is a summary of the RFP’s scope of work:

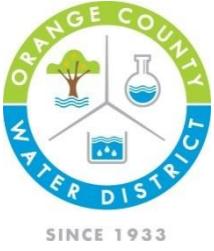
- Deliver and install a commercial-off-the-shelf LIMS.
- Configure and customize the LIMS to implement the functionality described in the requirements document such as provide 100 reports, access for 20 concurrent users, 50 instrument interfaces, the facility to transfer data from LIMS to the Water Resources Management System (WRMS), and configuration/administrative tools.
- Deliver a project plan which describes in detail the work plan, the milestones and schedule for the completion of the LIMS project.
- Selected LIMS vendors participate in a LIMS configured demonstration where District staff provides a short list of requirements that the LIMS vendor must implement and demonstrate.
- Deliver a LIMS that operates on Oracle v11 database.
- Deliver a LIMS that contains all reference data such as quality control acceptance limits.
- Deliver a comprehensive user manual, written technical and functional training material. Conduct training sessions with laboratory staff on all aspects of LIMS.
- Conduct application and system testing.
- Provide Go-Live and post Go-Live Support.

The project schedule is shown in Table 1.

**Table 1: Project Schedule**

Description	Date Complete
Complete RFP	Tuesday, June 9, 2015
Recommend to Committee for approval of RFP process	Thursday, June 10, 2015
Recommend to Board for approval of RFP process	Wednesday, June 17, 2015
Issue RFP	Thursday, June 18, 2015
<b>LIMS proposals submitted to OCWD</b>	<b>Friday, July 24, 2015, by 4:00pm PST</b>
Notify qualified LIMS vendors and schedule Configured Demonstrations	Friday, July 31, 2015
Configured Demonstrations	Tuesday, Sept 1, 2015 to Thursday, September 3, 2015
Complete evaluation of Technical Proposals	Friday, September 4, 2015 – Wednesday, September 16, 2015
Recommend to Committee for approval of LIMS purchase	Thursday, September 17, 2015
Recommend to Board for approval of LIMS purchase	Wednesday, September 23, 2015
Contract/insurance documents completed	Wednesday, October 21, 2015
Execute Agreement	Friday, October 30, 2015
LIMS Installation	November 2015
LIMS Project Completion	September 2016

**PRIOR RELEVANT BOARD ACTION: Agreement No. 0953** Issuance of Professional Services Agreement for Astrix Technology Group, LIMS Consultant – November 2013



**DRAFT**

06/1/2015

June 18, 2015

To Potential Proposers:

**Request for Proposals for purchase of a Laboratory Information Management System (LIMS)**

The Orange County Water District (OCWD) is soliciting proposals for a fixed price contract from qualified LIMS vendors to provide a LIMS. The work is expected to commence immediately following award of the contract and upon execution of a Professional Services Agreement (Agreement).

A. Background

The District was formed in 1933 by a special act of the California State Legislature to protect Orange County's rights to water in the Santa Ana River and to manage the local groundwater basin. The District is governed by a Board of Directors consisting of ten members. From among its members, the Board appoints a president, vice president and such other positions as it deems necessary. District operations are supervised by an appointed general manager.

Since 1933, the District has replenished and maintained the groundwater basin at safe levels while more than doubling the basin's annual yield. This important source provides local groundwater producers with a reliable supply of high-quality water.

The OCWD Advanced Water Quality Assurance Laboratory (AWQAL) is the primary user of LIMS. AWQAL currently staffs 29 full-time personnel. In 2014, the AWQAL reported over 400,000 analytical results for over 20,000 samples.

The AWQAL currently uses a LIMS named Aspen (2001) by Telecation, Inc. to process data from sample analysis and to report this data. This system has been in operation for over 14 years. During this time, it has performed well.

## **B. Project Description**

OCWD is soliciting proposals for a fixed price contract to provide a LIMS for the AWQAL facility located at 18700 Ward Avenue, Fountain Valley, CA 92708.

The purpose of AWQAL LIMS is to meet stakeholders' needs. LIMS must provide solutions that enable stakeholders to cost effectively produce high quality analytical results. The operational stakeholders are staff and management of the Laboratory and Information Services departments who have direct contact with LIMS. Other stakeholders who benefit from LIMS but are not in the operational area of LIMS are Water Quality, Hydrogeology, and Operations departments.

## **C. General Scope of Work**

The General Scope of Work is a high level description of the functionality in LIMS that is necessary to meet stakeholder needs. Details related to the General Scope of Work (Exhibit A) are in the Requirements Document (see Appendix One).

## **D. Proposal Requirements**

Any bidder interested in providing a LIMS and performing the necessary implementation services, which consists of configuration and customization of this LIMS, must submit a written proposal. Each proposal must meet all criteria set forth in this RFP. Please submit all requested information, documents, insurance certificates with Additional Insured form, copy of sample billing, and applicable licenses with your proposal. Submittal of the proposal is solely at the cost of the bidder and OCWD is in no way liable or obligates itself for any cost incurred to the bidder in preparing the proposal.

Bidder must:

1. Have experience and knowledge installing and operating a LIMS in the municipal water or environmental laboratory.
2. Have a business license.
3. Have insurance with minimum coverage of \$2,000,000 General Liability, \$1,000,000 Automobile Liability and \$1,000,000 Workers' Compensation and Employer's Liability.

## **E. Other Requirements**

1. District expects that the LIMS vendor selected will provide quality service in accordance with professional standards in the industry.
2. Unauthorized activity will not be tolerated and would include the following, but not limited to: the usage of office telephones, office machines, televisions or VCR, for any purpose; shutting down any office machines; locking office doors or other doors,

- leaving any windows open; allowing unauthorized people to enter any District building at any time.
3. The LIMS vendor selected must demonstrate experience with the type of work anticipated and must have the ability to perform all anticipated services in a timely manner upon receipt of written requests from OCWD or its authorized representative.
  4. The LIMS vendor must participate in a configured demonstration. The goals of the configured demonstrations are described below.

- 4.1. How will LIMS change the current Lab's workflow? Many stakeholder needs can be met by features that are already provided in the LIMS. These features are not added to LIMS via additional configuration work. These features provided in the LIMS may introduce constraints to the project and may require changes to laboratory workflows.
- 4.2. How must LIMS be modified to meet stakeholder's needs? Many stakeholder needs may not be met by features in LIMS and the necessary features must be configured or customized by the LIMS vendor. Vendor responses from this RFP which includes the configured demonstration will allow OCWD staff to better manage this project by understanding the extent to which professional services are required from the LIMS vendor.
- 4.3. Is the LIMS user friendly? Software usability is a vital component of software value. Issues related to transaction speed, a professional and easy to use interface, and productive administrative tools are difficult to assess by reading feature descriptions. A demonstration that is configured with terminology and work flows familiar to staff will allow for a more comprehensive evaluation of a prospective LIMS.

## **F. Submittal Information/Instructions**

Proposals must be well ordered, detailed, comprehensive and readable. Clarity of language and adequate, accessible documentation are essential to OCWD's ability to conduct a thorough evaluation. Proposals must, to the extent practical, provide information directly rather than by making references to appendices, technical manuals, etc. Supporting materials may not be examined, except at OCWD's discretion.

The LIMS vendor selected will enter into an Agreement to provide services for a period of up to one year, with an option to extend or renew at the discretion of OCWD. The proposal should include a Technical Proposal and a Price Proposal in a separate, sealed envelope.

**No price information should be contained in the Technical Proposal.**

## **Technical Proposal (Envelope 1)**

The Technical Proposal will include information as described in the following items. Proposals shall conform to the following format and order. Ensure that all pages do not exceed 8-1/2 x 11", are numbered and identified with your firm's name. One original and three copies of the Technical Proposal are required.

The Technical Proposal should contain, at a minimum, the following:

1. Brief description of your company.
2. Summary of the Highlights of the proposal
3. Body of Proposal including:
  - 3.1. A description of your understanding with respect to the scope of work involved
  - 3.2. A description of your project management and system development methodologies and the recommended approach you propose to utilize to complete the undertaking.
  - 3.3. This should include a description of phased activities, briefings or reports, and how communications and consultation will be handled. Bidders are encouraged to be creative in their approach to investigating best practices and determining what is right for the District's needs.
4. A description of deliverables and results required for this undertaking;
5. A detailed work plan and schedule showing the scope of work for the completion of the LIMS project and indicating commencement and completion dates, and significant activities/milestones showing a time/task breakdown with estimated person-hours (or days) for members of the project team required to complete the various components of the assignment. This plan should demonstrate and describe the Bidder's understanding of the project scope, goals and objectives. This plan must also include Go-Live migration plan, Go-Live checklist, and a detailed plan for Go-Live Support and Post Go-Live Support (include number of days of on-site support) until Final System Acceptance; (Note that the time/task breakdown is to be included in the Technical Proposal not the Fee Proposal);
6. An explanation of how your company will fulfill the services requested by OCWD, including a technical discussion of the proposed Payment Milestones contained in Exhibit D.
7. A proposal which describes the computer hardware and system software platforms required to install and operate the prospective LIMS. The proposal must include a description of how the proposed hardware and software platforms in combination with LIMS provide for the security of OCWD's data, and the reliability, availability, performance and upgrade path of LIMS. The proposal must meet specifications in sections 1.1, 1.2, 1.3 and 1.4 of the requirements document.
  - 7.1. Hardware - The LIMS vendor shall describe the optimal hardware environment (both client and servers) required to utilize the proposed LIMS. Include in the proposal the optimal number of servers. In the event that there is more than one

suitable hardware platform, list all options indicating the relative strengths and weaknesses of each.

7.2. Network Environment - The LIMS vendor shall describe the optimal network environment required to utilize the proposed LIMS. Include in the proposal, the optimal bandwidth requirements such that LIMS consistently delivers a response time of 5 seconds or less. In the event that there is more than one suitable network environment, list all options indicating the relative strengths and weaknesses of each.

7.3. Operating System and Third Party Software - The LIMS vendor shall describe the operating systems and third party software required by the proposed LIMS that will function in the hardware environment recommended above (both clients and servers). In the event that there is more than one suitable operating system or third party software, list all options indicating the relative strengths and weaknesses of each.

7.4. Security - The LIMS vendor shall describe the security tools included with LIMS.

7.4.1. Describe how LIMS restricts access to the following:

- 7.4.1.1. Application access;
- 7.4.1.2. Menu access;
- 7.4.1.3. Record access;
- 7.4.1.4. Field access;
- 7.4.1.5. Querying/reporting access;
- 7.4.1.6. Administrative tool access.

7.4.2. Describe the user security profile and how the security profile is defined.

7.4.3. Describe firewall access requirements and limitations.

7.4.4. Describe the functionality of LIMS on users' (client) computers that do not have administrative rights. District policy is to set users' computers to 'Backup User'. What is the affect of this policy on security features?

7.4.5. Describe the policy for addressing security flaws when such flaws are announced by the LIMS vendor, database vendor (e.g. Oracle) or operating system vendor (e.g. Microsoft). Include in your proposal, the time to implement patches from the time these flaws are publicly announced.

7.5. Reliability – 3 months between LIMS failures and a robust disaster recovery facility. Describe the conditions that must be in place for the proposed LIMS to meet this requirement.

7.6. Availability - LIMS must be available between 7:00 AM and 9:00 PM every day. Additionally, LIMS must be available 99.5% of the time. Describe the conditions that must be in place for the proposed LIMS to meet this requirement.

7.7. Performance – LIMS must meet performance criteria related to transaction speed as specified in the requirements document. In general, the response time must be under 5 seconds unless otherwise stated.

- 7.8. LIMS Upgrade – The LIMS vendor shall describe a path for future upgrades of LIMS and Oracle software. The following specifications must be addressed in the proposal. Each upgrade shall be complete within 2 weeks. Each upgrade shall preserve all modifications present in LIMS prior to the upgrade. The upgraded LIMS shall not be reconfigured or source code rewritten to make available features that were available prior to the upgrade.
8. A proposal which describes the details of the optimal annual maintenance contract required to support LIMS. Include in this proposal, the following minimum benefits: 24/7 access, Unlimited Technical Support with a dedicated software engineer, Programming Support – minimum of 8 hours, Free Software Upgrades for LIMS and any required third party software, Dial-in Remote Support and anticipated price increases for the next 5 years. Additional benefits can be included in the proposal. If upgrades for any third party software, including the database software, are not included in the contract, provide a list of such software in the proposal. The Annual Service Contract must meet specifications in sections 15.1 and 15.2 of the requirements document.
  9. Relevant Experience, Qualifications and Successes with an indication of your firm's recent experience on projects of a similar nature, with details as to size, providing company name, address, reference name and title, telephone number, term of work, and comments. Technical Proposal shall include all relevant project experience with LIMS and at least two LIMS upgrade references with telephone numbers and email addresses. Relevant project experience includes work in the municipal water and environmental industries and projects that were completed in California and/or the surrounding states. Additional relevant experience includes project experience with replacing an Aspen LIMS (Telecation, Inc) with your firm's LIMS regardless of the geographic location of the project.
  10. A statement describing the company's present and projected work load, staffing and ability to provide prompt, quality work on this project.
  11. A list of key staff you would propose to use for this work together with their professional qualifications, related project experience and an indication of their duties and responsibilities on this particular project. The key staff must be employees of the LIMS vendor; key staff must not be employees of a sub contractor or self employed sub contractors;
  12. Support Materials (resumes, cooperation brochures. etc.)

**A separate sealed envelope clearly labeled “The Price Proposal” containing one original and three copies of a Price Proposal prepared in accordance with requirements outlined in this RFP.**

The original and all three copies of the entire Proposal must be submitted together in accordance with the submission requirements.

## **Price Proposal (Envelope 2)**

The second envelope shall contain the price proposal and any supporting cost information. The Bidders will provide pricing for the required working solution with breakdown by the deliverables. Note: OCWD shall not be liable to pay any additional fee if the fees quoted by the Successful Bidder in its Proposal do not adequately compensate the Successful Bidder. Additional work not originally included in the Proposal and approved by OCWD would be an exception.

At a minimum, the cost proposal shall include the following completed submission forms found in the Exhibits:

- Submission Form: Price Proposal Summary (Exhibit B)
- Submission Form: Project Team Task and Time Form (Exhibit C)
- A Statement Substantiating Price

All tasks and work items must be listed including a breakdown of team member hours. Include the per diem rate for each team member for all members of the project team, a breakdown of labor costs by task, and all applicable taxes. Team members shall include any subcontractors of the Bidder.

The Bidder agrees to be solely responsible for any and all payments and/or deductions required to be made including those required for Pension Plans, Employment Insurance, Workplace Safety and Insurance Boards, or Income Tax.

Prices submitted in the Proposal shall be for a fixed price without escalator clauses or other qualifications and shall be firm for the duration of the RFP process and the term of any resulting Agreement.

All quoted prices for the proposed services shall include all charges including travel and related expenses. All applicable taxes are to be itemized separately.

### **Guidelines for Price Proposal**

1. Software Licensing
  - a. Include licenses for all required third party software.
  - b. Oracle licenses will be provided by OCWD.
2. Implementation Services
  - a. List LIMS Configuration items separately if the configuration services differ in unit cost, onsite versus offsite, typical or advanced, or any other significant attribute.
  - b. Instrument Integration quote shall be calculated on 50 instrument interfaces.
3. Maintenance
  - a. Quote the maintenance support service for LIMS and any required third party software. The level of maintenance support service must satisfy section 15 of the requirements document and F. Technical Proposal of this RFP.
  - b. Include a detailed description of the maintenance support service quoted.

## G. Submission Process

Each Bidder is asked to submit four (4) identical sets of their proposal - One (1) unbound original identified as "Master" and three (3) copies marked "Copy", sealed, and clearly marked as to contents. Note that submissions shall be made in a format suitable for 2-envelope evaluation as described elsewhere in this RFP.

All proposals must be received by Orange County Water District on or before **4:00 pm PST on Friday, July 24, 2015.**

**Proposals received after that time and date will not be considered.**

The delivery address is as follows:

Orange County Water District  
18700 Ward Street  
Fountain Valley, CA 92708  
**Attention: Lee Yoo**

If sent by regular mail, the address is as follows:

Orange County Water District  
Post Office Box 8300  
Fountain Valley, CA 92728-8300  
**Attention: Lee Yoo**

All proposals to be considered responsive and responsible must be legibly signed by an individual(s) who has the authority to bind the organization. Faxed or electronic proposals shall not be accepted in response to this RFP.

The onus unequivocally remains with the Bidders to ensure that proposals are delivered to the Project Manager, by the above stated time, in accordance with the submission process. Misdirected proposals, proposals received after the closing date and/or time shall not be accepted and shall be returned unopened. Requests for extensions of closing date or time shall not be granted and adjustments to proposals by telephone, fax, or electronically shall not be considered.

Bidders shall be permitted to withdraw their proposal unopened after it has been deposited, if such request is received in writing, by the Project Manager, prior to the closing date and time specified in this document.

Proposals must be legible and completed in ink or typewritten. Erasures, overwriting, strike-outs shall not be reason for rejection, provided all such changes remain legible and have been initialed by the authorized person signing on behalf of the Bidder.

Proposals that are incomplete, conditional or obscure shall be considered noncompliant. Submissions are to conform to the terms and conditions set out herein. Failure to do so shall cause the submission to be rejected.

## **H. Configured Demonstrations**

Configured Demonstrations are scheduled for **Tuesday, September 1, 2015**, **Wednesday, September 2, 2015** and **Thursday, September 3, 2015**. The LIMS vendor must configure their LIMS to the specifications in Appendix One then demonstrate the configured LIMS on site or via a webinar to Lab staff. LIMS vendors will be assigned a 2 hour period either between 10am to 12 Noon or 1pm to 3pm PST.

## **I. Proposal Expiration Date**

Bidders hereby acknowledge that this project must be awarded by the Administration and Finance Committee and the OCWD Board of Directors. The expected date for submission to the Administration and Finance Committee for selection approval is **Thursday, September 17, 2015** and to the OCWD Board of Directors is **Wednesday, September 23, 2015**.

The Bidder further acknowledges that offers contained within their Proposals shall be irrevocable for a period of ninety (90) calendar days from the date of Board approval or until the notice of award to the Successful Bidder is issued, whichever comes first.

## J. Schedule

Hard copy responses and related materials must be delivered by **4:00 pm PST Friday, July 24, 2015** as specified in the RFP. Late responses will be rejected at the sole discretion of the District.

An approximate schedule for selection is as follows. The schedule may change at any time given the District's discretion and changes:

Complete RFP	Tuesday, June 9, 2015
Recommend to Committee for approval of RFP process	Thursday, June 11, 2015
Recommend to Board for approval of RFP process	Wednesday, June 17, 2015
Issue RFP	Thursday, June 18, 2015
<b>RFPs submitted to OCWD</b>	<b>Friday, July 24, 2015, by 4:00 pm PST</b>

Notify qualified LIMS vendors and schedule Configured Demonstrations	Friday, July 31, 2015
Configured Demonstrations	Tuesday, Sept 1, 2015 to Thursday, September 3, 2015
Complete evaluation of Technical Proposals	Friday, September 4, 2015 – Wednesday, September 16, 2015
Recommend to Committee for approval of LIMS purchase	Thursday, September 17, 2015
Recommend to Board for approval of LIMS purchase	Wednesday, September 23, 2015
Contract/insurance documents completed	Wednesday, October 21, 2015
Execute Agreement	Friday, October 30, 2015

### **K. Vendor Communication**

Upon release of this RFP, all vendor communication concerning the overall RFP should be directed to the District's representative listed below. Any oral communication with a District representative will be considered unofficial and non-binding on the District.

Vendors should rely only on written statements issued by the following District representative:

Name: Lee Yoo (*Lab Director*) or Mark Yamamoto (*Chemist Supervisor/LIMS Administrator*)

Address: Orange County Water District  
18700 Ward Street  
Fountain Valley, CA 92708

Telephone: (714) 378-3347 (Lee Yoo) or (714) 378-3346 (Mark Yamamoto)

Fax: (714) 378-3373

Email: [lyoo@ocwd.com](mailto:lyoo@ocwd.com) (Lee Yoo) or [myamamoto@ocwd.com](mailto:myamamoto@ocwd.com) (Mark Yamamoto)

## **L. Proposal Evaluation**

### **Bidder's Qualifications**

It is important that the Work be undertaken by a Bidder that can demonstrate specific experience in successfully developing similar projects for municipal or other government organizations, or their agencies, boards and commissions, and the private sector with projects of comparable nature. In particular, the Bidder must have demonstrated experience in the following areas.

### **Mandatory requirements**

The following are minimum qualifications and licensing requirements that the Bidder must meet in order for their proposal submittal to be eligible for evaluation:

OCWD will also require that the LIMS vendor submit copies of their Project Manager's resume.

1. System knowledge and experience:
  - a. Bidder must have a minimum of 10 years continuous experience implementing LIMS systems;
2. Bidder must have managed or led at least 5 new implementations of LIMS;
  - a. Bidder must have managed or led at least 3 upgrades of LIMS;
3. Project knowledge and experience:
  - a. Experience with municipal water or environmental laboratories.
4. Project management knowledge and experience:
  - a. A sound project management methodology
  - b. Successful experience implementing similar large, complex engineering and information technology projects

### **General requirements**

1. The capacity of the Bidder to understand and to meet the goals and objectives of OCWD, while respecting the restrictions of OCWD with respect to this project;
2. Demonstrated responsiveness to the needs and requirements of the clients and the RFP;
3. Bidder's experience in dealing with municipal or other governmental bodies;
4. Bidder's experience in projects of a similar nature, scope, and size;
5. Bidder's stability, credentials and financial situation;
6. Bidder's references of similar projects to attest to the Bidder's knowledge, creativity, expertise/skill, quality of work, timeliness, flexibility and diligence.

### **Desirable additional qualifications include:**

1. Bidder should certify their LIMS to the ISO9001:2008 standard.
2. Bidder should be an Oracle Partner (Gold level or higher).

3. Bidder should have a local presence.

### **Selection Criteria - The Evaluation Scoring Model**

Proposals will be assessed on the basis of information provided by the Bidder at the time of submission and shall take into account subsequent interviews with the Bidder as may be required by OCWD at its sole discretion.

A scoring model similar to the following will be used as a quantified mechanism for evaluating candidate Bidders. While subjectivity is unavoidable in a decision-making process, this model attempts to make the process as objective as possible.

Evaluation Scoring Model

<b>Criteria</b>	<b>Score</b>
1. Submission of all appropriately completed forms, Statutory Declaration and Certificates. Submission of separate Technical Proposal and Price proposals as specified in this document.	Pass/Fail
2. LIMS shall use an Oracle database	Pass/Fail
3. LIMS shall not use Microsoft Access	Pass/Fail
4. Project Approach and Schedule	25
5. Experience and Qualifications of Project Manager	15
6. Experience and Qualifications of Bidder and Key Team Members	15
7. Configured Demo	15
8. Work Plan with Man-hour Estimate	10
9. Record of Success on Similar Projects	10
10. Time Commitment of Staff	10
<b>Total</b>	<b>100</b>

## **M. Selection Process**

Proposals submitted will be evaluated by District staff. Staff will review each proposal for completeness, project approach and understanding, professional qualifications and costs of services provided. Proposals shall be limited to 20 pages single sided excluding resumes and supporting attachments.

An evaluation team made up of relevant OCWD staff and such other persons as may be selected by OCWD will conduct the evaluation of the Technical Proposal. The evaluation committee will evaluate Bidders Technical Proposal and will be scored out of 100 total points using a Scoring Model similar to the one above without reference to the "Price Proposal". Bidders will be ranked and the Bidders who receive a score above 90% (Short List) will be selected to participate in Configured Demonstrations.

The staff evaluation team will view and evaluate the Configured Demonstrations presented by the Short List Bidders to ascertain that the Bidder understands the project and to provide clarification of the proposal. These Configured Demonstrations will provide Bidders an opportunity to explain why their LIMS should be the District's next LIMS. Participation by the Bidder in the Configured Demonstrations completes the Bidder's Technical Proposal.

"Price Proposal" envelopes will only be opened for the Short List Bidders based on the evaluation of the Technical Proposal.

After the "Price Proposal" envelopes are opened, staff will review the evaluation score and the price proposal for each of the identified firms and present these with a recommendation to the District's Administration and Finance Committee on **Thursday, September 17, 2015** and to the District's Board of Directors on **Wednesday, September 23, 2015**. Following notification of the consultant selected, it is expected that an agreement will be executed between both parties for the services described above. The selected consultant staff should be available to immediately begin work on the project. A typical OCWD Professional Services Agreement is attached along with expected insurance requirements (Exhibit E).

Proposal evaluation results are the property of OCWD. OCWD intends not to disclose evaluation results, under any circumstances, either before, during, or after the RFP process. An award of an Agreement, if any, shall be based on the evaluation results. By responding to this RFP, Bidders agree to accept the recommendations of the Evaluation Team as final and binding. Submission of a proposal constitutes acceptance by the firm of the conditions contained in this request for proposals unless clearly and specifically noted in the proposal submitted and confirmed in the contract between the District and the firm selected.

The District reserves the right to retain all proposals submitted and use any idea in a proposal regardless of whether that proposal is selected. The District reserves the right

to only hire the consultant for a portion of the work described in the RFP and/or to reject any and all proposals.

**The District requests that proposals be received by 4:00 p.m. PST on Friday, July 24, 2015 at the Orange County Water District, 18700 Ward Street, Fountain Valley, CA 92708.**

**Five paper copies and an electronic version of the proposal should be submitted (excludes the separately submitted fee envelope).**

**N. District Contact Person**

The contact person for this project is either Lee Yoo ((714 3783347 or [lyoo@ocwd.com](mailto:lyoo@ocwd.com)) or Mark Yamamoto (714 3783346 or myamamoto@ocwd.com)).

**O. Additional Information and Changes**

All requests for additional information should be made to the undersigned, in writing (fax and email are acceptable). No oral modifications of this RFP shall be valid. Any modifications shall be written by RFP addendum, and signed by the District's Project Manager.

**ORANGE COUNTY WATER DISTRICT**

Lee Yoo  
Laboratory Director  
Address: 18700 Ward Ave. Fountain Valley CA 92708  
Phone Number: 714-378-3347  
Email: [lyoo@ocwd.com](mailto:lyoo@ocwd.com)

## **EXHIBIT A – GENERAL SCOPE OF WORK**

### **Scope and Intent**

It is the intent of this Request for Proposal to select a single qualified LIMS vendor that can implement a LIMS as described below. The Project would consist of installing LIMS, configuring and customizing LIMS to meet District's specifications, and creating the appropriate training material and conducting training sessions with OCWD staff.

In addition to reviewing the District's hardware and software environment make recommendations for acquisition as appropriate, OCWD is seeking technical services by a qualified LIMS vendor to:

1. Deliver and install a commercial-off-the-shelf LIMS;
2. Configure/Customize the LIMS to implement the functionality described in the requirements document;
3. Provide access to LIMS for 20 concurrent users;
4. Provide instrument interfaces;
5. Provide 100 reports;
6. Provide the facility to transfer data from LIMS to the Water Resources Management System (WRMS);
7. Provide configuration/administrative tools that are a part of LIMS and that can be used by a team of 7 laboratory staff members to modify and create forms or screens;
8. Provide software tools that are a part of LIMS or from a third party software provider that can be used by a team of 7 laboratory staff members to modify and create reports;
9. Provide administrative tools that are a part of LIMS that can be used by a team of 7 laboratory staff members to enter, modify or delete reference data;
10. Provide access to all archived data in the new LIMS, however, archived data in the current LIMS shall not be migrated to the new LIMS;
11. Provide the facility for Ion Balance Calculations;
12. Provide a LIMS that operates on Oracle v11 database;
13. Enter all reference data into the new LIMS;

14. Provide comprehensive user manual for LIMS in both paper and electronic format which includes all configuration/customization done by the LIMS vendor;
15. Deliver written technical and functional training material and conduct on-site training sessions with Laboratory and Information Services staff on all aspects of LIMS which includes training for LIMS Administration, Report Development, LIMS Configuration and the End User.
16. Conduct application and system testing;
17. Provide Go-Live and Post Go-Live Support.

### **Technical Environment**

**Current LIMS environment:** One stand-alone Dell server running Microsoft Windows Server 2012 with Hyper-V for LIMS.

- Application/Web/Reporting server
  - Oracle database Standard Edition One, v11g for Windows for LIMS Archive data.

**See Appendix One for required specifications. The LIMS vendor will need to review and analyze the specifications with staff before implementation.**

### **Specifications**

OCWD is installing a new LIMS at AWQAL. The services to be acquired will involve review and update of business rules, business processes and workflow as appropriate, system design and architecture recommendation, installation and configuration of LIMS, migration of existing LIMS data and other data as applicable, testing and defect remedy in preparation for go-live operations, go-live of the updated systems, development of documentation, conversion of reports and comprehensive training to OCWD staff based on role or responsibility. Bidders are also encouraged to offer 3rd party solutions and additional services as deemed necessary and beneficial to augment the systems and enhance overall end user productivity.

The objectives for the new LIMS are as follows:

1. Replace the current LIMS which is near the end of its lifecycle with a LIMS that is at the beginning of its lifecycle and take full advantage of new web-enabled technology;
2. Implement all specifications in the Requirements Document;
  - a. Implement all essential functionality, currently in LIMS, in the new LIMS;
  - b. Provide improved LIMS capabilities;

- i. More widespread use of electronic analytical data such as chromatograms, and electronic notebooks. This objective will support the Lab's goal of operating a paperless lab and in the process reduce storage costs associated with paper documents;
  - ii. Implement features that improve efficiency and lower costs by reducing redundant data entry such as bi-directional instrument interfaces which record SampleIDs, Lab# and analytical results electronically rather than manually on paper;
  - c. Upgrade the LIMS to WRMS transfer routine;
  - d. Provide administrative tools in LIMS which increase the ability of Lab staff to modify LIMS without writing source code or working directly with database tables;
3. Replace the current Microsoft Access database with an enterprise database, Oracle database Standard Edition One for Windows;
  4. Improve the operating environment by installing LIMS in a virtualized Windows environment and eliminating obsolete hardware and operating systems;
  5. Improve disaster recover capabilities.

OCWD proposes running both the current LIMS in parallel with the new LIMS in test mode until such point that OCWD staff is satisfied. The test system (new LIMS) will then become the production system, and the current LIMS will be shut down. OCWD does not plan on running two parallel production systems. OCWD is relying on the successful bidder to review the District's plans and propose alternative options for implementing LIMS based on the requirements document.

### **Services Required:**

LIMS vendor shall install, configure, and implement, fully functional development, testing, training and production environments as part of this project. This shall include all tasks required to support full integration into the OCWD environment. LIMS vendor shall provide all necessary resources to successfully complete the following tasks.

1. **Review Hardware and Software:** Review the District's hardware and software environment for the installation of LIMS and make recommendations for hardware and software acquisition as appropriate;
2. **Install LIMS:** Install LIMS in a new virtual Microsoft Windows Server environment using Oracle Database Standard Edition One for Windows and implement appropriate Oracle database upgrades and data restructuring required for LIMS;
  - a. Configure and/or customize LIMS to meet specifications in the requirements document.
  - b. Install, configure, customize and implement LIMS in fully functional development, sandbox and production environments;
  - c. Install LIMS software on virtual machines on servers running Microsoft Windows Server 2012 r2 provided by OCWD.

- d. Apply Windows server updates and patches to LIMS servers as appropriate and recommended by software vendor.
- e. Provide a Go-Live Migration Plan and Go-Live Checklist.
- f. LIMS will be implemented based on OCWD approved specifications and placed into a live environment in accordance with the Project Schedule after which OCWD will again review the design and functionality of LIMS. OCWD will then determine whether the functionality and performance of LIMS interface meets the requirements of OCWD and will notify LIMS vendor of any deficiency or problem as soon as reasonably possible. LIMS vendor shall remedy any deficiency or problem reported by OCWD within thirty (30) days of receipt of written notice.

**3. Testing:** Conduct application and system testing

- a. A comprehensive formal testing process and test environment shall be developed by LIMS vendor and approved by OCWD. LIMS vendor shall develop a test plan for each component/module or system function establishing roles/responsibilities of team members for each test plan. LIMS vendor shall develop and load test data into a test system and facilitate the completion of each test plan, coordinating efforts with the OCWD Project Manager, OCWD Technical Lead, and the Core Staff members.
- b. All testing procedures shall be produced by the contractor and approved by OCWD no less than two weeks before testing begins. Prior to moving the Systems into a production environment, Contractor shall remedy all known Defects and install and test the most current, commercially available fix pack(s) from Oracle and other third party vendors, and remedy all problems and deficiencies that may surface during that process.
- c. All tests will be performed on-site at OCWD on standard computers and servers with OCWD standard software and hardware. Tests will not be considered complete until the OCWD Project Manager and Core staff is satisfied that the software and data performed properly and have been accepted in writing.
- d. Upon successful completion of testing and written certification by LIMS vendor that the System upgrades and integration are complete in all respects, and all known defects have been remedied by LIMS vendor, the System will be prepared for live operations. LIMS vendor will provide on-site support during Go-Live for not less than ten (10) consecutive business days. If defects surface during that period, OCWD reserves the right to require LIMS vendor to remain on site until the system is stable and material defects have been remedied.

**4. Training:** Create appropriate written technical and functional training material and conduct training sessions with OCWD staff on all aspects of the Project.

- a. LIMS vendor shall provide immersive training at the beginning of the project to provide an overview of LIMS features, functions, screens, reports and other functionality to appropriate District staff.
- b. Training shall occur no sooner nor later than three weeks prior to go-live operations. LIMS vendor shall identify OCWD staff member training based on role, responsibility, or project involvement and LIMS vendor will coordinate all training. All training will be on-site at OCWD main offices in Fountain Valley. LIMS vendor shall train designated OCWD Staff as part of a “Train the Trainer” program, which will become responsible for End User Training for OCWD Staff. LIMS vendor shall also develop customized end user training and reference materials for OCWD staff providing information and examples of OCWD usage of the accepted solution.
- c. LIMS vendor will develop materials in both electronic and hardcopy and for end user training.
- d. LIMS vendor will develop materials in both electronic and hardcopy and deliver technical training including System Administration, use of and maintenance of the MIF, development and maintenance of LIMS reporting tools and utilities, and other technical training as appropriate.

**5. Documentation:** Develop application and system documentation

- a. All project-related documentation shall be updated and provided to OCWD prior to training. Project documentation shall include, but not be limited to, hardware configuration, software configuration (including detail specifications for the integration configuration between LIMS and WRMS), screen, reports, security administration, training manuals, collected data, data migration scripts, operational and maintenance procedures, installation procedures, and testing procedures.
- b. All documentation shall be delivered in the form of electronic files. All project documentation deliverables shall be placed on DVD-ROM in their original format (i.e.: Word, Excel, etc.) and three copies shall be provided to the IT Department. All DVD-ROMs shall be created and tested on OCWD computers for compatibility. The final documentation deliverable shall consist of a complete set of electronic user manuals and electronic system administration manuals exclusive of LIMS user/system manuals procured by OCWD.
- c. System/Architecture Design to include Entity Relationship Diagram (ERD), Data Dictionary, Physical Data Model, system architecture and hierarchy, and/or other documentation to detail the architecture along with any customizations and interface considerations.
- d. An ‘As Configured’ document for the integration between LIMS and WRMS, defining all data transactions before and after integration work. Database attributes such as, but not limited to, field size, data type, possible data choices (where applicable) will be documented. This document will define which fields in LIMS ultimately update to WRMS and visa versa.

- e. The manuals shall include, but not be limited to, the content of the knowledge transfer sessions, including a table of contents. All code written for this project shall be delivered in the DVD-ROM format and three copies shall be provided to the IT Department.

Contents shall include, but not be limited to System/Application:

- configuration
- disaster recovery procedure
- installation process
- administration procedures
- security administration procedures
- workflow documentation
- test plans and test plan results
- All other documentation generated by other project tasks (i.e. status reports, logs, training materials)

**6. Go-Live:** Provide Go-Live and Post Go-Live Support

- a. Provide 15 days on-site and/or remote support after Go-Live.
- b. Provide technical support with 24-hour response until Final System Acceptance.
- c. Provide 1 year warranty against Material Defects.

**Additional Software**

Although District staff anticipates that the majority of the software will be provided via the LIMS Software License/Software Update and Support agreement, the District understands that the purchase of additional software may be required. LIMS vendor shall review and provide a report of all required software acquisitions.

**Acceptance Criteria of Completed Work**

Final System Acceptance will occur after all terms and conditions of the contract negotiated with the LIMS vendor have been successfully completed, all testing has been successfully completed and the System has operated in a live environment for a ninety (90) business day consecutive period without Material Defects.

**Application & System Knowledge Transfer**

LIMS vendor shall conduct periodic knowledge transfer sessions. These sessions will be performed with the OCWD Project Manager, OCWD Application Manager, and assigned IT personnel present. The scope of these sessions will include, but not be limited to, a review of all existing documentation, actual hands-on installation and setup of the software and tools being used for the project, setup of the data and database connections to the software and tools, a demonstration of how the software and tools work and how to maintain and upgrade the data. LIMS vendor shall also provide a hands-on review of the installation of any custom applications, tools and steps relating to the installation.

## **OTHER**

### **OCWD Responsibilities:**

1. Assign a project manager that will work with the LIMS vendor's project manager in ensuring overall project success,
2. Assign an executive sponsor to ensure overall project success,
3. Make available controlled access to the District's local area networks in order to permit the LIMS vendor to perform its obligations under this Contract,
4. Ensure that System technical and customization documentation is timely provided to the LIMS vendor,
5. Coordinate all interactions and meetings with District staff, and Provide computer equipment, Database Software, and operating system Software if and as needed to accommodate New System requirements.

### **LIMS vendor Responsibilities:**

1. **Project Lead:** The Contractor will be the Project Lead for the LIMS project. OCWD requires the Contractor to be responsible for completing this project with limited access to OCWD resources. OCWD requires the Contractor to have in-depth experience and skills in the following areas:
  - a. LIMS installation, configuration and customization
  - b. Oracle Database Enterprise Edition, Standard Edition and Standard Edition One, versions 9i through 11g
  - c. Microsoft Windows Server 2008 r2 and 2012 r2 with Hyper-V and server virtualization (may need IS help here)
2. **Understanding requirements:** The LIMS vendor is responsible for understanding the needs outlined in this RFP and for translating them into appropriate work plan and designs. The LIMS vendor shall submit the work plans for approval. The LIMS vendor shall also submit all design documentation, where applicable, for review and signoff.
3. **Transfer and Ownership of Deliverables:** Deliverables, including source code, shall be submitted in both paper and electronic media formats to the OCWD Project Manager.
4. **Hardware Review:** Review the District's hardware and software environment for the upgrade and make recommendations for hardware and software acquisition as appropriate;
5. **Procedure Development:** Develop and provide all operating procedures.
6. **Software upgrade/conversion/migration:** The LIMS vendor is responsible for performing all software installation LIMS and software installations of third party software as appropriate.
7. **Data conversion:** The LIMS vendor is responsible for all data conversion and Quality Control for the new LIMS.

8. **Screens generation:** The LIMS vendor is responsible to generate screens to meet specifications in the requirements document.
9. **Reports generation:** The LIMS vendor is responsible to generate reports to meet specifications in the requirements document.
10. **Ownership of Materials:** OCWD Ownership of all project deliverables shall be transmitted to OCWD upon payment by OCWD for the work.
11. **Formal Hand Over:** The LIMS vendor will provide a formal hand-over process to ensure that skills and knowledge are transferred to OCWD staff.
12. **Communication and Reporting Relationship:** The LIMS vendor shall assign a project manager who will report to selected OCWD staff and will:
  - a. Submit a final detailed work plan/schedule satisfactory to OCWD within two weeks of the Professional Services Agreement (PSA) being executed with the LIMS vendor;
  - b. Provide weekly progress reports
  - c. conduct weekly meetings with OCWD staff and present deliverables based on agreed upon milestones
  - d. Prepare and distribute all key meetings minutes or decisions for the project work.
  - e. Prepare, update and share project schedule using online services such as [www.smartsheet.com](http://www.smartsheet.com) for Project Management and [www.basecamp.com](http://www.basecamp.com) for team collaboration services.
  - f. The LIMS vendor will be responsible for planning, organizing, and communicating with the Team on all aspects of the Project. The LIMS vendor will conduct technical reviews at major project milestones.
13. **Quality of Service:** The LIMS vendor shall be responsible for the professional quality, technical accuracy, and the coordination of all services furnished by or on the behalf of the LIMS vendor.
14. **Conference Room Pilot:** The LIMS vendor shall lead the Conference Room Pilot (CRP) to demonstrate full compliance with the requirements stated in this RFP. The CRP will be coordinated by a joint effort of LIMS vendor, OCWD staff and consultants. Should the outcome of the CRP not meet all expectations of OCWD, a new CRP will be scheduled until all requirements are met.
15. **Support:** The LIMS vendor shall provide technical support after Go-Live and until Final System Acceptance. (OCWD will obtain an annual Software Subscription and Support agreement with the LIMS vendor).
16. **Creation of Deliverables:** The LIMS vendor shall assume full responsibility for creation of the deliverables of this project.
17. **Warranty:** The LIMS vendor shall warranty the implementation for 1 year after Final System Acceptance.

## Appendix One – LIMS Requirements Document

### EXHIBIT B - PRICE PROPOSAL SUMMARY

- Please provide an attachment that specifies what each cost includes and the breakdown as to the FTE's and resources that will be assigned.
- Please provide a timeline for the project including start and end dates for each of the items/activities detailed in the cost sheet below and the Deliverables section.

Cost Item	Hours or Units	Cost per Hour or Unit	Extended Total	Title/Level of Person Proposed	Completion Date
1. Deliver a Project Plan - Review the hardware and software environment make recommendations for acquisition as appropriate;					
Software Licensing					
LIMS Licenses					
Implementation Services					
Integration					
Instrument Integration					
WRMS Integration					

Training					
Training, System and Application Documentation					
Go-Live Support and Post Go-Live Support until Final System Acceptance.					
LIMS Configuration					
LIMS Configuration (describe difference from above)					
Maintenance					
Annual Maintenance					
Annual Maximum percent increase in total maintenance costs for 2 <sup>nd</sup> , 3 <sup>rd</sup> , and 4 <sup>th</sup> year					
<b>COST TOTALS</b>					
Total Software Licensing					
Total Implementation Services					
Total Cost of Project					

## **EXHIBIT C – PROJECT TEAM TASK AND TIME FORM**

Bidder: \_\_\_\_\_

The following Project Team Task and Time Form must, at a minimum, breakdown the Price Items in Exhibit B by team members, rates and number of hours assigned. The Project Team Task and Time Form should contain detailed cost breakdowns:

Reproduce this form as needed if space is inadequate with respect to Activities and Team members.

## **EXHIBIT D – PAYMENT MILESTONES**

Following are the anticipated milestones and progress payments.

<b>Milestone</b>	<b>Payment Percentage</b>
1. Review the hardware and software environment make recommendations for acquisition as appropriate;	
2. Install LIMS and all third party software	20
3. Implement all specifications in the requirements document;	20
4. Completion of LIMS System Testing	
5. Completion of Integration Testing between LIMS and WRMS	10
6. Deliver written technical and functional training material;	
7. Conduct on-site training for Laboratory and Information Services staff;	10
8. Deliver Written Application and System Documentation;	
9. Deliver Go-Live Migration Plan and Go-Live Checklist;	
10. Go-Live	20
11. Final System Acceptance	20
Total	100%

**EXHIBIT E - PROFESSIONAL SERVICES AGREEMENT**

**Orange County Water District**  
**Requirements Document for Laboratory Information Management System RFP**

**Instructions to Offerors:**

Enter your company name in the Offeror field.

Please provide a comment for any requirement that cannot be implemented under any conditions. Additionally, provide a comment for any requirement that can only be met using third party software.

Include any clarifications or comments within the written proposal, indicating the requirement(s) to which the comment applies.

Offeror:
----------

Ref Number	Description
n/a	<b>Technical</b>
1	Hardware, Operating System, and Infrastructure 1.1. LIMS software shall operate on a 32-bit or 64-bit PC client workstation. 1.2. LIMS software shall operate on a client workstation running a Windows 7 or Windows 8 operating system. 1.3. LIMS software shall use Oracle database version 11 or newer, including Oracle Standard Edition One or Oracle Standard Edition. 1.4. LIMS software shall run on a Microsoft Hyper V virtualized server. 1.5 It is preferable that LIMS is a web-based application built on the Microsoft .NET Framework. If not, please describe the application environment, the development technology, and any additional required software in Comments. 1.6 LIMS shall not be built using any version of Microsoft Access. Neither the front end (forms) nor the database can be built using Microsoft Access.
2	LIMS Technical Requirements - These requirements are meant to provide a precise description of the functionality that is expected for the prospective LIMS. It is this functionality in terms of providing OCWD staff with timely, specific information and in terms of providing features that enforce established policies and business rules that is the requirement. 2.1. LIMS software shall be accessible to 20 concurrent users. Use 20 concurrent users for cost estimates. However, LIMS shall have the capability to be accessed by at least 40 concurrent users to accommodate future increases in laboratory personnel. 2.2. LIMS software shall be web-enabled. 2.2.1. Both the web interface and the client-server interfaces shall access LIMS data simultaneously. 2.2.2. Additionally, any configuration to the client interface shall be available in the web interface without additional configuration. 2.2.3. LIMS software shall run on a Windows Tablet PC or Apple iPad over a wireless network 2.3. LIMS software shall support the retrieval of the following fields from an archive database. Archived data is currently stored in an Oracle database (LIMS_Archives). 2.3.1 SampleID, Lab#, Source, TestGroupID, TestID, Test Name, ReportedResults, RDL, Units, DateSampled, DateAnalyzed, AnalyzedBy, NumericResult, TestID, AnalysisDate, AnalyzedBy, SupervisorApprovedDate, Note, Note2, Note3, Note4, Note5.

2.4.	The LIMS vendor shall include LIMS software upgrades in the purchase of LIMS or in the purchase of an annual service contract. LIMS software upgrades include the LIMS upgrade and upgrades to the Oracle database in the event that the database shall be upgraded when LIMS is upgraded.
2.5.	LIMS software shall be configurable using tools in LIMS that do not require writing custom code. However, LIMS shall be able to interact with custom code written by OCWD staff should configuration tools not meet the needs of OCWD.
2.5.1	The LIMS vendor shall support any configuration and customization work done by the LIMS vendor or OCWD during a LIMS upgrade. The LIMS vendor shall provide the tools and resources to transfer any configuration or customization work to the upgraded LIMS. This requirement shall be part of the annual service contract.
2.6.	LIMS to WRMS Data Transfer - LIMS shall have the capability to send supervisor approved data marked as "to be transferred to WRMS" to the Water Resources Management System (WRMS). LIMS shall implement the functionality described in Exhibit H.
2.6.1.	LIMS shall record the following data in a Log table (LIMS_XPORT_REF_LOG), located in WRMS.
2.6.1.1	Lab#
2.6.1.2	XPORT_COMPLETE_YN - only set to Y when all results have been populated to LIMS_XPORT_STAGING table
2.6.2.	LIMS shall send the following data to a staging table (LIMS_XPORT_STAGING) in WRMS. A description and/or sample data is provided for selected fields.
2.6.2.1.	WRMSResultsTo – Approval group in WRMS
2.6.2.2.	Batch Number – Sample Group Number in Aspen
2.6.2.3.	Note – sampling notes
2.6.2.4.	Note2 – sampling notes
2.6.2.5.	Note3 – sampling notes
2.6.2.6.	Note4 – sampling notes
2.6.2.7.	Note5 – sampling notes
2.6.2.8.	SampleID – SAR-IMPERIAL-01, GWRS-ROP
2.6.2.9.	Collect Date
2.6.2.10.	Collect Time
2.6.2.11.	EndCollectDate
2.6.2.12.	EndCollectTime
2.6.2.13.	Collect By – initials of person who collected sample
2.6.2.14.	Submitter – OCWD, MWD
2.6.2.15.	Project# - GWRSPDR, SARMON
2.6.2.16.	SampleType - WATER
2.6.2.17.	Source – GRAB, COMP
2.6.2.18.	SampleDepth
2.6.2.19.	LaboratoryName - OCWD
2.6.2.20.	Lab# - 13010180-01
2.6.2.21.	Received Date
2.6.2.22.	Received Time
2.6.2.23.	Received By – initials of person who received the sample
2.6.2.24.	NoBot – number of bottles
2.6.2.25.	Filtered – yes or no
2.6.2.26.	Preserved – yes or no
2.6.2.27.	Cooled – yes or no

2.6.2.28.	TurnAround
2.6.2.29.	SampleRefID – Test Series
2.6.2.30.	TestID – abbreviation of test name
2.6.2.31.	Analytical Method – Not the TestGroupID
2.6.2.32.	PrepDate
2.6.2.33.	AnalysisDate
2.6.2.34.	Result
2.6.2.35.	Reportable Detection Limit
2.6.2.36.	Units
2.6.3	LIMS shall include the following 5 fields that shall be located in the same table as the Lab# (Samples table in the current LIMS or in a table where the Lab# is a primary key or is unique).
2.6.3.1	XPORTED_TO_WRMS
2.6.3.2	XPORTED_TIME - This date must be recorded with the correct format generated by WRMS.
2.6.3.3	XPORTED_NOTES
2.6.3.4	XPORTED_BY
2.6.3.5	LIMS_XPORT_REF_LOG_ID
2.6.4	LIMS shall update the XPORTED_TO_WRMS field (section 2.6.3) once the data for a Lab# is sent to the LIMS_XPORT_STAGING table.
2.6.5	LIMS shall update the XPORT_COMPLETE_YN field (section 2.6.1) once data for all Lab#s are sent to the LIMS_XPORT_STAGING table.
2.6.6	LIMS shall send data by Lab#s to WRMS in batches: Field, Inorganic, Organic and Archive. LIMS shall only send Lab#s that are supervisor approved, where the Lab#s have not been transferred to WRMS, or other conditions.
2.6.7	LIMS shall provide the facility for the supervisor to resend data by Lab# to WRMS. This facility shall remove the Supervisor Approval date or other conditions.
2.6.8	LIMS shall provide a report which lists Lab#s that were transferred to the staging table but did not transfer to tables in WRMS. LIMS shall provide a report where the data can be filtered by field.
2.6.8.1	This report must describe the reason that the Lab# did not transfer to WRMS.
2.6.8.2	The data source for this report is the LIMS_XPORT_REF_LOG table and a table in LIMS (Samples table in the current LIMS).
2.6.8.3	LIMS shall provide interface(s) to view the report.
3	Communications
3.1.	LIMS shall use Microsoft Outlook to send email
3.2.	LIMS shall allow for all reports and search results to be sent via email from within LIMS. LIMS shall have the capability to open Microsoft Outlook and provide the capability to select email addresses from within LIMS.
3.3.	LIMS shall allow for Action Level Notifications (ALN) to be sent via email.
3.3.1.	LIMS shall identify TestIDs in a worksheet where the result exceeds the action level (ActionLevel field in Tests table. Action levels are entered for each TestID in the Sample_Reference_Tests table. The Action Level Notification report contains the following information.) The results for these identified TestIDs shall communicated as appropriate via an ALN.
3.3.1.1.	LIMS shall support sending an ALN via email from a worksheet. LIMS shall enter the following information in the subject of the email. ALN: SampleID - Drinking Water Well - TestID Numeric Result Units. Not all wells are Drinking Water Wells; the term Drinking Water Well is only placed in the subject if the SampleID is a drinking water well.

3.3.1.2.	LIMS shall record the following information in the header of the email: SampleID, TestID, Reported Result, Date Sampled, and Time Collected.
3.3.1.3.	LIMS shall record the following information in the body of the email: Report Date, SampleID, Lab#, Date Sampled, Time Collected, Analysis Date, Monitoring Program, Re-Sample?, Test Name, Analyzed By Method, Reported Result, Numeric Result, Action Level, MCL, Analysis Verified, Analysis Re-Checked, Analyzing Chemist, Sending Chemist and Chemist Comments.
3.3.2.	Requirement removed
3.3.3.	LIMS shall provide the facility to enter information related to the ALN in a form. The form displays the following information.
3.3.3.1.	LIMS shall display the following information: Worksheet #, E-Mail Group, Lab#, SampleID, TestID, Numeric Result, Analysis Verified, Analysis ReChecked, Resample?, Drinking Water, Comments, and Sending Chemist.
3.3.3.1.1	LIMS shall display the Worksheet # of the worksheet.
3.3.3.1.2	LIMS shall display an E-Mail Group is from Microsoft Outlook. If a group is not selected or an email address is not entered, an ALN for that Lab# will not be sent.
3.3.3.1.3	LIMS shall display results for a Lab# on the ALN form.
3.3.3.1.4	LIMS shall display the SampleID, TestID and Numeric Result from the worksheet.
3.3.3.1.5	LIMS shall provide the following check boxes: Analysis Verified, Analysis Rechecked, and Resample? .
3.3.3.1.6	LIMS shall set Drinking Water = True if the sample is from a Drinking Water Well.
3.3.3.1.7	LIMS shall allow the user to enter the initials of the sending chemist (the user who is sending the ALN).
3.3.4.	LIMS shall identify a TestID as requiring an ALN based on the following additional validation criteria in 3.3.1. The following conditions shall trigger an action level notification from LIMS.
3.3.4.1.	LIMS shall identify a TestID as requiring an ALN if the SampleID = GWRS-FPW, TestID = TOC and the numericresult is greater than 0.5 mg/L.
3.3.4.2.	LIMS shall identify a TestID as requiring an ALN if the SampleID = Lab-DI, TestID = pH and the numericresult is less than or equal to 5.8 units.
3.3.4.3.	LIMS shall identify a TestID as requiring an ALN if the SampleID = GWRS-UVP or GWRS-UVF, TestID = H2O2 and the numericresult is less than or equal to 1.5 mg/L.
3.3.4.4.	LIMS shall identify a TestID as requiring an ALN if the TestID = AI and the numericresult is less than or equal to 10 A.I..
3.3.4.5.	LIMS shall identify a TestID as requiring an ALN if the TestID = CORROS and the numericresult is less than or equal to - 1.5 S.I. or greater than or equal to 1 S.I.
3.4.	LIMS shall send Resample Requests
3.4.1.	LIMS shall support sending Resample Requests from a worksheet.
3.4.2.	LIMS shall display the following information.
3.4.2.1.	LIMS shall display a Send to List which is a check box - user checks this box if the resample request is sent to a default list of recipients.
3.4.2.2.	LIMS shall display a Sent to email below - user checks this box and enters the recipient's email address (see Exhibit E).
3.4.2.3.	LIMS shall display the Lab#, SampleID, TestGroupID, TestID, Collect Date and Additional Comments for all tests in the worksheet.
3.4.2.4.	LIMS shall allow entering a Sending Chemist (user's name). If the test is an organic test, only users from the organic section are listed. If the test is an inorganic test, only users from the inorganic section are listed.
3.4.2.5.	LIMS shall send an email to the selected parties.

3.4.2.6.	LIMS shall record the text "Main_Lab@ocwd.com" in the 'From' line of the email.
3.4.2.7.	LIMS shall record the text "Resample Request - Lab# <record Lab# here>, Sample ID: <record SampleID here> in the 'Subject' line of the email
3.4.2.8.	LIMS shall record the text "The Lab requests a re-sample for the sample below." LIMS shall record all the information from 3.4.2.3. in the email. LIMS shall record this text, at the bottom of the email, "Please contact the sending chemist <record sending chemist name here>, plus Inorganic Supervisors Jeremy Davis and Phil Harrington if you have any questions regarding this email."
3.5.	LIMS shall send all reports as attachments in an email. The user selects the file format from this list: xls (Excel), pdf, docx (Word), txt and rtf.
3.6	LIMS shall comply with OCWD's branding standards which includes OCWD's Logo and Name, on all reports.
4	<p><b>Security</b></p> <p>4.1. LIMS shall provide four levels of security - Administrator, Supervisor, Chemist, LIMS Analyst. In general, staff will be assigned a security level, however, provisions shall be made in LIMS to allow or not allow access to configuration tools, administrative tools, forms and reports.</p> <p>4.1.1. Administrator - Lab Director and LIMS Administrator - Access all areas of LIMS</p> <p>4.1.2. Supervisor - Configuration privileges and administrative tools</p> <p>4.1.3. Chemist - Access all areas of LIMS except Sample Login, where data is supervisor approved and where data is sent to WRMS (see 2.6.). No access to change Lab# or SampleID. Access to administrative tools to modify reference data for a core LabLIMS group.</p> <p>4.1.4. LIMS Analyst - Access only to forms related to Sample Login and WRMS File Generation for Field Samples. Access to administrative tools.</p> <p>4.2. LIMS shall only allow authorized users access. If able to use Active Directory (AD) for user name and password, please indicate and specify which version of AD.</p> <p>4.3. LIMS shall provide access to specific forms, reports, and controls on forms based on the user's level of security.</p> <p>4.4. LIMS shall maintain a full audit trail of all new entries of data, changes to existing data and configuration/modifications to LIMS.</p> <p>4.4.1. LIMS shall record who, what and when for each audit entry.</p> <p>4.4.2. LIMS shall provide administrative tools to view audit trail information.</p> <p>4.5. LIMS shall shut down after 30 minutes of inactivity and save any data that was entered by the user.</p> <p>4.6. LIMS shall not allow modifications to data once the Lab# is supervisor approved.</p>
5	<p><b>Archiving</b></p> <p>5.1. LIMS shall save all data and this data is available to all users</p> <p>5.2. LIMS shall correctly identify active and archive samples. Samples that are archived were sent to WRMS</p> <p>5.3. LIMS shall provide for concurrent operation of 3 database groups: active, archive and training. LIMS shall allow modifications to data in the training database group and these modifications shall not affect the active database group.</p>
6	<p><b>Table Structure (see Exhibit F)</b></p> <p>6.1. The LIMS vendor shall enter the reference data in sections 6.3, 6.4, 6.6, 6.9 and Exhibit A and Exhibit B into the new LIMS. Reference data will be sent in electronic format (Excel or Microsoft Access) to the successful LIMS vendor.</p> <p>6.2. Samples, TestGroups, Tests</p> <p>6.3. SampleRefLib, Sample_Reference_TestGroups, Sample_Reference_Tests</p> <p>6.4. TestGroupLib, TestLib, TestGroup_TestLib</p> <p>6.5. QC_Pointers, QC_Samples, QC_Testgroups, QC_Tests</p> <p>6.6. SampleIDs, LabSections, Projects</p>

6.7.	OCWD-OrganicExtractionForms, OCWD-OrganicExtractionForms-Samples
6.8.	data (name of table is data) contains analytical results and messages used for Ion Balance calculation.
6.9	OCWD-DilutionCheck, OCWD-MatrixCheck
7	<b>Escrow Account</b>
7.1.	LIMS vendor shall provide an escrow account in which the source code for LIMS will be stored.
7.2.	LIMS vendor shall release the source code to OCWD, at no charge to OCWD, if the LIMS vendor is unable to continue to support LIMS.
n/a	<b>General</b>
8	<b>Lab Number (Lab#) Information</b>
8.1.	LIMS shall generate a Lab Number (Lab#) in the format 12100679-01 (YYMMnnnn-NN where YY is the year, MM is the month, nnnn is a sequential number reset at the beginning of each month and NN identifies the Test Series (see section 19 for more info about Test Series). The Lab# is the primary organizing field for sample data. As such, all sample data is associated with a Lab#, most importantly, Test Series, TestGroupIDs (for example, 524 or X200.7) and TestIDs (for example, pH or MTBE).
8.1.1.	LIMS shall contain a form which displays the following: Lab#, SampleID, Date Sampled, Test Series, Ion Balance Status, Count, Done, Sample Complete Date, Report Date, and Supervisor Approval Date
8.1.1.1	LIMS shall be capable of displaying all samples or only samples where ion balance is requested
8.1.1.2	LIMS shall be capable of sorting all fields A-Z or Z-A. LIMS shall be capable of filtering by selection.
8.1.1.3	LIMS shall display all TestGroupIDs logged in for each Lab# by selecting the Lab# and clicking a button. The TestGroupIDs are displayed as described in 8.1.2.
8.1.2.	LIMS shall contain a form which displays the following: Lab#, TestGroupID, TestGroup Name, TestGroup Assigned To, Prep By, Prep Date, Count, Done, TestGroup Complete Date, and Supervisor Approval Date
8.1.2.1.	LIMS shall allow the modification of information related to TestGroupID. The user clicks on the 'TestGroups Detail' button to change data. Supervisors can change data but can't change the Lab# or LIMS#.
8.1.2.2.	LIMS shall allow the modification of information related to TestID. The user or supervisor can view all Tests logged in for each TestGroupID by selecting the appropriate TestGroupID. The Tests data are displayed as described in 8.1.3..
8.1.3.	LIMS shall provide a form which displays the following: Lab#, TestGroupID, TestID, Flag, Numeric Result, Reported Result, Units, Analyzed By, Analysis Date, Approved By, Approved Date and Worksheet#.
8.1.3.1.	LIMS shall allow the modification of the Numeric Result, Analyzed By, Analysis Date, Approved By and Approved Date on this form.
8.1.3.2.	LIMS shall allow the formatting of the Numeric Result should the user modify the Numeric Result. See 9.1 for details on calculations and formatting operations required for Numeric Results.
8.1.3.3.	LIMS shall provide the capability such that whenever an Approved Date is modified, LIMS modifies associated date fields as described in 17.4.5.
8.1.4.	LIMS shall provide a Lab# configuration administrative tool that allows the Lab# to be configured, for example, when the month changes from February to March. This feature is also used to configure the Lab# when a sample is deleted and the deleted Lab# shall be recovered
9	<b>Statistics, General Calculations and Search Function</b>
9.1.	LIMS shall calculate, format and record all analytical results to results that will be reported.
9.1.1.	LIMS shall format organic test results from the instrument that are below the Reportable Detection Limit (RDL) and report these results as ND. Additionally, TestGroupID = 524 results shall be formatted to TR for results that are greater than or equal to ½ RDL and less than the RDL.
9.1.2.	LIMS shall format inorganic and field test results that are less than the RDL and report these results as <RDL.

9.1.3.	LIMS shall provide administrative tools to customize significant figures and break values for each test. Each test result shall be formatted according to its significant figure and break value. This shall be accomplished wherever analytical results are entered.
9.1.4.	LIMS shall provide provisions for an 'Alpha' result. An 'Alpha' result is entered by the user. This result will override all calculations in LIMS. For example, the user may enter 'NA' as an 'Alpha' result. The reported result for this test will be 'NA'.
9.2.	Ion Balance Calculations
9.2.1.	LIMS shall verify that the following TestGroups are complete - X200.7, X200.7D, 2320B, X1-300.0, 2510B, 2540C, 4500F-C, 4500NH3H, 4500SID. IonBalance = True and IonBalanceStatus = "Pending" in SAMPLES table. The ion balance calculations are only performed on samples where these TestGroups are complete. The following tests are required for the ion balance calculation: Ca, Ca-DIS, Cl, F, K, K-DIS, Mg, Mg-DIS, Na, Na-DIS, NH3-N, NO2-N, NO3-N, PO4-P, TOTALK, SO4, EC, TDS, pH.
9.2.2.	Ion Balance Calculation Details
9.2.2.1	LIMS shall calculate the following results in milliequivalents per liter. If there are negative results, enter 0 milliequivalents per liter. Do not alter analytical results entered by chemist.
9.2.2.1.1	Multiply the Na result by 0.04350
9.2.2.1.2	Multiply the K result by 0.02558
9.2.2.1.3	Multiply the Mg result by 0.08229
9.2.2.1.4	Multiply the Ca result by 0.0499
9.2.2.1.5	Multiply the NH3-N result by 0.07140
9.2.2.1.6	Multiply the TOTALK result by 0.01998
9.2.2.1.7	Multiply the F result by 0.05264
9.2.2.1.8	Multiply the Cl result by 0.02821
9.2.2.1.9	Multiply the NO2-N result by 0.07140
9.2.2.1.10	Multiply the NO3-N result by 0.07140
9.2.2.1.11	Multiply the SO4 result by 0.02082
9.2.2.1.12	Multiply the PO4-P result by 0.03229
9.2.2.1.13	Multiply the Br result by 0.01252
9.2.2.2	LIMS shall calculate the sum of cations which is the sum of Ca, K, Mg, Na, and NH3-N in milliequivalents per liter
9.2.2.3	LIMS shall calculate the sum of anions which is the sum of Br, Cl, F, NO2-N, NO3-N, PO4-P, SO4, and TOTALK in milliequivalents per liter
9.2.2.4	LIMS shall calculate the percent difference as follows. Absolute value of $100 * (\text{Sum of Cations} - \text{Sum of Anions}) / (\text{Sum of Cations} + \text{sum of Anions})$
9.2.2.5	LIMS shall display the message "Standard Method Balanced +/- 2%", if the percent difference is less than or equal to 2
9.2.2.6	LIMS shall calculate the absolute value of the difference between the sum of the cations and the sum of the anions.
9.2.2.7	LIMS shall display the message "Standard Method Balanced +/- 0.2 meq/L (Low Level)" if the value calculated in 9.2.2.6 is less than 0.2 and the sum of the anions is less than or equal to 3.
9.2.2.8	LIMS shall display the message "Standard Method Not Balanced +/- 0.2 meq/L (Low Level)" if the value calculated in 9.2.2.6 is greater than or equal to 0.2 and the sum of the anions is less than or equal to 3.
9.2.2.9	LIMS shall display "Standard Method Balanced +/- 2%" if the sum of anions is greater than or equal to 3 and less than 10 and the value calculated in 9.2.2.4 is less than or equal to 2.

9.2.2.10	LIMS shall display "Standard Method Not Balanced +/- 2%" if the sum of anions is greater than 3 and less than 10 and the value calculated in 9.2.2.4 is greater than 2.
9.2.2.11	LIMS shall display "Standard Method Balanced +/- 5% (High Level)" if the sum of anions is greater than or equal to 10 and less than 800 and the value calculated in 9.2.2.4 is less than or equal to 5.
9.2.2.12	LIMS shall display "Standard Method Not Balanced +/- 5% (High Level)" if the sum of anions is greater than or equal to 10 and less than 800 and the value calculated in 9.2.2.4 is greater than 5.
9.2.2.13	LIMS shall display "Total Ion Content Exceeds Ion Balance Capability" if the sum of anions is greater than or equal to 10 and greater than or equal to 800.
9.2.2.14	LIMS shall display "The anion and cation sums are balanced." if the criteria in 9.2.2.7 or 9.2.2.9 or 9.2.2.11 is met.
9.2.2.15	LIMS shall display the sum of cations, sum of anions, and percent difference.
9.2.2.16	LIMS shall provide a search by Lab# feature.
9.2.2.17	LIMS shall record the sum of cations in the TOTCAT result field and the sum of anions in the TOTANI result field.
9.2.2.18	LIMS shall not allow data entry or data modification for samples that are supervisor approved.
9.2.2.19	LIMS shall record Pass or Fail in the IonBalanceStatus field.
9.2.2.20	LIMS shall display the Lab#, SampleID, Entered By, Date, Cations, Anions (TestID, units, a column for result in mg/L or ug/L and a column for milliequivalents per liter for each cation and anion), 2 message boxes and 2 warning boxes for each sample.
9.2.3.	Additional Ion Balance Details
9.2.3.1	If there isn't a NO3-N result, LIMS shall verify that there exists a NO3 with a different Lab# but with the same sample group or batch number. If there is a NO3 result, LIMS shall divide that result by 4.4268 and enter it into the NO3-N result.
9.2.3.2	LIMS shall use either the dissolved metal result or the total metal result. For example, LIMS shall use either K-Dis (Dissolved K) result or the K result. If there are both results, LIMS shall use the total metal result for the sum of cations calculation.
9.2.4.	LIMS shall provide the following 4 TDS/Conductivity calculations.
9.2.4.1.	LIMS shall provide Measured versus Calculated TDS calculation
9.2.4.1.1	The acceptance range for this calculation is $((\text{Measured TDS}) / (\text{Calculated TDS})) > 1.0 \text{ but } < 1.2$
9.2.4.1.2	Calculated TDS = $0.61(\text{HCO}_3\text{Ca}) + 0.6(\text{CO}_3\text{Ca}) + 0.17(\text{OHCa}) + \text{Na} + \text{K} + \text{Ca} + \text{Mg} + \text{Cl} + 1.266(\text{SiO}_2) + \text{NO}_3 + \text{F}$
9.2.4.1.3	If Measured < Calculated, suspect the higher ion sum (anions or cations) or Measured TDS. If Measured > 1.2(Calculated), suspect the lower ion sum (anions or cations).
9.2.4.2.	LIMS shall provide Anion/Cation Sum versus Conductivity calculation
9.2.4.2.1	The acceptance range for this calculation is $100 \times \text{anion} \text{ (or cation) sum (in meq)} = (0.9 \text{ to } 1.1)\text{EC}$
9.2.4.2.2	"Check Anions" message if $100 \times \text{cation sum}$ is closer to $(1.0)\text{EC}$ than $100 \times \text{anion sum}$ . "Check Cations" message if $100 \times \text{anion sum}$ is closer to $(1.0)\text{EC}$ than $100 \times \text{cation sum}$ .
9.2.4.3.	LIMS shall provide Calculated TDS versus Conductivity calculation
9.2.4.3.1	The acceptance range for this calculation is $((\text{Calculated TDS})/\text{EC}) = 0.55 \text{ to } 0.7$
9.2.4.3.2	Use calculated TDS equation from #1 above. If $< 0.55$ , "Check low ion total and EC" message. If $> 0.7$ , "Check high ion total and EC" message.
9.2.4.4.	LIMS shall provide Measured TDS versus Conductivity
9.2.4.4.1	The acceptance range for this calculation is $((\text{Measured TDS})/(\text{Measured EC})) = 0.55 \text{ to } 0.7$
9.2.4.4.2	If outside range, "Check TDS and EC" message.

9.2.4.5.	LIMS shall perform calculations in 9.2.4.1, 9.2.4.2, 9.2.4.3 and 9.2.4.4 by a single user click.
9.2.5.	LIMS shall format the results and display the Analysis Date field where the analyst can modify the analysis date
9.2.6.	LIMS shall display "PASS" when a sample meets the acceptance criteria as described in sections 9.2.2 and 9.2.4.
9.2.7.	LIMS shall allow changes to the Ion Balance Status. On the Ion Balance Status form, user can select in the column titled Ion Balance Status from Failed but Approved, Fail, Recheck Pass, Pending, and N/A.
9.2.8.	Requirement removed.
9.2.9.	Requirement removed.
9.2.10.	LIMS shall provide the capability to select a Lab# and print the historical data for each test (see Exhibit E).
9.2.11.	LIMS shall provide the capability to view the historical TDS/EC ratios for all samples listed on this form if the data is available. Once the search is complete, LIMS displays the search data in a form. User prints a report of this data (see Section 9.3 and Exhibit E).
9.3.	LIMS shall calculate the TDS/EC ratio from either an EC or TDS worksheet. LIMS shall print a report which lists samples where the TDS/EC ratio is less than 0.55 or greater than 0.7. If the current EC or TDS result is greater than 2 standard deviations from the mean, LIMS shall designate that the sample is listed in this report as Out of Range = "Yes".
9.3.1.	LIMS shall display the Worksheet # and the TestGroupID on this report.
9.3.2.	LIMS shall display a section titled Notes, Supervising Chemist signature line and Date on this report
9.3.3.	LIMS shall display the Lab#, SampleID, Out of Range, Current Result, Last Result, Maximum, Average, Minimum, Standard Deviation and Sample Count on this report.
9.3.4.	LIMS shall display the title of the report = "Quality Control Exception Report: TDS/EC"
9.3.5.	LIMS shall display the following text in the header. "The TDS/EC ratio for the samples listed below are lower than 0.55 or greater than 0.7. Out of Range is "Yes" if the TDS or EC result is greater than 2 standard deviations from the average."
9.4.	LIMS shall calculate the Calcium Hardness ( $\text{CaHRD} = \text{Ca} * 2.497$ ) in a worksheet.
9.5.	LIMS shall calculate the Total Hardness ( $\text{TOTHRD} = (2.497 * \text{Ca}) + (4.118 * \text{Mg})$ ) is calculated in a worksheet.
9.6.	LIMS shall calculate Chromium III ( $\text{CrIII} = \text{Cr} - \text{CrVI}$ ) in a worksheet.
9.7.	LIMS shall calculate Corrosivity in a worksheet.
9.7.1.	LIMS shall calculate the corrosivity according to this formula. Note this formula uses the natural log or ln: Corrosivity = $\text{pH} - (2.1 + \text{TDSCorrection} - (\ln(\text{CaHRD}) / \ln(10)) - (\ln(\text{TOTALK}) / \ln(10)))$
9.7.1.1.	LIMS shall calculate TDSCorrection as follows.
9.7.1.1.1	If the TDS is less than 50, TDSCorrection is 9.7
9.7.1.1.2	If the TDS is 50 or greater and less than 150, TDSCorrection is 9.77
9.7.1.1.3	If the TDS is 150 or greater and less than 300, TDSCorrection is 9.83
9.7.1.1.4	If the TDS is 300 or greater and less than 600, TDSCorrection is 9.86
9.7.1.1.5	If the TDS is 600 or greater and less than 900, TDSCorrection is 9.89
9.7.1.1.6	If the TDS is 900 or greater, TDSCorrection is 9.9
9.7.1.2.	$\text{pH} (\text{Units}) = \text{pH}$
9.7.1.3.	$\text{CaHRD} (\text{mg/L}) = \text{Calcium} (\text{mg/L}) * 2.497$
9.7.1.4.	$\text{TOTALK} (\text{mg/L}) = \text{Total Alkalinity}$
9.7.1.5.	$\text{TDS} (\text{mg/L}) = \text{Total Dissolved Solids}$
9.7.1.6.	TSM shall round the calculated result to 5 decimal places.
9.8.	LIMS shall calculate Aggressive Index (A.I.) in a worksheet

9.8.1.	LIMS shall calculate the Aggressive Index according to the following formula. Note this formula uses the natural log or ln: Aggressive Index = pH + (ln(TOTALK * CaHRD) / ln(10))
9.8.1.1.	CaHRD (mg/L) = calcium * 2.497
9.8.1.2.	TOTALK (mg/L) = Total Alkalinity
9.8.1.3.	Round to 5 decimal places.
9.9.	UV/TOC is calculated in a worksheet by clicking 'Calculate Results'.
9.9.1.	UV/TOC is calculated according to the following formula. UVAB / TOC
9.9.1.1.	UVAB (in 1/cm) = Ultraviolet (absorbance)
9.9.1.2.	TOC (mg/L) = Total Organic Carbon (unfiltered)
9.9.1.3.	TSM shall round the calculated result to 4 decimal places.
9.10.	LIMS shall calculate Alkalinity in a worksheet.
9.10.1.	LIMS shall calculate the results for the following tests based on the ALKPHE (Phenolphthalein Alkalinity) and TOTALK (Total Alkalinity). If either ALKPHE or TOTALK is null, then the results for the following tests are null.
9.10.1.1.	OHCa (Hydroxide (as CaCO <sub>3</sub> )) in mg/L is calculated based on the following conditions.
9.10.1.1.1	If ALKPHE <= (0.5 * TOTALK) then OHCa = 0
9.10.1.1.2	If ALKPHE < > TOTALK Then OHCA = (2 * ALKPHE) - TOTALK
9.10.1.1.3	If neither 2.15.10.1.1.1 or 2.15.10.1.1.2 is true, then OHCA = TOTALK
9.10.1.2.	CO <sub>3</sub> Ca (Carbonate (as CaCO <sub>3</sub> )) in mg/L is calculated based on the following conditions.
9.10.1.2.1	If (ALKPHE = TOTALK) Or ALKPHE = 0 Then CO <sub>3</sub> CA = 0
9.10.1.2.2	If ALKPHE <= (0.5 * TOTALK) Then CO <sub>3</sub> CA = (2 * ALKPHE)
9.10.1.2.3	If neither 2.15.10.1.2.1 or 2.15.10.1.2.2 is true, then CO <sub>3</sub> CA = 2 * (TOTALK - ALKPHE)
9.10.1.3.	HCO <sub>3</sub> Ca (Bicarbonate (as CaCO <sub>3</sub> )) in mg/L is calculated based on the following conditions.
9.10.1.3.1	If ALKPHE >= (0.5 * TOTALK) Then HCO <sub>3</sub> ca = 0
9.10.1.3.2	If ALKPHE < > 0 Then HCO <sub>3</sub> ca = TOTALK - (2 * ALKPHE)
9.10.1.3.3	If neither 2.15.10.1.3.1 or 2.15.10.1.3.2 is true, then HCO <sub>3</sub> Ca = TOTALK
9.10.2.	OH (Hydroxide (as OH)) in mg/L = OHCa / 50.04 * 17.0073
9.10.3.	CO <sub>3</sub> (Carbonate (as CO <sub>3</sub> )) = CO <sub>3</sub> Ca / 50.04 * 30.00465
9.10.4.	HCO <sub>3</sub> (Bicarbonate (as HCO <sub>3</sub> )) = HCO <sub>3</sub> Ca / 50.04 * 61.0172
9.11.	LIMS shall calculate Total Nitrogen (TOT-N) in a worksheet.
9.11.1.	Prior to performing the calculation, LIMS shall convert any NO <sub>2</sub> -N, NO <sub>3</sub> -N or TKN result that is less than the Reportable Detection Limit (RDL) to 0 for this calculation only (original result is stored in LIMS).
9.11.2.	TOT-N is calculated according to the following formula. TOT-N = NO <sub>2</sub> -N + NO <sub>3</sub> -N + TKN
9.11.3.	NO <sub>2</sub> -N (mg/L) = Nitrite Nitrogen
9.11.4.	NO <sub>3</sub> -N (mg/L) = Nitrate Nitrogen
9.11.5.	TKN (mg/L) = Total Kjeldahl Nitrogen
9.12.	LIMS shall calculate Total Nitrogen (TOT-N) in a worksheet. For samples where NO <sub>3</sub> NO <sub>2</sub> -N is requested instead of NO <sub>3</sub> -N and NO <sub>2</sub> -N.
9.12.1.	Prior to performing the calculation, LIMS shall convert any NO <sub>3</sub> NO <sub>2</sub> -N or TKN result that is less than the Reportable Detection Limit (RDL) to 0 for this calculation only (original result is stored in LIMS).
9.12.2.	TOT-N is calculated according to the following formula. TOT-N = NO <sub>3</sub> NO <sub>2</sub> -N + TKN
9.12.3.	NO <sub>3</sub> NO <sub>2</sub> -N (mg/L) = Nitrate + Nitrite Nitrogen
9.12.4.	TKN (mg/L) = Total Kjeldahl Nitrogen

9.13.	LIMS shall calculate Nitrate Nitrogen (NO3-N) and/or Nitrate (NO3) in a worksheet. Specifically for the case where NO3NO2-N, NO2-N and NO3 is requested for a sample. If either NO2-N and NO3NO2-N is null, NO3-N and/or NO3 will not be calculated.
9.13.1.	Prior to performing the calculation, LIMS shall convert any NO2-N or NO3NO2-N result that is less 0 to 0 for this calculation only (original result is stored in LIMS).
9.13.2.	TOT-N is calculated according to the following formula. NO3-N = NO3NO2-N - NO2-N
9.13.3.	NO3NO2-N (mg/L) = Nitrate + Nitrite Nitrogen
9.13.4.	NO2-N (mg/L) = Nitrite Nitrogen
9.13.5.	NO3-N (mg/L) = Nitrate Nitrogen
9.13.6.	Convert any negative NO3-N result to 0.
9.13.7.	NO3 (mg/L) = NO3-N * 4.4268
9.14.	LIMS shall record Quality Control Calculations - QC Codes are in parenthesis
9.14.1.	Blanks - Out of range if test result is greater than a set limit (B).
9.14.2.	Duplicates - Duplicate analysis of sample (D or Q) is used for relative percent deviation calculation in 9.14.4..
9.14.3.	Spike Recovery - Three levels (Spike, Spike Duplicate): Spike_1 (I, J), Spike_2 (S, K) and Spike_3 (X, Z). Flagged if spike recovery is outside a specified range.
9.14.3.1.	Spike recovery calculation is reported as a percent of the spiked amount: ((Spike Sample result - Sample result)/Spiked amount)*100
9.14.4.	Relative Percent Deviation (RPD) - For spikes and duplicates. Flagged if RPD is outside a specified range.
9.14.4.1.	The RPD calculation is reported in percentage: (Test result from first sample - Test result from second sample (duplicate or spike duplicate))/(Test result from first sample + test result from second sample)/2)*100
9.14.5.	Laboratory Fortified Blanks (LFB) - Four levels: LFB_1 (F), LFB_2 (U), LFB_3 (L), LFB_4 (N). Flagged if test result is outside a specified range.
9.14.6.	Calibration Checks (CC) - Six Levels: CC_1 (W), CC_2 (E), CC_3 ( C), CC_4 (T), CC_5 (A), CC_6 (P). Flagged if test result is outside a specified range.
9.15.	LIMS shall have the capability to search for Historical Data based on user defined data described below.
9.15.1.	Search is based on the following parameters. TestID, TestGroupID, SampleID, Date Range, Test Result (for example, test results greater than 10 ug/L), Notes or Comments (for example, search all samples for the word 'Carbon' in the Note, Note2, Note3, Note4, Note5 fields).
9.15.2.	Search for multiple parameters at once. For example, search for Mg and Ca, and SampleID1 and SampleID2 in the same search.
9.15.3.	Display the following data for the results of this search: SampleID, Lab#, Source, TestGroupID, TestID, Test Name, ReportedResult, NumericResult, RDL, Units, Date Sampled, Date Analyzed, Analyzed By, Supervisor Approval Date, Note, Note2, Note3, Note4, and Note5.
9.15.4.	User can sort the results of this search for each field listed in 9.15.3. by selection, ascending or descending.
9.15.5.	User can email the results of this search in an Excel spreadsheet. There are two output formats - Standard and Monthly Report. The two formats differ is the order and type of date that is placed in the Excel spreadsheet.
9.15.5.1.	Standard - The following fields shall be displayed in an Excel spreadsheet in this order: SampleID, TestgroupID, TestID, ReportedResults, NumericResults, RDL, Units, Lab#, CollectDate, AnalysisDate
9.15.5.2.	Monthly Report - The following fields shall be displayed in an Excel spreadsheet in this order: Lab#, SampleID, Collect Date, TestID, ReportedResults, NumericResults, Units, AnalysisDate
9.15.6.	Print the results of this search.
9.15.6.1.	Print the SampleID, Lab#, TestID, ReportedResult, NumericResult, Units, Date Sampled, Date Analyzed and AnalyzedBy.

9.15.7.	Print a report of the Statistical Analysis of Historical Data from 9.15 (see Exhibit E).
9.15.7.1.	List the SampleID, TestID, Current Result, Last Numeric result, Max result, Average result, Min result, Standard Deviation, and the Count. The Out of Range column will be 'Yes' if the Current Result is greater than +/- 2 Standard Deviation from the Mean.
9.15.8	Performance requirement for historical result search from a worksheet - historical results for 2000 testIDs shall be completed in less than 2 minutes. Performance requirement for historical search for a single TestID - the search shall be completed in less than 2 seconds.
10	Inventory System
10.1.	LIMS shall have the capability to store and track standards, lot numbers, and expiration dates
10.2.	LIMS shall have the capability to store and track reagents, bottles and gloves
10.3.	LIMS shall have the capability to use a bar code system track items received
10.4.	LIMS shall use a bar code system to track items consumed
10.5.	LIMS shall have the capability to alert laboratory staff via email when inventory of an item is below preset limits.
11	Documents System
11.1.	Scientific Documents Management System (SDMS)
11.1.1.	LIMS shall store and retrieve documents such as instrument raw data files. LIMS shall not require software that generated the document to view the document.
12	Standard Operating Procedures (SOPs) and LIMS Change Requests
12.1.	LIMS shall provide the capability to manage SOPs
12.1.1.	LIMS shall provide the capability to view SOPs
12.2.	LIMS shall provide the capability to manage change requests
12.2.1.	LIMS shall provide the capability to search and view stored change requests.
13	Instruments System
13.1.	LIMS shall provide an Instrument Maintenance Log
13.1.1.	LIMS shall provide the capability for a user to select an instrument and the maintenance events are displayed for this instrument. LIMS shall allow the user to Add an Entry, Edit this Entry, Add an Instrument, and Edit this Instrument.
13.1.2.	Search function
13.1.2.1.	The user selects an instrument, then types in text such as "insert" or "column". LIMS then searches and displays only those maintenance log entries that contain this text.
13.1.3.	The maintenance log shall be accessible from a worksheet (in addition to being accessible from a utility type menu) and shall display the maintenance records for the instrument that produced the data in the worksheet.
13.2.	LIMS or a third party software shall generate a file that is sent from LIMS to the instrument software that contains a list of the samples and required QC samples. The user does not have to type the list of samples to be analyzed in the instrument software. This requirement only applies to instrument software that can accept files from LIMS. See section 20.1 for description of bi-directional instrument interfaces.
13.2.1.	User selects samples and QC Samples in LIMS. LIMS generates a file that is sent to and read by the instrument software.
13.2.2.	LIMS prints out a run log which contains all samples and QC samples.
14	Bar Code
14.1.	LIMS shall support printing and reading 1-D and 2-D barcodes for sample login and inventory management.
15	Annual Service Contract

15.1.	The LIMS vendor shall provide an annual service contract which covers vendor assistance for OCWD Configuration and Customization at no extra cost. In addition to general product phone service, the LIMS vendor shall provide technical service for OCWD staff and validation of functionality whenever in-house modifications are made to LIMS using the vendor supplied configuration tools. With regards to customization, vendor shall provide assistance to OCWD staff in the form of examples of code, techniques approved by the LIMS vendor and detailed technical conversations about the issue at hand. If there is an extra cost, please enter this cost as a percentage of the standard annual service fee. This requirement applies to the following items.
15.1.1.	Instrument Interfaces
15.1.2.	Forms and reports
15.1.3.	Configuration by both OCWD Staff and LIMS vendor, and customization by LIMS vendor
15.2.	LIMS vendor shall provide a 5 year cost estimate for LIMS. Include standard annual service contract fees, fees to upgrade software, and a range of fees for customization based on the vendor's current customer base
15.4	Proposed Annual Service Contract - The LIMS vendor shall describe the Annual Service Contract recommended by the LIMS vendor in the response to this RFP. The Annual Service Contract shall meet specifications in sections 15.1 and 15.2.
<b>n/a</b>	<b>Sample Lifecycle</b>
16	Sample Login - The LIMS shall capture sample information
16.1.	LIMS shall record the SampleID, a field limited to 40 characters, which describes the location where the sample was taken.
16.2.	LIMS shall record a Lab# which defines a combination of SampleID and Test Series (a series of tests requested for this sample).
16.3.	Requirement removed.
16.4.	LIMS shall record the following information entered at sample login: Sample By, Sample Date, Sample Time, Sampling Method, Send Results To, Sampling Agency, Monitoring Program, Received Date, Received Time, Received By, End Collect Date, End Collect Time, Sample Depth, Re-sample, Sample Type, Laboratory name, Title 22 Well, Comments ( 5 separate fields)
16.5.	LIMS shall record the Test Series. LIMS shall record a profile of TestgroupIDs associated with this Test Series. LIMS shall record a profile of TestIDs associated with these TestGroupIDs.
16.5.1.	LIMS shall provide the capability to log in a Test Series. After a Test Series is selected, LIMS shall record the following information: Test Series, Number of Bottles, Filtered, Preserved, Cooled, Turn Around, Due Date, Ion Balance Requested, Ion Balance Status, TestGroupID, TestID, Action Levels associated with tests (trigger Action Level Notification emails), Lab Section, Rotation_Staff_Name (either the user or the group that is assigned to a test), and whether the sample is a Title22 sample or not.
16.5.1.1.	When a Test Series is logged in to a sample that is already logged in, LIMS shall keep all the old TestGroupIDs and only log in those TestGroupIDs that were not previously logged in
16.5.1.2.	When a Test Series is logged in to a sample that already logged in, LIMS shall keep all the old Tests and only log in those Tests that were not previously logged in
16.5.1.3	LIMS shall provide the capability to calculate the Due Date. If the Turn Around (days) is modified, the Due Date is recalculated. The Due Date is calculated by adding the number of Turn Around days to the Received Date.
16.6.	LIMS shall provide the capability to login a TestGroupID. LIMS then logs in a profile of TestIDs associated with this TestGroupID.

16.6.1.	LIMS shall provide the capability to login a profile of tests by TestGroupID in addition to Test Series. User can add a TestGroupID to a Test Series. If the Test Series is not known then the user can select LABUNK as the Test Series and select the appropriate TestGroupID. LIMS records the profile of tests based on the TestGroupID selected
16.6.2.	LIMS shall provide the capability to view the TestIDs associated with the selected TestGroupID before login.
16.6.3.	LIMS shall provide the capability to delete a TestID
16.7.	LIMS shall provide the capability to replicate samples. LIMS shall provide the capability to replicate either Sample or Sample and Test information. LIMS shall provide the capability to generate at most 100 replicates. For example, if the first Lab# is 12110025-01 and the number of replicates is 1, the LIMS will generate Lab# = 12110025-02.
16.8.	LIMS shall provide the capability to delete a SampleID, delete a TestGroupID, or delete a TestID as appropriate.
16.9.	LIMS shall provide the capability to Copy and Paste data between Lab#. This is usually done after a sample is replicated as described in 16.6.. The data that is copied and pasted is described in 16.4..
16.10.	LIMS shall provide the capability to send data to the Water Quality Department (WQ).
16.10.1.	LIMS shall send the data in 16.10.2 to h:\document\waterquality\wq\wq.mdb
16.10.2.	LIMS shall query the following data by Received_Date: Collect_Date, Project#, Note, Note2, Note3, Note4, Note5, Collect_Time, SampleID, Collect_Time, Received_Time, RefID, Received_Date, and Lab#.
16.10.3.	LIMs shall provide the capability for recording the Received_Date which is used in the query in 16.10.2. LIMS shall store and display this date ( a reminder of the last Received_Date sent to Water Quality) on the log in form.
16.11.	LIMS shall validate sample information
16.11.1.	LIMS shall verify the End Collect Date and End Collect Time as follows: If the Source is COMP (End Collect Date and End Collect Time shall be present) or GRAB (End Collect Date and End Collect Time shall not be present).
16.11.2.	LIMS shall check if the Collect_Time and Received_Time are identical, and display a message "The Receive time and the Collect Time are identical. Please check these times before proceeding.".
17	Worklists, Extraction Logs, Prep Logs, Worksheets
17.1.	LIMS shall generate Worklists (Backlog Reports in Aspen) (see Exhibit E for examples of reports and logs)
17.1.1.	LIMS shall generate two types of Backlog Reports for the Organic Section
17.1.1.1.	LIMS shall generate an Organic Nonvolatile Report for Organic Section. Activate from Main Menu, Routine Reports, Backlog Reports, Organic Nonvolatile Report. Report is Organic Nonvolatile Report.
17.1.1.1.1	LIMS shall display on this report, the TestGroupID, Lab#, SampleID, New Site, Project, Analyst/Ext Date, # Cn, Collect Date, Due Date, Comments (From LIMS, Note Field for field notes) and Analyst/Run Date. LIMS shall sort the data in ascending order - first by TestGroupID, second by Due Date and third by Lab#.
17.1.1.1.2	LIMS shall set the New Site = True if this is the first time the SampleID and TestGroupID combination exists in LIMS or LIMS Archives.
17.1.1.1.3	LIMS shall title this Report, "Backlog Report".
17.1.1.2.	LIMS shall generate an Organic Volatile Report for Organic Section. Activate from Main Menu, Routine Reports, Backlog Reports, Organic Volatile Report. Report is Organic Volatile Report
17.1.1.2.1	LIMS shall display on the report, the TestGroupID, Lab#, SampleID, New Site, Dilution Check, Project, # cn, Collect Date, Due Date, Comments (From LIMS, Note Field for field notes), and Analyst/Run Date. LIMS shall sort the data in ascending order - first by TestGroupID, second by Due Date and third by Lab#.
17.1.1.2.2	LIMS shall set New Site = True if this is the first time the SampleID and TestGroupID combination exists in LIMS or LIMS Archive.
17.1.1.2.3	LIMS shall set Dilution Check = True if there is a result greater than 30 for any test for this SampleID in LIMS or LIMS Archive. (Does not apply to TestID =TTHMs)

17.1.1.2.4	LIMS shall record a Suggested Dilution if the SampleID is in the OCWD-DilutionCheck table. LIMS selects the highest dilution for a particular SampleID.
17.1.1.2.5	LIMS checks the Matrix Check check box if the SampleID is in the OCWD-MatrixCheck table and the MatrixIssue field is 'Yes'.
17.1.1.2.6	LIMS shall title this Report, "Backlog Report"
17.1.1.3	LIMS shall generate the Organic 548 Report
17.1.1.3.1	LIMS shall title the Report, "548.1 - SO4, Ca and Mg Backlog Report"
17.1.1.3.2	LIMS shall display the Lab#, Sample ID, Collect Date, Log Date, Last SO4 result, last Ca Result, Last Mg Result, Ca + Mg Result, Units, Dilution Check, Dilution Factor Guideline, Analys / Run Date.
17.1.1.3.3	LIMS shall display the following text is printed in the footer of the report.
17.1.1.3.3.1	Samples listed are logged in for 548.1 analysis.
17.1.1.3.3.2	Units are mg/L for SO4, Ca and Mg results.
17.1.1.3.3.3	Dilution Check is selected for a sample if the last SO4 result is greater than 250 mg/L and/or the last Ca + Mg results is greater than 100 mg/L.
17.1.1.3.3.4	Guidelines on Dilution Factors and EDTA Additions based on SO4 result. See report for details.
17.1.1.3.3.5	Guideline on Dilution Factor and EDTA Addition based on Ca + Mg result. If the last Ca + Mg result is greater than 100 mg/L then the guideline for the Dilution Factor is 1:22.
17.1.2.	LIMS shall provide the capability to print the Backlog Report for the Inorganic Section. LIMS shall provide the capability for the user to enter a Work Group ID.
17.1.2.1.	LIMS shall display the Work Group ID, TestGroupID, Lab#, TestID, Result, Date Received, Time Received, Action Level, Last Result, Sample ID, Date Sampled, Time Sampled, Expiration Date, Test Series.
17.1.2.1.1	LIMS shall display the last result reported for a TestID.
17.1.2.1.1.1	LIMS shall format the Last Result to 2 decimal places for all TestIDs except Cl which is reported to 0 decimal places.
17.1.2.2.	LIMS shall display all TestGroups for a particular Work Group ID.
17.1.2.3.	LIMS shall title the Report, "Workload Report"
17.1.2.4.	LIMS shall provide the capability to record ph results on the printed backlog report for TestGroupID = 2120B, LIMS records a TestID = pH CLR. This TestID is not logged into LIMS but is only printed on the backlog report so the analyst can record a pH for the sample.
17.1.2.5.	For TestGroupID = 4500NO3F, LIMS shall display TestID = pH NOX. This TestID is not logged into LIMS but is only printed on the backlog report so the analyst can record a pH for the sample. A pH NOX is recorded for each NO3NO2-N and NO2-N. A pH NOX is not recorded for NO3 or NO3-N, however, at least one pH NOX is recorded for every 4500NO3F instance.
17.2.	LIMS shall generate Extraction Logs (Organic Section) - The following prep methods (not TestGroupID) require extraction logs: 504.1, 507, 508, 515.4, 521, 521-FP, 525, 526, 527, 528, 529, 531, 532, 537, 539, 547, 548, 549, 550.1, 551.1, 552.2, 556, NDMA, NDMA-LOW, CEC_NH, CEC_NP, CEC_PH, CEC_PP, CEC_Xray, and CEC_PHE - select samples for extraction, duplicates, and spikes LIMS shall provide the capability to print all Extraction Logs in 17.2. LIMS shall have the capability to display all Extraction Logs in 17.2 by selecting a Log#.
17.2.1.	LIMS shall display the Prep Method, Log#, Date Extracted, Extraction Type, Sample Volume, Extracted By, Final Extract Volume.
17.2.2.	LIMS shall display the Extraction Solvent, Final Solvent, NaCl, Buffer/Acid, and Sodium Sulfate. For each reagent, display the Vendor, Lot Number, Date Opened and Date Baked.
17.2.3.	LIMS shall display the Extracted Calibration/Amount Added for Std1, Std2, Std3, Std4, Std5, Std6 and Std7.

17.2.4	LIMS shall display the Low LFB, LFB, Spike, Surrogate, Internal and for each of these items, display the Concentration Of Std, Amount Added and Added By.
17.2.5	LIMS shall display the sample list - Lab#, SampleID, Date Sampled, pH, Free Cl2 and Sample Comment (entered by user).
17.2.6	LIMS shall provide the capability to select a Prep Method, then select a Lab# for a list of all samples for the selected Prep Method. The Lab#, SampleID, CollectDate, ExtractDate, Selected, Duplicate, Spike, SpikeUp, # Bottles fields are displayed. When the user selects a sample, the Selected Field is changed from 'No' to 'Yes'. When the user clicks the Duplicate button, the Duplicate Field is changed from 'No' to 'Yes'. The Spike and Spike Up field work in a similar manner.
17.2.7	Once an extraction log is created, LIMS shall not allow the entry of samples or QC samples that are already in the extraction log
17.2.8	LIMS shall provide the capability to enter a sample that is not logged into LIMS. For example, if samples for MDLs are extracted, the user enters the Lab# as MDL01, SampleID as MDL Number 1 and Collect Date as today.
17.2.9	LIMS shall provide the capability to create a list of standards used for QC samples. This list is associated with the extraction log. LIMS shall verify the expiration date of each standard to ensure that the standard is acceptable. If the expiration date of any standard is exceeded, the extraction log can't be created.
17.3.	LIMS shall generate Prep Logs (Inorganic Section) - The following TestGroupIDs require Prep logs: 3112B, 3113B, X200.7, X200.7D, X200.8, X200.8D, X200.8U, X1-335.4, X1-218.6, 4500F-C, X1-351.2, 5540C - select samples for prep, duplicates, and spikes. Prep Logs don't use Prep Methods as does the Organic Section, however, Prep Methods can be used if configured correctly. Prep Logs use the TestGroupID to identify the prep method. LIMS shall have the capability to print all prep logs described in 17.3. LIMS shall have the capability to display all Prep Logs described in 17.3 by selecting a Log#.
17.3.1.	LIMS shall provide the capability to select a TestGroupID.
17.3.2.	LIMS shall provide the capability to create a new prep log. LIMS shall display a list of samples by two options: "Open New Log (View Samples with no Prep Date)" or "Open New Log (View samples with Both No Prep Date and Prep Date)".
17.3.3.	LIMS shall display a Lab# for a list of all samples for the selected TestGroupID. The Lab#, SampleID, CollectDate, ExtractDate, Selected, Duplicate, Spike, SpikeUp fields are displayed. There is a Mid Spike and Mid Spike Up for X200.8U only.
17.3.4.	Once the user selects a sample, then chooses to select a duplicate, spike or spike duplicate, for a selected sample. LIMS shall create the appropriate QC Lab# and record it into the Prep log.
17.3.5.	LIMS shall display the status of each sample in regards to the QC selected.
17.3.5.1	LIMS provide the capability to select a sample, the Selected Field is changed from 'No' to 'Yes'. When the user clicks the Duplicate button, the Duplicate Field is changed from 'No' to 'Yes'. The Spike, Spike Up, Mid Spike and Mid Spike Up fields work in a similar manner (see section 20.1.6 for description of Lab# for QC Samples).
17.3.5.2	LIMS shall provide the capability to deselect a sample, if that sample should not be in the Prep Log. The Selected Field is changed from 'Yes' to 'No'. Additionally, when a sample is deselected, all QC associated with that sample shall be deselected or changed from 'Yes' to 'No' as well.
17.3.6.	LIMS shall provide the capability to edit a Prep log to change the prep date, prep by, remove samples, and add samples to a prep log
17.3.6.1.	LIMS shall provide the capability such that when samples are removed from a prep log, all QC samples associated with the sample will also be removed.

17.3.6.2.	When adding a sample to a Prep log, the user can also add a duplicate, spike or spike duplicate for the selected sample to the prep log. LIMS shall record the Collect Date and Collect Time for these QC Samples based on the sample's Collect Date and Collect Time. For example, the Collect Date for Sample1 is 2/27/2014. LIMS records 2/27/2014 for Sample1S (spiked sample) in the Prep Log's Collect Date column.
17.3.6.3.	LIMS shall provide the capability that if the TestGroupID is marked as complete, then the sample can't be removed or added to a prep log.
17.3.7.	Once a Prep log is created, LIMS shall save it and assign a unique prep log number to this prep log. If a sample is prepped three times, there will be three Prep logs for that sample. Once an Prep log is created, LIMS shall not allow QC or samples to be entered that are already in this Prep log.
17.3.8.	LIMS shall provide the capability to enter a sample that is not logged into LIMS. For example, if samples for MDLs are extracted, the user enters the Lab# as MDL01, SampleID as MDL Number 1 and Collect Date as today.
17.3.9.	LIMS shall generate the CN Prep Log
17.3.9.1.	LIMS shall display the TestGroupID, Log#, 0.25 NaOH vendor, H2SO4 vendor, H2SO4/MgCL2 vendor, Digestion Tube Vendor, 0.25 NaOH Lot#, H2SO4 Lot#, H2SO4/MgCL2 Lot#, Digestion Tube Lot#.
17.3.9.1.1	LIMS shall save the information in 17.3.9.1. When a prep log is created, LIMS shall record the most recent information. LIMS shall provide the capability to save any modifications to this information and display it on the next prep log.
17.3.9.2.	LIMS shall display the following information for each Lab#: SampleID, Collect Date, Collect Time, Initial Vol (ml), pH Initial, pH Dist, S- present Yes/No, Cadmium Carbonate Yes/No, Cl2 present Yes/No, Sodium Arsenite Added Yes/No, Prep Date, Prep By, Sample Comment.
17.3.9.2.1	LIMS shall record the Lab#, duplicates, spikes, LFB, LRB, MDL, and RDL.
17.3.9.2.2	LIMS shall record the Sample ID, Initial Vol (6 ml), Prep Date, Prep By, and Sample Comment.
17.3.9.3.	LIMS shall display the following information related to the CN Prep Log
17.3.9.3.1	All samples checked with Potassium Iodide test paper for Cl2
17.3.9.3.2	pH>12 when first received/acidified in lab
17.3.9.3.3	All samples checked with Lead Acetate strip for sulfide
17.3.9.3.4	All calibration standards are distilled
17.3.9.3.5	Final volume for all is 6 ml
17.3.10.	LIMS shall generate the ORG-N Prep Log
17.3.10.1.	LIMS shall display the TestGroupID, Log#, H2SO4 Vendor, H2SO4 Lot#
17.3.10.1.1	LIMS shall save information in section 17.3.10.1. When a prep log is created, LIMS shall record the most recent information. LIMS shall provide the capability to save any modifications to this information and display it on the next prep log.
17.3.10.2.	LIMS shall display the following information for each Lab#: SampleID, Collect Date, Collect Time, Initial Vol (20 ml), Prep Date, Prep By, Sample Comment.
17.3.10.2.1	LIMS shall record the Lab#, duplicates, spikes, LFB, LRB, MDL, and RDL.
17.3.10.2.2	LIMS shall record the Lab#, Sample ID, Collect Date, Collect Time, Prep Date, Prep By, and Sample Comment.
17.3.10.3.	LIMS shall display the following information related to the ORG-N Prep Log
17.3.10.3.1	Initial volume and Final volume for all is 20 ml
17.3.10.3.2	Digestion time is 30 minutes @380 degrees C for all
17.3.10.3.3	Preserved sample pH should be <= 2 UNITS
17.3.10.3.4	2 boiling chips per tube, 1 ml Borate buffer, 8 ml Digestion Reagent
17.3.11.	LIMS shall generate the MBAS Prep Log

17.3.11.1.	LIMS shall displays the TestGroupID, Log#, Chloroform Vendor, Chloroform Lot#
17.3.11.1.1	LIMS shall save information in section 17.3.11.1. When a prep log is created, LIMS shall record the most recent information. LIMS shall provide the capability to save any modifications to this information and display it on the next prep log.
17.3.11.2.	LIMS shall displays the following information for each Lab#: SampleID, Collect Date, Collect Time, Initial Vol (20 ml), Divide results by *, Prep Date, Prep Time, Prep By, Sample Comment.
17.3.11.2.1	LIMS shall record the Lab#, duplicates, spikes, LFB, LRB, MDL, and RDL.
17.3.11.2.2	LIMS shall record the Lab#, Sample ID, Collect Date, Collect Time, Prep Date, Prep Time, and Prep By.
17.3.11.3.	LIMS shall display the following information related to the MBAS Prep Log
17.3.11.3.1	Extracted samples are good for 1 week
17.3.11.3.2	48 hour hold time starts from collection time
17.3.11.3.3	Final volume is 50 ml
17.3.11.3.4	For 100 ml sample = 1, for 200 ml sample = 2, for 250 ml sample = 2.5, for 500 ml sample = 5
17.3.12.	LIMS shall generate the ICP Prep Log
17.3.12.1	LIMS shall display the TestGroupID, Log#, HCL Vendor, HNO3 Vendor, Watchglass Vendor, Digestion Tube Vendor, HCL Lot#, HNO3 Lot#, Watchglass Lot#, Digestion Tube Lot#
17.3.12.2	LIMS shall save information in section 17.3.12.1. When a prep log is created, LIMS shall record the most recent information. LIMS shall provide the capability to save any modifications to this information and display it on the next prep log.
17.3.12.3	LIMS shall display the following information for each Lab#: SampleID, Collect Date, Collect Time, Digestion Initial Vol (50 ml), Date/Time Initial, Initial pH A<2, Date/Time Final, Final pH B<2, Prep Date, Prep By, Sample Comment.
17.3.12.3.1	LIMS shall record the Lab#, Sample ID, Collect Date, Collect Time, Digestion Initial Vol (ml)(50 ml), Prep Date, and Prep By.
17.3.12.4	LIMS shall display the following information related to the ICP Prep Log
17.3.12.4.1	Final volume for all is 50 ml
17.3.12.4.2	Automated Block Digestion for all
17.3.12.4.3	pH A: pH<2 when first received/acidified in lab (Date, Time)
17.3.12.4.4	pH B: pH<2 at time of digestion (>24 hours) (Date, Time)
17.3.12.4.5	If sample collected in acid-containing bottle and pH A<2, 24 hours starts at collection time
17.3.13.	LIMS shall generate the F Prep Log
17.3.13.1.	LIMS shall display the TestGroupID, Log#, TISAB III Vendor, H2SO4 Vendor, TISAB III Lot#, H2SO4 Lot#
17.3.13.1.1	LIMS shall save information in section 17.3.13.1. When a prep log is created, LIMS shall record the most recent information. LIMS shall provide the capability to save any modifications to this information and display it on the next prep log.
17.3.13.2.	LIMS shall display the following information for each Lab#: SampleID, Collect Date, Collect Time, Initial Vol (ml) (300 ml), Distillation Date, Distilled By, Sample Comment.
17.3.13.2.1	LIMS shall record the Lab#, Sample ID, Collect Date, Collect Time, Initial Vol (ml)(300 ml), Distillation Date, and Distilled By.
17.3.13.2.2	LIMS shall record Lab# = CC STD.
17.3.13.3.	LIMS shall display the following information related to the F Prep Log
17.3.13.3.1	Final volume for all is 300 ml
17.3.13.3.2	28 day hold time
17.3.14.	LIMS shall generate the ICP/MS Prep Log - For TestGroupIDs: X200.8, X200.8D and X200.8U

17.3.14.1.	LIMS display the TestGroupID, Log#, HCL Vendor, HNO3 Vendor, Watchglass Vendor, Digestion Tube Vendor, HCL Lot#, HNO3 Lot#, Watchglass Lot#, Digestion Tube Lot#
17.3.14.1.1	LIMS shall save information in section 17.3.14.1. When a prep log is created, LIMS shall record the most recent information. LIMS shall provide the capability to save any modifications to this information and display it on the next prep log.
17.3.14.2.	LIMS shall display the following information for each Lab#: SampleID, Collect Date, Collect Time, Digestion Initial Vol (50 ml), Date/Time Initial, pH A, pH B, Prep Date, Prep By, Sample Comment.
17.3.14.2.1	LIMS shall record the Lab#, Sample ID, Collect Date, Collect Time, Initial Vol (ml)(50 ml), Prep Date, and Prep By.
17.3.14.3.	LIMS shall display the following information related to the ICP/MS Prep Log
17.3.14.3.1	Final volume for all is 50 ml (for X200.8 and X200.8D) or "Final volume for all is 25 ml" (for X200.8U)
17.3.14.3.2	Automated Block Digestion for all
17.3.14.3.3	pH A: pH<2 when first received/acidified in lab (Date, Time)
17.3.14.3.4	pH B: pH<2 at time of digestion (>24 hours) (Date, Time)
17.3.15.	LIMS shall generate the CrVI pH Adjustment Log
17.3.15.1.	LIMS shall display the TestGroupID, Log#, Sodium Borate decahydrate Vendor, Sodium Carbonate Vendor, Potassium Bicarbonate Vendor, Sodium Borate decahydrate Lot#, Sodium Carbonate Lot#, Potassium Bicarbonate Lot#
17.3.15.1.1	LIMS shall save information in section 17.3.15.1. When a prep log is created, LIMS shall record the most recent information. LIMS shall provide the capability to save any modifications to this information and display it on the next prep log.
17.3.15.2.	LIMS shall displays the following information for each Lab#: SampleID, Collect Date, Collect Time, Initial sample pH, Adjusted Sample pH, Prep Date, Prep By, Sample Comment.
17.3.15.2.1	LIMS shall record the Lab#, Sample ID, Collect Date, Collect Time, Prep Date, Prep By and Sample Comment.
17.3.16.	LIMS shall generate the CrVI (X1-218.7) pH and Cl2 Check Log
17.3.16.1.	LIMS displays the TestGroupID, Log#, Sodium Borate decahydrate Vendor, Sodium Carbonate Vendor, Potassium Bicarbonate Vendor, Sodium Borate decahydrate Lot#, Sodium Carbonate Lot#, Potassium Bicarbonate Lot#
17.3.16.1.1	LIMS shall save information in section 17.3.16.1. When a prep log is created, LIMS shall record the most recent information. LIMS shall provide the capability to save any modifications to this information and display it on the next prep log.
17.3.16.2.	LIMS shall display the following information for each Lab#: SampleID, Collect Date, Collect Time, Sample pH, Sample Cl2, Prep Date, Prep By, Sample Comment.
17.3.16.2.1	LIMS records the Lab#, Sample ID, Collect Date, Collect Time, Prep Date, Prep By and Sample Comment.
17.4	LIMS shall generate Worksheets for data entry purposes.
17.4.1	LIMS shall provide the capability for the user to create a worksheet. LIMS shall provide the capability for the user to select Lab#s and the associated tests.
17.4.2	LIMS shall provide the capability to create worksheets during data import via an instrument interface. Most of the analytical data is recorded automatically using instrument interfaces.
17.4.3	LIMS shall create worksheets that only contain tests for a particular TestGroupID; LIMS shall not allow more than one TestGroupID per worksheet.

17.4.4	LIMS shall only allow a worksheets to be viewed by one user at a time. If a worksheet is viewed by a user, LIMS shall 'locked' this worksheet and shall not allow other users to open it until the first user closes the worksheet.
17.4.5	Worksheets contain fields for 'Analyzed By', 'Analysis Date', Approved By' and 'Approved Date'. The procedures listed below shall run whenever users enter each field individually or using procedures that enter these fields for all samples in the worksheet.
17.4.5.1	LIMS shall examine each TestGroup associated with the tests in the worksheet. If all tests are completed for the TestGroup, then LIMS marks the TestGroupID as completed and LIMS shall record a TestGroupCompleteDate.
17.4.5.2	LIMS shall examine each SampleID associated with the tests in the worksheet. If all TestGroups are completed for the SampleID, then LIMS marks the SampleID as completed and LIMS shall record a SampleCompleteDate.
17.4.6	LIMS shall provide the capability to either add data to an existing worksheet or create a new worksheet. This capability only applies to data that is imported via an instrument interface.
17.4.7	LIMS shall not allow the Approving Chemist to change any data.
17.4.8	LIMS shall not allow the Analyzing Chemist to approve any data.
17.4.9	LIMS shall provide the capability to remove a particular QC sample or all QC samples related to a worksheet with supervisor approval.
17.1.10	LIMS shall provide the capability to remove all results, analysis date, and analyzed by from a worksheet with supervisor approval.
<b>n/a</b>	<b>Data Entry for Sample Login</b>
18	LIMS shall provide for data entry
18.1.	LIMS shall allow the user to enter field results for TestIDs associated with Test Series = FIELD, ORP, and Test Series that begins with F- .
18.1.1.	LIMS shall perform a validation check for F-pH which shall be between 4 and 12 UNITS. If the result cannot be validated, LIMS shall display a message box stating "Please check this F-pH result. It is less than 4 units or greater than 12 units."
18.1.2.	LIMS shall perform a validation check for F-EC which shall be greater than 100 um/cm. If the result cannot be validated, LIMS shall display a message box stating "Please check this F-EC result. It is less than 100 um/cm."
18.1.3.	LIMS shall perform a validation check for F-TEMP which shall be between 10 and 35 degrees C. If the result cannot be validated, LIMS shall display a message box stating "Please check this F-TEMP result. It is less than 10 degrees C or greater than 35 degrees C."
<b>n/a</b>	<b>Analytical</b>
19	LIMS shall employ a Test Series (see 6.3. for the table structure used to implement the Test Series in Aspen)
19.1.	LIMS shall allow the configuration of a Test Series to include a single TestGroupID such as EPA 524 or a series of TestGroupIDs such as 2510B (EC), 9221B (Bacti) and 4500H+B (pH)
19.2.	LIMS shall provide the capability to configure a Test Series at the test level. For example, the method X200.8 is a method in the Test Series TITLE22, but not all the tests analyzed by X200.8 is included in the Test Series TITLE22. Two Test Series may include X200.8 and LIMS shall allow for a different profile of tests for the method X200.8 in each Test Series.
19.2.1.	LIMS shall allow the Action Level to be configurable at the test level for a particular Test Series. The Action Level is used to determine whether LIMS shall send an Action Level Notification via email for an analytical result. Identical tests in different Test Series shall be allowed to have different Action Levels. See 3.3. for a discussion of Action Level Notifications allow an analytical batch to be associated with one or more corresponding prep batches

19.3	LIMS shall associate a Test Series with each Lab#. LIMS shall ensure that each Lab# has a Test Series associated with it
19.4	LIMS shall provide capability to enter a Test Series when a sample is logged in. (see section 16.5.1.)
19.5	LIMS shall provide administrative tools to create, delete, copy and edit a Test Series through a form designed for these purposes. LIMS shall allow the management of Test Series that does not involve accessing tables directly by writing insert, update or delete queries
20	Acquiring Analytical Results
20.1.	LIMS shall provide instrument interfaces that imports a text or spreadsheet file (instrument file) generated by the analytical instrument software, and is capable of sending sample lists that can be imported into the analytical instrument software. Interfaces are divided into two main categories: Organic Section (20.2.) and Inorganic Section (20.3.). See Exhibit C for a list of instrument names and instrument software for the Organic Section. See Exhibit D for a list of instrument names and instrument software for the Inorganic Section. LIMS shall provide instrument interfaces with the capability of sending sample lists to the analytical instrument software as is feasible. There may be analytical instrument software that is unable to receive sample lists from LIMS. See section 13.2 for additional related requirements.
20.1.1.	LIMS shall record the following data contained in the instrument files: Analytical results, Lab#, QC Code, Analysis Date, Analysis Time, Analyzed By, TestGroupID, TestID, Detector, Retention, Area, InstrumentID, spike recoveries (where appropriate - in the majority of cases, spike recoveries are calculated in LIMS and not imported from a instrument file), internal and surrogate standard information (where appropriate - not all methods require an internal or surrogate standard) for both samples and QC samples.
20.1.2.	The LIMS vendor shall provide instrument interfaces which attempts to reduce redundancies. There should be no more interfaces than needed.
20.1.3	LIMS shall record the appropriate QC validation data for each test as described in 23.16.2.1.1 and 23.16.2.2.1.
20.1.4	LIMS shall not import data if a result exists in LIMS and the result is Chemist Approved. LIMS shall display a message box containing the Lab#, TestID and result that can't be imported. This message box includes the text: "LIMS has detected a Numeric Result that already exists for the sample below: Lab: <Lab#> TestGroupID: <TestGroupID> TestID: <TestID> Existing Numeric Result: <[NumericResult]> "The test result was chemist approved and the data will not be imported. Delete this test result and associated QC (click Delete Import Record) or see your supervisor."
20.1.5	LIMS shall display the following message if a result exists in LIMS and the result is not Chemist Approved. "Aspen has detected a Numeric Result that already exists for the sample below: Lab#: <[Lab#]> TestgroupID: <TestGroupID> TestID: <TestID> Existing Numeric Result: <NumericResult> Overwrite Existing Data? Click Cancel to abort import."
20.1.6	LIMS shall calculate spike recoveries and relative percent deviation. See section 9.14. for a description of the calculations.
20.1.7	Performance requirement for instrument interfaces: LIMS shall import data from an instrument file to a worksheet in LIMS in less than 5 minutes for all interfaces.

20.2.	LIMS shall provide instrument interfaces for the Organic Section - Currently, a third party software named Limsslink is used for all Organic Section Interfaces except CEC, 537 and 539 which are imported directly into LIMS. For each interface, the following data is retrieved from the instrument file: Lab#, QC_Code, TestGroupID, Analysis Date, Analysis Time, TestID, NumericResults, Detector, Retention Time, Area, InstrumentID, and LinkedLab#. The TestGroupID, InstrumentID and Detector are entered through source code in LIMS and are listed in the following subsections. If there is more than one instrumentID listed, there must be a separate interface for each instrument. The file structure for instrument files within a TestGroupID are identical. For example, instrument files for the 524 TestGroupID instruments (SAT4E" or "SAT4F" or "SAT4B" or "SAT2C") have the same file structure. Note that CEC, 537 and 539 TestGroupIDs are imported directly into LIMS. The QC data such as the acceptance ranges are stored by TestGroupID in reference tables. See 23.16.2.2.1 for the required Organic QC data for each TestID in a TestGroupID.
20.2.1.	LIMS shall record the following information for TestGroupID = 14DIOX
20.2.1.1	TestGroupID = "14DIOX"
20.2.1.2	InstrumentID = "SAT4E" and "SAT2F"
20.2.1.3	Detector = "MS"
20.2.2.	LIMS shall record the following information for TestGroupID = 504
20.2.2.1.	TestGroupID = "504"
20.2.2.2.	InstrumentID = "3800-1"
20.2.2.3.	Detector = "Detector B"
20.2.3.	LIMS shall record the following information for TestGroupID = 507
20.2.3.1.	TestGroupID = "507"
20.2.3.2.	InstrumentID = "3800-4"
20.2.3.3.	Detector = "Detector A"
20.2.4.	LIMS shall record the following information for TestGroupID = 508
20.2.4.1.	TestGroupID = "508"
20.2.4.2.	InstrumentID = "3800-3"
20.2.4.3.	Detector = "Detector A"
20.2.5.	LIMS shall record the following information for TestGroupID = 515
20.2.5.1.	TestGroupID = "515"
20.2.5.2.	InstrumentID = "3800-2" and "T1310A"
20.2.5.3.	Detector = "Detector B"
20.2.6.	LIMS shall record the following information for TestGroupID = 521
20.2.6.1.	TestGroupID = "521"
20.2.6.2.	InstrumentID = "S4C"
20.2.6.3.	Detector = "MS"
20.2.7.	LIMS shall record the following information for TestGroupID = 521-FP
20.2.7.1.	TestGroupID = "521-FP"
20.2.7.2.	InstrumentID = "S4C"
20.2.7.3.	Detector = "MS"
20.2.8.	LIMS shall record the following information for TestGroupID = 522
20.2.8.1.	TestGroupID = "522"
20.2.8.2.	InstrumentID = "S4C" and "SQB"
20.2.8.3.	Detector = "MS"
20.2.9.	LIMS shall record the following information for TestGroupID = 524

20.2.9.1.	TestGroupID = "524"
20.2.9.2.	InstrumentID = "SAT4F" and "SAT4B" and "SAT2C"
20.2.9.3.	Detector = "MS"
20.2.9.4.	LIMS shall calculate Total Trihalomethanes (THMs). Please note if this calculation is done in third party software. See below for a more detailed discussion of this calculation
20.2.9.4.1	TTHMs = CHCl3 + CHBrCl + CHBr2C + CHBr3
20.2.9.4.2	CHCl3 (ug/L) = Chloroform
20.2.9.4.3	CHBrCl (ug/L) = Bromodichloromethane
20.2.9.4.4	CHBr2C (ug/L) = Dibromochloromethane
20.2.9.4.5	CHBr3 (ug/L) = Bromoform
20.2.9.4.6	If any of the above tests are above the RDL, then TTHMs is the sum of those test results that are above the RDL. Any result below the RDL is not used in calculating TTHMs.
20.2.9.4.7	If all tests are below the RDL, then the following rules apply. A Trace Level (TR) which is half the RDL shall be taken into account when determining TTHMs. A test is reported as TR if the result is between the TR level and the RDL.
20.2.9.4.7.1	If all test results are below the Trace level, then TTHMs = 0.
20.2.9.4.7.2	If all test results are below the RDL and if any or all of the above tests are reported as TR then TTHMs is reported as TR.
20.2.9.4.8	The following are examples of reporting TTHMs.
20.2.9.4.8.1	If all the trihalomethanes are reported as ND, the TTHMs is reported as ND even though the sum of the 4 trihalomethanes exceeds the TTHMs RDL of 0.5 ug/L. For example, if the sum of the TTHMs is 0.45 and all the trihalomethanes are reported as ND, then TTHMs is reported as ND (not TR).
20.2.9.4.8.2	If any of the trihalomethanes are reported as TR and none of the trihalomethanes are reported above the RDL, then TTHMs is reported as TR. For example, if three of the trihalomethanes are reported as TR and the sum of the trihalomethanes is 0.9 ug/L, TTHMs is reported as TR (not 0.9 ug/L).
20.2.9.4.8.3	If any of the trihalomethanes are reported as above the RDL, those results are summed and reported as TTHMs. Results for trihalomethanes reported as TR are not included in the calculation of TTHMs.
20.2.9.5.	LIMS shall calculate Total Xylenes (TOTALX). Please note if this calculation is done in third party software. See below for a more detailed discussion of this calculation.
20.2.9.5.1	TOTALX = mp-XYL + o-XYL
20.2.9.5.2	mp-XYL (ug/L) = mp-Xylene
20.2.9.5.3	o-XYL (ug/L) = o-Xylene
20.2.9.5.4	If any of the above tests are above the RDL, then TOTALX is the sum of those test results that are above the RDL. Any result below the RDL is not used in calculating TTHMs.
20.2.9.5.5	If all tests are below the RDL, then the following rules apply. A Trace Level (TR) which is half the RDL shall be taken into account when determining TOTALX. A test is reported as TR if the result is between the TR level and the RDL.
20.2.9.5.5.1	If all test results are below the Trace level, then TOTALX = 0.
20.2.9.5.5.2	If all test results are below the RDL and if any or all of the above tests are reported as TR then TOTALX is reported as TR.
20.2.9.5.6	The following are examples of reporting TOTALX.
20.2.9.5.6.1	Each of the 2 xylenes listed in 20.2.9.5.2 and 20.2.9.5.3 can be reported as TR which is half of the Reportable Detection Limit (RDL) of 0.5 ug/L. Results between 0.25 ug/L and 0.5 ug/L are reported as TR.

20.2.9.5.6.2	If all the xylenes are reported as ND, the TOTALX is reported as ND even though the sum of the 2 xylenes exceeds the TOTALX RDL of 0.5 ug/L. For example, if the sum of the TOTALX is 0.45 and all the xylenes are reported as ND, then TOTALX is reported as ND (not TR).
20.2.9.5.6.3	If any of the xylenes are reported as TR and none of the xylenes are reported above the RDL, then TOTALX is reported as TR. For example, if two xylenes are reported as TR and the sum of the xylenes is 0.6 ug/L, TOTALX is reported as TR (not 0.6 ug/L).
20.2.9.5.6.4	If any of the xylenes are reported as above the RDL, those results are summed and reported as TOTALX. Results for xylenes reported as TR are not included in the calculation of TOTALX.
20.2.10.	LIMS shall record the following information for TestGroupID = 524.3
20.2.10.1.	TestGroupID = "524.3"
20.2.10.2.	InstrumentID = "SQA"
20.2.10.3.	Detector = "MS"
20.2.11.	LIMS shall record the following information for TestGroupID = 525
20.2.11.1.	TestGroupID = "525"
20.2.11.2.	InstrumentID = "S4D"
20.2.11.3.	Detector = "MS"
20.2.12.	LIMS shall record the following information for TestGroupID = 531
20.2.12.1.	TestGroupID = "531"
20.2.12.2.	InstrumentID = "HPLC-3"
20.2.12.3.	Detector = "Detector"
20.2.13.	LIMS shall record the following information for TestGroupID = 532
20.2.13.1.	TestGroupID = "532"
20.2.13.2.	InstrumentID = "HPLC-3"
20.2.13.3.	Detector = "PDA"
20.2.14.	LIMS shall record the following information for TestGroupID = 537
20.2.14.1.	LIMS shall record the following information. This information is not in the instrument file.
20.2.14.1.1	TestGroupID = "537"
20.2.14.1.2	InstrumentID = "QTRAP-6500"
20.2.14.1.3	Detector = "MSMS"
20.2.14.1.4	Units = <lookup from appropriate library table based on Test Series>
20.2.14.1.5	Analyzed By = <entered by user>
20.2.14.2.	LIMS shall record the following information from the instrument file.
20.2.14.2.1	TestID
20.2.14.2.2	Lab#, QC Code, Linked_Lab#
20.2.14.2.3	Result - if the result is "N/A" or "No Peak" or "< 0" then LIMS records 0. Reported to 4 decimal places, for example, 0.0537.
20.2.14.2.4	Retention Time - if the retention time is "N/A" or "No Peak" or "< 0" then LIMS records 0.. Reported to seconds with AM or PM, for example, 11:30:58 AM.
20.2.14.2.5	Peak Area - if the peak area "N/A" or "No Peak" or "< 0" then LIMS records 0.. Reported to the nearest whole number, for example, 12345.
20.2.14.2.6	ISPeak - if the ISPeak is "N/A", LIMS records "No Internal Standard"
20.2.14.2.7	ISPeakArea - if the ISPeakArea is "N/A", LIMS records 0.
20.2.14.2.8	Analysis Date - formatted MM/DD/YYYY
20.2.14.2.9	Analysis Time - formatted HH:MM:SS

20.2.15.	LIMS shall record the following information for TestGroupID = 539
20.2.15.1.	LIMS records the following information. This information is not in the instrument file.
20.2.15.1.1	TestGroupID = "539"
20.2.15.1.2	InstrumentID = "QTRAP-6500"
20.2.15.1.3	Detector = "MSMS"
20.2.15.1.4	Units = <lookup from appropriate library table based on Test Series>
20.2.15.1.5	Analyzed By = <entered by user>
20.2.15.2.	The following information is found in the instrument file.
20.2.15.2.1	TestID
20.2.15.2.2	Lab#, QC Code, Linked_Lab#
20.2.15.2.3	Result - if the result is "N/A" or "No Peak" or "< 0" then LIMS records 0. Reported to 4 decimal places, for example, 0.0539.
20.2.15.2.4	Retention Time - if the retention time is "N/A" or "No Peak" or "< 0" then LIMS records 0. Reported to seconds with AM or PM, for example, 11:30:58 AM.
20.2.15.2.5	Peak Area - if the peak area "N/A" or "No Peak" or "< 0" then LIMS records 0. Reported to the nearest whole number, for example, 12345.
20.2.15.2.6	ISPeak - if the ISPeak is "N/A", LIMS records "No Internal Standard"
20.2.15.2.7	ISPeakArea - if the ISPeakArea is "N/A", LIMS records 0.
20.2.15.2.8	Analysis Date - formatted MM/DD/YYYY
20.2.15.2.9	Analysis Time - formatted HH:MM:SS
20.2.16.	LIMS shall record the following information for TestGroupID = 547
20.2.16.1.	TestGroupID = "547"
20.2.16.2.	InstrumentID = "HPLC-3"
20.2.16.3.	Detector = "Detector"
20.2.17.	LIMS shall record the following information for TestGroupID = 548
20.2.17.1.	TestGroupID = "548"
20.2.17.2.	InstrumentID = "S2G"
20.2.17.3.	Detector = "MS"
20.2.18.	LIMS shall record the following information for TestGroupID = 549
20.2.18.1.	TestGroupID = "549"
20.2.18.1.1	InstrumentID = "HPLC-3"
20.2.18.2.	Detector = "Detector"
20.2.19.	LIMS shall record the following information for TestGroupID = 550
20.2.19.1.	TestGroupID = "550"
20.2.19.2.	InstrumentID = "HPLC-3"
20.2.19.3.	Detector = "UV"
20.2.19.3.1	Only TestID = ACENAP is reported for the UV Detector.
20.2.19.4.	Detector = "F"
20.2.19.4.1	TestIDs: NAP, ACNAPE, FLUOR, PHENAN, ANTHRA, FLANTH, PYRENE, BaaNTH, CHRYS, BbFLUR, BkFLUR, BaPYRE, DBahAN, BghiPR, INDPYR are reported for the F Detector.
20.2.20.	LIMS shall record the following information for TestGroupID = 551
20.2.20.1.	TestGroupID = "551"
20.2.20.2.	InstrumentID = "3800-1"
20.2.20.3.	Detector = "DET A"

20.2.20.4.	The 551 Instrument interface shall report Total Trihalomethanes (TTHMs) as follows.
20.2.20.4.1	Trichloromethane (Chloroform, CHCl3), Bromodichloromethane (CHBrCl2), Dibromochloromethane (CHBr2Cl) and Tribromomethane (Bromoform, CHBr3) are summed and reported as Total Trihalomethanes (TTHMs).
20.2.20.4.2	TR is not used for trihalomethanes in TestGroupID 551 as it is in TestGroupID 524.
20.2.20.4.3	If all the trihalomethanes are reported as ND, the TTHMs is reported as ND even though the sum of the 4 trihalomethanes exceeds the TTHMs RDL of 0.5 ug/L. For example, if the sum of the TTHMs is 0.65 ug/L and all the trihalomethanes are reported as ND, then TTHMs is reported as ND (not 0.65 ug/L).
20.2.20.4.4	If any of the trihalomethanes are reported as above the RDL, those results are summed and reported as TTHMs. Results for trihalomethanes reported as ND are not included in the calculation of TTHMs.
20.2.21.	LIMS shall record the following information for TestGroupID = 552
20.2.21.1.	TestGroupID = "552"
20.2.21.2.	InstrumentID = "3800-2" and "T1310A"
20.2.21.3.	Detector = "Detector A"
20.2.22.	LIMS shall record the following information for TestGroupID = 556_GCMS
20.2.22.1.	TestGroupID = "556"
20.2.22.2.	InstrumentID = "S2E"
20.2.22.3.	Detector = "MS"
20.2.23.	LIMS shall record the following information for TestGroupID = NDMA-LOW
20.2.23.1.	TestGroupID = "NDMA-LOW"
20.2.23.2.	InstrumentID = "SAT2D" and "S4A" and "S4C"
20.2.23.3.	Detector = "MS"
20.2.24.	LIMS shall record the following information for TestGroupID = NDMA-FP
20.2.24.1.	TestGroupID = "NDMA-FP"
20.2.24.2.	InstrumentID = "SAT2D" and "S4A" and "S4C"
20.2.24.3.	Detector = "MS"
20.2.25	LIMS shall record the following information for TestGroupID = CEC_NH, CEC_NP, CEC_PH, CEC_PP, CEC_Xray, or CEC_PHE
20.2.25.1	LIMS shall record the following information. This information is not obtained from the instrument file.
20.2.25.1.1	TestGroupID = "CEC_NH, CEC_NP, CEC_PH, CEC_PP, CEC_Xray, or CEC_PHE" (user selects the appropriate TestGroupID)
20.2.25.1.2	InstrumentID = "QTRAP-5500"
20.2.25.1.3	Detector = "MSMS"
20.2.25.1.4	Units = <lookup from appropriate library table based on Test Series>
20.2.25.1.5	Analyzed By = <entered by user>
20.2.25.2	LIMS shall record the following information from the instrument file.
20.2.25.2.1	TestID
20.2.25.2.2	Lab#, QC Code, Linked_Lab#
20.2.25.2.3	Result - if the result is "N/A" or "No Peak" or "< 0" then LIMS records 0. Reported to 4 decimal places, for example, 0.0888.
20.2.25.2.4	Retention Time - if the retention time is "N/A" or "No Peak" or "< 0" then LIMS records 0. Reported to seconds with AM or PM, for example, 11:30:58 AM.
20.2.25.2.5	Peak Area - if the peak area "N/A" or "No Peak" or "< 0" then LIMS records 0. Reported to the nearest whole number, for example, 12345.

20.2.25.2.6	ISPeak - if the ISPeak is "N/A", LIMS records "No Internal Standard"
20.2.25.2.7	ISPeakArea - if the ISPeakArea is "N/A", LIMS records 0.
20.2.25.2.8	Analysis Date - formatted MM/DD/YYYY
20.2.25.2.9	Analysis Time - formatted HH:MM:SS
20.3.	LIMS shall provide instrument interfaces for the Inorganic Section - Inorganic Section Interfaces are built in LIMS. For example, the user starts LIMS, selects a instrument file, and clicks the 'Import' button. LIMS then imports the data from the instrument file. The user does not use third party software such as LimsLink or Excel when importing data into LIMS.
20.3.1.	LIMS shall record the following information for TestGroupID = CLO4 (IC), CLO4 (ICS3000)
20.3.1.1.	After importing instrument file, display Lab#, Multi-Dilution check box, Dilution Factor, CLO4 result, Units = ug/L, Check Box indicating the dilution selected by LIMS, and Comment.
20.3.1.1.1	Replace null, empty string or "n.a." result with 0.
20.3.1.1.2	For CLO4 (IC), if the CLO4 result/Dilution factor is between 0 and 2, then LIMS selects the box to select the dilution.
20.3.1.1.2.1	If more than one dilution is within this range, LIMS selects the lowest dilution that meets this criteria.
20.3.1.1.3	For CLO4 (ICS3000), if the CLO4 result/Dilution factor is between 0 and 100, then selects the box to select the dilution.
20.3.1.1.3.1	If more than one dilution meets is within this range, LIMS selects the lowest dilution that meets this criteria.
20.3.1.2.	LIMS shall print the Perchlorate Matrix Conductivity Threshold (MCT) Report. See 23.6.2.4.
20.3.1.3.	TestGroupID = "CLO4"
20.3.1.4.	InstrumentID = "IC"
20.3.1.5.	Detector = "IC"
20.3.2.	LIMS shall record the following information for TestGroupID = IDBP
20.3.2.1	After importing instrument file, display Lab#, Multi-Dilution check box, Dilution Factor, CLO2, BrO3, CLO3 and Br results, Units = ug/L, Check Box indicating the dilution selected by LIMS, and Comment.
20.3.2.2	Replace null, empty string or "n.a." results with 0.
20.3.2.3	Divide Br result by 1000 to convert to mg/L.
20.3.2.4	For CLO2, if the CLO2 result/Dilution factor is greater than or equal to 0 and less than or equal to 500, LIMS selects this CLO2 result. If more than one dilution is within this range, LIMS selects the result in the lowest dilution.
20.3.2.5	For BrO3, if the BrO3 result/Dilution factor is greater than or equal to 0 and less than or equal to 500, LIMS selects this BrO3 result. If more than one dilution is within this range, LIMS selects the result in the lowest dilution.
20.3.2.6	For CLO3, if the CLO3 result/Dilution factor is greater than or equal to 0 and less than or equal to 500, LIMS selects this CLO3 result. If more than one dilution is within this range, LIMS selects the result in the lowest dilution.
20.3.2.7	For Br, if the Br result/Dilution factor is greater than or equal to 0 and less than or equal to 0.5, LIMS selects this Br result. If more than one dilution is within this range, LIMS selects the result in the lowest dilution.
20.3.2.8	TestGroupID = "300.1B"
20.3.2.9	InstrumentID = "IC"
20.3.2.10	Detector = "IC"
20.3.3.	LIMS shall record the following information for TestGroupID = CN

20.3.3.1.	After importing instrument file, display Lab#, QC_Code, TestGroupID, Analysis Date, Auto Select, Numeric Result, Units, TestID and Comment.
20.3.3.2.	TestGroupID = "X1-335.4"
20.3.3.3.	InstrumentID = "FIA"
20.3.3.4.	Detector = "FIA"
20.3.4.	LIMS shall record the following information for TestGroupID = CrVI, CrVI (ICS3000)
20.3.4.1.	After importing instrument file, display Lab#, Multi-Dilution check box, Dilution Factor, CrVI result, Units = ug/L, Check Box indicating the dilution selected by LIMS, and Comment.
20.3.4.1.1	Replace null, empty string or "n.a." result with 0.
20.3.4.1.2	For CrVI, if the CrVI result/Dilution factor is between 0 and 2 then LIMS selects the box to select the dilution.
20.3.4.1.2.1	If more than one dilution meets this criteria, LIMS selects the lowest dilution that meets this criteria.
20.3.4.1.3	For CrV (ICS3000), if the CrVI result/Dilution factor is between 0 and 100, then LIMS selects the box to select the dilution.
20.3.4.1.3.1	If more than one dilution meets this criteria, LIMS selects the lowest dilution that meets this criteria.
20.3.4.2.	TestGroupID = "X1-218.6"
20.3.4.3.	InstrumentID = "IC"
20.3.4.4.	Detector = "IC"
20.3.5.	LIMS shall record the following information for TestGroupID = CrVI (UCMR)
20.3.5.1	After importing the instrument file, display Lab#, Multi-Dilution check box, Dilution Factor, CrVI result, Units = ug/L, Check Box indicating the dilution selected by LIMS, and Comment.
20.3.5.2	Replace null, empty string or "n.a." result with 0.
20.3.5.3	For CrVI, if the CrVI result/Dilution factor is between 0 and 100, then LIMS selects the box to select the dilution.
20.3.5.3.1	If more than one dilution meets this criteria, LIMS selects the lowest dilution that meets this criteria.
20.3.5.2	TestGroupID = "X1-218.7"
20.3.5.3	InstrumentID = "IC"
20.3.5.4	Detector = "IC"
20.3.6.	LIMS shall record the following information for TestGroupID = IC, IC (ICS3000)
20.3.6.1.	There will be multiple dilutions for each sample and all results shall be displayed. LIMS selects the appropriate result based on whether the result is within the calibration range. If there is more than one result in different dilutions that are within the calibration range, LIMS selects the result in the least diluted sample.
20.3.6.1.1	Replace null, empty string or "n.a." results with 0.
20.3.6.1.2	For F, if the F result/Dilution factor is greater than or equal to 0 and less than or equal to 2, LIMS selects this F result. If more than one dilution is within this range, LIMS selects the result in the lowest dilution.
20.3.6.1.3	For Cl, if the Cl result/Dilution factor is greater than or equal to 0 and less than or equal to 100, LIMS selects this Cl result. If more than one dilution is within this range, LIMS selects the result in the lowest dilution.
20.3.6.1.4	For NO2-N, if the NO2-N result/Dilution factor is greater than or equal to 0 and less than or equal to 10, LIMS selects this NO2-N result. If more than one dilution is within this range, LIMS selects the result in the lowest dilution.
20.3.6.1.5	For Br, if the Br result/Dilution factor is greater than or equal to 0 and less than or equal to 2, LIMS selects this Br result. If more than one dilution is within this range, LIMS selects the result in the lowest dilution.

20.3.6.1.6	For NO3-N, if the NO3-N result/Dilution factor is greater than or equal to 0 and less than or equal to 10, LIMS selects this NO3-N result. If more than one dilution is within this range, LIMS selects the result in the lowest dilution.
20.3.6.1.7	For PO4-P, if the PO4-P result/Dilution factor is greater than or equal to 0 and less than or equal to 2, LIMS selects this PO4-P result. If more than one dilution is within this range, LIMS selects the result in the lowest dilution.
20.3.6.1.8	For SO4, if the SO4 result/Dilution factor is greater than or equal to 0 and less than or equal to 80, LIMS selects this SO4 result. If more than one dilution is within this range, LIMS selects the result in the lowest dilution.
20.3.6.2.	The user can also manually select a result as appropriate.
20.3.6.3	After importing instrument file, display Lab#, Multi-Dilution check box, Dilution Factor, F, Cl, NO2-N, Br, NO3-N, PO4-P, and SO4 results, Units , Check Box indicating the dilution selected by LIMS, and Comment.
20.3.6.4	TestGroupID = "X1-300.0"
20.3.6.5	InstrumentID = "IC"
20.3.6.6	Detector = "IC"
20.3.7.	LIMS shall record the following information for TestGroupID = ICP And ICP-Trace
20.3.7.1.	For K, Mg, Ca, B, Fe, Ag, Cr, V, Co, and Na.
20.3.7.2.	After importing the instrument file, display Lab#, QC_Code, Analysis Date, Auto Select, TestID, Numeric Result, Units, and Comment.
20.3.7.3.	TestGroupID = "X200.7"
20.3.7.4.	InstrumentID = "ICP"
20.3.7.5.	Detector = "ICP"
20.3.7.6.	Sample Type field in instrument field is used to designate QC samples.
20.3.7.6.1	For Sample Type = 503, append Q to the Lab#. This is a duplicate.
20.3.7.6.2	For Sample Type = 451, append S to the Lab#. This is a spike.
20.3.7.7.	Sample ID field in instrument file is used to designate appropriate QC Samples. LIMS generates a Lab# from the Sample ID field. The 2 digit counter increments for each QC Code and continues to increment until all samples in the instrument are processed. MMDDYY is the analysis date.
20.3.7.7.1	For Sample ID field = "ICV", append ICV + 2 digit counter + MMDDYY + C
20.3.7.7.2	For Sample ID field = "CCV", append CCV + 2 digit counter + MMDDYY + C.
20.3.7.7.3	For Sample ID field = "ECV", append ECV + 2 digit counter + MMDDYY + C.
20.3.7.7.4	For Sample ID field = "QCS", append QCS + 2 digit counter + MMDDYY + N.
20.3.7.7.5	For Sample ID field = "ICB", append ICB + 2 digit counter + MMDDYY + B
20.3.7.7.6	For Sample ID field = "CCB", append CCB + 2 digit counter + MMDDYY + B
20.3.7.7.7	For Sample ID field = "ECB", append ECB + 2 digit counter + MMDDYY + B
20.3.7.7.8	For Sample ID field = "MDL", append ECB + 2 digit counter + MMDDYY + B
20.3.7.8.	LIMS asks the user if dissolved metals are being imported. If user selects 'Yes', then a list of all samples that are being imported is displayed. User selects those samples where dissolved metals are requested. LIMS then appends a -DIS to the TestIDs and a D to the TestGroupID.
20.3.7.9.	LIMS shall add the following TestIDs into LIMS during the instrument routine: TOTHRD and CaHRD for ICP, and CrIII for ICP-Trace.
20.3.8.	LIMS shall record the following information for TestGroupID = ICP-MS

20.3.8.1	For Hg (Mass 202), Sb (Mass 123), Ba (Mass 137), Cu (Mass 63), Se (Mass 82), Cd (Mass 111), Zn (Mass 66), Ag, Al, As, Be, Co, Gd, Mn, Mo, Ni, Pb, Tl, and V TestIDs. For example, mass 202 is used to report Hg results. LIMS selects the results for mass 202. Results for all masses shall be displayed. User has the ability to select which mass to report.
20.3.8.2	After importing the instrument file, display Lab#, QC_Code, TestGroupID, Analysis Date, Analysis Time, Auto Select, Numeric Result, Units, Mass, TestID, and Comment.
20.3.8.3	TestGroupID = "X200.8"
20.3.8.4	InstrumentID = "ICP/MS"
20.3.8.5	Detector = "ICP/MS"
20.3.8.6	Sample Type field in instrument field is used to designate QC samples.
20.3.8.6.1	For "Sample Type:,QC Dupl", append Q to the Lab#. This is a duplicate.
20.3.8.6.2	For "Sample Description:,SPIKE", append S to the Lab#. This is a spike.
20.3.8.6.3	For "Sample Description:,SPIKE DUP", append K to the Lab#. This is a spike duplicate.
20.3.8.7	Sample ID field in instrument file is used to designate appropriate QC Samples. LIMS generates a Lab# from the Sample ID field. The 2 digit counter increments for each QC Code and continues to increment until all samples in the instrument are processed. MMDDYY is the analysis date.
20.3.8.7.1	For Sample ID field = "QC Std 3", append IPC + 2 digit counter + MMDDYY + C
20.3.8.7.2	For Sample ID field = "QC Std 4", append CCB + 2 digit counter + MMDDYY + B
20.3.8.7.3	For Sample ID field = "QC Std 5", append QCS + 2 digit counter + MMDDYY + N
20.3.8.8	LIMS displays a message box asking the user if dissolved metals are being imported. If user selects 'Yes', then a list of all samples that are being imported is displayed. User selects those samples where dissolved metals are requested. LIMS then appends a -DIS to the TestIDs and a D to the TestGroupID.
20.3.9.	LIMS shall record the following information for TestGroupID = ICP-MS_UCMR
20.3.9.1.	User selects the appropriate instrument file, then imports the data into LIMS. The following information is displayed in a form: Lab#, QC Code, TestGroupID, Analysis Date, Analysis Time, Auto Select, Numeric Result, Units, Mass, TestID, Comment, Analyzed By, InstrumentID and Detector. All the fields can be edited in this form by the user.
20.3.9.2.	TestGroupID = "X200.8U"
20.3.9.3	InstrumentID = "ICP/MS"
20.3.9.4	Detector = "ICP/MS"
20.3.9.5	LIMS marks the Auto Select box according to the following masses for each test: Co (Mass 59), Cr (Mass 52), Mo (Mass 98), Sr (Mass 88) and V (Mass 51). Only tests that have the Auto Select box checked will be sent to LIMS. The user can manually check or uncheck the Auto Select box.
20.3.9.6	LIMS asks for the user initials and records it into the Analyzed By field.
20.3.9.7	LIMS places notes in the Comment field identifying which tests will not be imported (for example, "Test will not be imported") and the mass selected for a particular test (for example, "V result is mass 51").
20.3.9.8	At some point, the X200.8U Internal Standard Report needs to be printed. Aspen prints this report here because the internal standard recoveries are not stored in Aspen tables. Sc, Tb and In are not reported by this method, however, the internal standard recoveries shall be on this report for both samples and QC samples. The internal standard recoveries are calculated by the instrument software and are in the instrument file.
20.3.9.9	Sample Type field in instrument field is used to designate QC samples.
20.3.9.9.1	For "Sample Type:,QC Dupl", append Q to the Lab#. This is a duplicate.

20.3.9.10	Sample ID field in the instrument file is used to designate appropriate QC Samples. LIMS generates a Lab# from the Sample ID field. The 2 digit counter increments for each QC Code and continues to increment until all samples are processed. MMDDYY is the analysis date.
20.3.9.10.1	For Sample ID field = "QC Std 3", append IPC + 2 digit counter + MMDDYY + C
20.3.9.10.2	For Sample ID field = "QC Std 4", append CCB + 2 digit counter + MMDDYY + B
20.3.9.10.3	For Sample ID field = "QC Std 5", append QCS + 2 digit counter + MMDDYY + N
20.3.9.11	This method uses a "G" QC sample. The "G" QC Sample, and the "S", "K", "X" or "Z" QC samples are used to calculate the spike recovery and the Relative Percent Deviation (RPD). For example, to calculate the spike recovery for Lab# 13010099-01, the user analyzes three samples with the following Lab#: 13010099-01, 13010099-01G and 13010099-01S. The spike recovery and RPD are calculated based on the results for Lab# 13010099-01G and 13010099-01S.
20.3.10.	LIMS shall record the following information for TestGroupID = NH3-N
20.3.10.1.	After importing the instrument file, display Lab#, QC_Code, TestGroupID, Analysis Date, Auto Select, Numeric Result, Units, TestID, and Comment.
20.3.10.2.	TestGroupID = "4500NH3H"
20.3.10.3	InstrumentID = "FIA"
20.3.10.4	Detector = "FIA"
20.3.11.	LIMS shall record the following information for TestGroupID = NO2-N
20.3.11.1.	After importing the instrument file, display Lab#, QC_Code, TestGroupID, Analysis Date, Auto Select, Numeric Result, Units, TestID, and Comment.
20.3.11.2.	TestGroupID = "4500NO3F"
20.3.11.3.	InstrumentID = "FIA"
20.3.11.4.	Detector = "FIA"
20.3.12.	LIMS shall record the following information for TestGroupID = NO3
20.3.12.1.	After importing the instrument file, display Lab#, QC_Code, TestGroupID, Analysis Date, Auto Select, Numeric Result, Units, TestID, and Comment.
20.3.12.2.	TestGroupID = "4500NO3F"
20.3.12.3.	InstrumentID = "FIA"
20.3.12.4.	Detector = "FIA"
20.3.12.5.	The NO3NO2-N result is obtained from the instrument file. NO3 and NO3-N are added by LIMS when importing the instrument file data.
20.3.12.5.1	It is assumed that the NO2-N result is 0. The NO3-N result is equal to the NO3NO2-N result.
20.3.12.5.2	The NO3 result is NO3NO2-N result * 4.4268.
20.3.13.	LIMS shall record the following information for TestGroupID = ORG-N
20.3.13.1.	After importing the instrument file, display Lab#, QC_Code, TestGroupID, Analysis Date, Auto Select, Numeric Result, Units, TestID, and Comment.
20.3.13.2.	TestGroupID = "X1-351.2"
20.3.13.3.	InstrumentID = "FIA"
20.3.13.4.	Detector = "FIA"
20.3.13.5.	LIMS shall add TestIDs TKN and TOT-N when importing the instrument file data.
20.3.14.	LIMS shall record the following information for TestGroupID = PO4-P
20.3.14.1.	After importing the instrument file, display Lab#, QC_Code, TestGroupID, Analysis Date, Auto Select, Numeric Result, Units, TestID, and Comment.
20.3.14.2.	TestGroupID = "365.1"

20.3.14.3.	InstrumentID = "FIA"
20.3.14.4.	Detector = "FIA"
20.3.15.	LIMS shall record the following information for TestGroupID = TOC
20.3.15.1.	Each sample is analyzed 4 times. The first analysis is rejected. The next 3 analyses are averaged and reported in LIMS.
20.3.15.1.1	If there are less than 3 analyses for a sample, LIMS notifies the user by displaying the message "Lab# <LIMS enters the appropriate Lab#> was analyzed less than 3 times and a result won't be reported.". This notification applies to all samples except "3% H2O2" which may be analyzed less than 3 times but is never reported.
20.3.15.1.2	If there are more than 3 analyses for a sample, LIMS notifies the user by displaying the message "Lab# <LIMS enters the appropriate Lab#> was analyzed more than 3 times and a result won't be reported.".
20.3.15.2	The first sample is bypassed. This sample is a DI RINSE and may be analyzed as many as 10 times.
20.3.15.3	Both DOC and TOC are analyzed using method 5310C. If a DOC analysis is required for a sample, the user adds a D to the end of the Lab# (the 12th position in the Lab# string). The instrument software does not distinguish between TOC and DOC results and the instrument file only lists TOC results, even if the result is a DOC result. A Lab# without the D in the 12th position, indicates that a TOC result is reported.
20.3.15.4	If the Lab# ends in a D (12th position in the Lab# string), then LIMS will add the TestID = DOC along with the result, calculated by the procedure in 20.3.15.1..
20.3.15.5	TestGroupID = "5310C"
20.3.15.6	InstrumentID = "5310C" or "900" (5310C is not an error, in this case the InstrumentID is the same as TestGroupID)
20.3.15.7	Detector = "TOC"
20.3.15.8	Units = "mg/L"
20.3.16.	LIMS shall record the following information for TestGroupID = pH and EC - Mettler Autotitrator
20.3.16.1.	The instrument software generates a single instrument file that contains both pH and EC results. However, each test is entered into LIMS under a different TestGroupID. To ensure that the worksheet contains only one TestGroupID (see 17.1.2.5.1.), the instrument file containing both pH and EC results is processed twice - once for pH and once for EC.
20.3.16.1.1	pH
20.3.16.1.1.1	TestGroupID = "4500H+B"
20.3.16.1.1.2	InstrumentID = "Mettler"
20.3.16.1.1.3	Detector = "pH"
20.3.16.1.2	EC
20.3.16.1.2.1	TestGroupID = "2510B"
20.3.16.1.2.2	InstrumentID = "Mettler"
20.3.16.1.2.3	Detector = "EC"
20.4.	LIMS shall examine the test results in worksheets with the following criteria
20.4.1.	LIMS shall provide the capability to send an email containing the following information if the analytical result is above the action level. Additionally, LIMS shall display a message box for each TestID where the analytical result is above the action level. See section 3.3 for more details.
20.4.2.	LIMS shall print a report if the analysis date is after the approval date.
20.4.3.	LIMS shall print a report if the prep date is after the analysis date, .
20.4.3.1.	The report is titled "Samples With Analysis Dates Prior to Prep Dates"

20.4.3.2.	The report displays the Lab#, SampleID, TestGroupID, TestID, Analysis date, Prep Date, PrepBy and the Prep Log #.
20.4.4.	LIMS shall print a report (see Exhibit E) if the prep date is null for those TestGroupIDs that require sample prep. The TestGroupIDs are 5540C, X1-218.7, X1-218.6, X200.8U, X200.8D, X200.8, X200.7D, X200.7, 504, 507, 508, 515, 522, 525, 526, 528, 532, 537, 548, 549, 550, 551, 552, CEC_NH, CEC_NP, CEC_PH, CEC_PP, CEC_Xray, CEC_PHE, NDMA, and NDMA-LOW.
20.4.4.1.	The report shall display the method, the worksheet number, SampleID, Lab#, Collect Date and Analysis Date of samples without a prep date.
20.4.4.2.	The report shall display the text "There are no Prep Dates for the samples listed below. Please enter the prep dates or meet with your supervisor."
20.4.5.	LIMS shall print a report if the expiration date is exceeded (based on analysis date, and sample date or prep date). (3 reports below, see Exhibit E)
20.4.5.1.	LIMS shall print the Tests Analyzed Past the Expiration Date - Examines all inorganic tests that are supervisor approved and is used by supervisors. The expiration date is determined by the holding time as described in the Standard Operating Procedures (SOP).
20.4.5.1.1	The report shall displays Lab#, SampleID, TestGroupID, TestID, Result, Expiration Date, Analysis Date, Collect Date, Hold Days, Analyzed By, Supervisor Approval Date and Resample Requested.
20.4.5.1.2	The report shall display text "The analysis date exceeds the expiration date for the tests listed below."
20.4.5.2.	LIMS shall print the OCWD-Automated Sample Check - LIMS shall examine inorganic tests in a worksheet only and LIMS shall generate this report. Not limited to problem as described in 20.4.5.1., but includes 20.4.2. and 20.4.3..
20.4.5.2.1	The report shall display Lab#, LIMS#, TestGroupID, TestID, Supl App. Date (Supervisor Approved Date), Error Found (For example, The Analysis Date 4/25/2012 is greater than the Hold Date (4/19/2012).
20.4.5.2.2	The report shall display the text "There is a problem with samples listed on this report. Please correct the error or see your supervisor."
20.4.5.2.3	The report shall add the comment "<TestID> analyzed past holding time." to the comments field for this Lab# when analysis date is entered for all tests in the worksheet. If analysis date is later changed, user shall delete this comment.
20.4.5.2.4	LIMS shall perform this verification and generate a report where ever an analysis date can be entered or modified by a user. It is not limited to validating analysis dates in a worksheet.
20.4.5.3.	LIMS shall print the Organic Samples Analyzed Past the Extract Hold Date - LIMS examintes all organic tests. The extract hold date is determined by the extract holding time as described in the Standard Operating Procedures (SOP).
20.4.5.3.1	The report shall display Lab#, SampleID, TestgroupID, Collect Date, Prep Date, Extract Hold Days, Extract Hold Date, Analysis Date, Analyzed By, Supervisor Approval Date, Resample Requested
20.4.5.3.2	The report shall display the text "The analysis date exceeds the extract hold date for the samples listed below."
20.4.6.	LIMS shall print a report if the CrVI is greater than the Cr result by more than 20%.
20.4.7.	LIMS shall print a report if the Collect Date is greater than the Analysis Date.
20.4.8.	LIMS shall print a report if the Received Date is greater than the Analysis Date.
20.4.9.	LIMS shall print a report if the Analysis Date is greater than today's date.
20.4.10.	LIMS shall print a report if the EndCollectDate is greater than the received date.
20.4.11.	LIMS shall print a report if NO2-N is greater than the NO3NO2-N by more than 10%.
20.4.12.	LIMS shall print a report if the Br result is greater than 10 mg/L.

20.4.13.	LIMS shall print a report if the Br result between X1-300.0 and 300.1B differs by more than 20%.
20.4.14.	LIMS shall print a report if a total metal result (for example As) is less than the dissolved metal result (for example As-DIS). (see Exhibit E)
20.4.15.	LIMS shall print a report if the EC differs from the F-EC (Field EC) by more than 10%.
20.4.15.1.	LIMS shall print the OCWD-Automated Sample Check - For inorganic tests only in a worksheet. Not limited to problem as described in 20.4.15.
20.4.15.1.1	The report shall display Lab#, LIMS#, TestGroupID, TestID, Supl App. Date (Supervisor Approved Date), Error Found (For example, The EC (85) & F-EC (13) results differ by >10% (MISC). Note MISC is the SampleID.)
20.4.15.1.2	The report shall display the text "There is a problem with samples listed on this report. Please correct the error or see your supervisor."
20.4.16.	LIMS shall print a report if the pH differs from the F-pH (Field pH) by more than 0.7 unit.
20.4.17.	LIMS shall mark the Lab# as complete and ready for supervisor approval when all TestGroups for the Lab# are complete. A TestGroup is complete when all Tests for the TestGroup are approved by the Approving Chemist.
20.4.18.	LIMS shall provide the following algorithm. If the ReportedResult contains '<' (for example <5), then LIMS checks the RDL (Reportable Detection Limit) and compares it to the ReportedResult without the '<' (for example, if the reportedresult is <5, LIMS compares 5 with the entry in the RDL field.) If these two numbers don't match, the user is notified. This finds errors where the user enters an Alpha Result, for example <5 where the original RDL is 2.5, but forgets to also change the RDL to 5.
20.5.	Acquiring QC Analytical Results
20.5.1.	LIMS shall record QC samples into LIMS via the instrument interfaces described in section 20.1., 20.2., and 20.3..
20.5.2	LIMS shall record QC samples into LIMS when sample data is recorded into LIMS via instrument interfaces.
20.5.3	LIMS shall record the following QC samples types: duplicates, spikes, laboratory fortified blanks, blanks, calibration checks, internal standard areas, surrogate standards, and method detection limit samples. 23.16.2. lists the QC samples for each method.
20.5.4	LIMS shall print Surrogate Standard Reports (see 23.6.) and Internal Standard Reports (see section 23.7.) when LIMS records QC samples using the instrument interfaces.
20.5.5	LIMS shall store quality control parameters so that the appropriate quality control reports can be generated. Section 23.16.2. lists the Quality Control Samples that are analyzed for each method.
20.5.5.1.	For laboratory fortified blanks (8 levels) and calibration checks (8 levels), the quality control parameters include the upper and lower acceptance limits (in units).
20.5.5.2.	For spikes (5 levels), the quality control parameters include spike recoveries (in percentage).
20.5.5.3.	For blanks (2 levels), the quality control parameters include an upper limit (in units).
20.5.5.4.	For spikes and duplicates, the relative percent deviation quality control parameter unit is percentage.
n/a	<b>Data Review</b>
21	Validating and Approving Data
21.1.	LIMS shall provide the capability for the analytical chemist and the approving chemist to approve data in worksheet. Users shall have the capability to enter their initials and the approved date. See Section 17.4.
21.2.	LIMS shall provide the capability for Supervisor approval.
21.2.1.	LIMS shall display sample information on the Supervisor Approval Form when the SampleID has a SampleCompleteDate entered.
21.2.1.1.	LIMS shall provide the capability for Inorganic Supervisor Approval
21.2.1.1.1	LIMS shall display a list of samples that are ready for inorganic supervisor approval.

21.2.1.1.2	LIMS shall provide the facilities such that the Inorganic Supervisor can approve a sample, ask for a resample, or mark the sample as "Don't send to WRMS".
21.2.1.1.3	LIMS shall display notes for the sample and ion balance results.
21.2.1.1.4	LIMS shall provide the capability to display the following information for a sample: TestGroupID, TestID, Note, Flag, NumericResult, ReportedResult, RDL, Units, AnalysisDate, AnalyzedBy, PrepDate, PrepBy and Worksheet# for all tests in the sample.
21.2.1.2.	LIMS shall provide the capability for Organic Supervisor Approval
21.2.1.2.1	LIMS shall display a list of samples that are ready for organic supervisor approval.
21.2.1.2.2	LIMS shall provide the capability such that the Organic Supervisor can approve a sample, ask for a resample, or mark the sample as "Don't send to WRMS".
21.2.1.2.3	LIMS shall display notes for samples.
21.2.1.2.4	LIMS shall provide the capability to display the following information for a sample: TestGroupID, TestID, Note, Flag, NumericResult, ReportedResult, RDL, Units, AnalysisDate, AnalyzedBy, PrepDate, PrepBy and Worksheet# for all tests in the sample where there is a result above the RDL.
21.2.1.3.	LIMS shall provide the capability for Field Approval
21.2.1.3.1	LIMS shall provide for sample approval where the Test Series is "FIELD" Or "F-CL2" Or "F-DO" Or "F-DOCL2" Or "F-DOT" Or "F-DOTCL2" Or "F-EC".
21.2.1.3.2	LIMS shall only allow samples that are not supervisor approved and completed to be approved.
21.2.2	LIMS shall provide separate Inorganic Supervisor Approval and Organic Supervisor Approval forms.
21.2.3	LIMS shall provide the capability to unapprove a Lab# that was previously supervisor approved.
<b>n/a</b>	<b>Standards, Media, and Reagents</b>
22	Labels
22.1.	LIMS shall print labels for inorganic extraction methods.
22.1.1.	The labels display the Lab#, SampleID and Collect Date.
22.2.	LIMS shall print Labels for Reagents – Inorganic Section
22.2.1.	Currently uses Datamax printer
22.2.2.	For example, 0.25N NaOH
22.3.	LIMS shall print Labels for Standards – Organic Section
22.3.1.	Currently uses an Access database outside of LIMS
<b>n/a</b>	<b>Reporting</b>
23	Reports - The user shall have the ability to email these reports from within LIMS. LIMS shall support inserting a report into an email and sending it from within LIMS. (see Exhibit E). Please identify whether the LIMS uses built in reporting, or if a 3rd party reporting tool is provided as part of the license, or if OCWD will be required to purchase a 3rd party reporting tool.
23.1.	LIMS shall print a Certificate of Analysis. Hardcopy analytical reports that display results by Lab# are printed upon request.
23.1.1.	LIMS shall display "OCWD Advanced Water Quality Assurance Laboratory" and "CERTIFICATE OF ANALYSIS" at top of report.
23.1.2.	LIMS shall display the Lab#, Sample ID, Sample Matrix, Sample Group ID, Monitoring Program, Collect Date, Collect Time, Collect By, Field Comments, Lab Comments
23.1.3.	LIMS shall display Lab#, Analytical Method (Note: Analytical Method is a separate field from TestGroupID), Test Name, Test ID, Result, Units, Flag, RDL, Analysis Date, By Prep Date.
23.1.4.	LIMS shall display "* A = above Action Level" in footer of report.

23.2.	LIMS shall print a Perchlorate Matrix Conductivity Threshold (MCT) Report - lists the EC and Field-EC for perchlorate samples and checks ranges. Report OCWD-InorganicQC_CLO4_MTC. Activated from Form OCWD-ImportData-CLO4, click Import File.
23.2.1	LIMS shall display the text "If the EC is below 1835 um/cm, 'MCT < 1835 um/cm (EC)' will be checked. If the F-EC result is below 1835 um/cm, 'MCT < 1835 um/cm (F-EC)' will be checked. If the EC is exceeds 1835 um/cm or if there is no EC result, 'MCT < 1835 um/cm (EC)' will not be checked. If the F-EC is exceeds 1835 um/cm or if there is no F-EC result, 'MCT < 1835 um/cm (F-EC)' will not be checked. All EC and F-EC values are reported in um/cm." on the report.
23.2.2.	LIMS shall display the title "Perchlorate Matrix Conductivity Threshold (MCT) Report.
23.2.3	LIMS shall display a line for the analyzing user's signature and date.
23.2.4	LIMS shall display the Lab#, Sample ID, EC, MCT<1835 um/cm (EC), F-EC, MCT<1835 um/cm (F-EC) and Comments.
23.2.5	LIMS shall use F-EC (field EC), if a F-EC result is entered in LIMS, otherwise the analytical result for field EC is used in this report.
23.3.	LIMS shall print a IDBP - PGF Surrogate Recovery Report: lists PGF value and % surrogate recovery and whether the sample passed or failed either or both checks. Report OCWD-SurrogateDateReport-IDBP and -IDBP_Sub. LIMS shall print this report when the IDBP data is transferred to LIMS via an instrument interface.
23.3.1.	LIMS shall print an OCWD-Automated Sample Check: OCWD-AutomatedHistoricalReportSampleCheck_ver2 report which lists potential problems with data in a worksheet. Activated from Form Edit Existing Worksheet, Print Inorganic Data Review.
23.3.1.1.	LIMS shall print this report when the EC differs from Field EC by more than 10% or Analysis Date greater than the Hold Date.
23.4.	LIMS shall print the Test Series report which lists all tests in a Test Series
23.4.1.	This report shall display the Test Series name, Test, Test Name, Test Group, Units and RDL.
23.5.	LIMS shall print the Inorganic Discard Report which lists all inorganic samples that are marked as archived and sent to LIMS.
23.5.1	The report shall display the title "Inorganic Sample Discard Report" and today's date.
23.5.2	The report shall display the Lab#, Sample ID, Project#, Collect Date, Received Date, Completed Date, Supervisor Approved Date, Reported Date.
23.5.3	The report shall display a check box to the left of the each Lab#.
23.6.	LIMS shall print Surrogate Standard reports - Activated when importing data.
23.6.1.	LIMS shall print a surrogate standard report for 507
23.6.1.1.	Display title "507 Surrogate Data"
23.6.1.2.	Surrogate TestID = NXYL
23.6.1.3.	Display text "A Pass designation indicates that the result for NXYL is between 8.75 and 16.25 ug/L."
23.6.1.4.	Display Lab#, +/-30%, NXYL, %Rec
23.6.1.4.1	Calculate %Rec (% recovery) based on true value = 12.5 ug/L.
23.6.2.	LIMS shall print a surrogate standard report for 508
23.6.2.1.	Display title "508 Surrogate Data"
23.6.2.2.	Surrogate TestID = DCBP8-SS
23.6.2.3.	Display text "A Pass designation indicates that the result for DCBP8-SS is between and ug/L."
23.6.2.4.	Display Lab#, +/-30%, DCBP8-SS, %Rec
23.6.2.4.1	Calculate %Rec (% recovery) based on true value = 2.5 ug/L.
23.6.3.	LIMS shall print a surrogate standard report for 515

23.6.3.1.	Display title "515 Surrogate Data"
23.6.3.2.	Surrogate TestID = DCPAA-SS
23.6.3.3.	Display text "A Pass designation indicates that the result for DCPAA-SS is between and ug/L."
23.6.3.4.	Display Lab#, +/-30%, DCPAA-SS, %Rec
23.6.3.4.1	Calculate %Rec (% recovery) based on true value = 25 ug/L.
23.6.4.	LIMS shall print a surrogate standard report for 521
23.6.4.1.	Display title "521 Surrogate Data"
23.6.4.2.	Surrogate TestID = NDMA d6
23.6.4.3.	Display text "A Pass designation indicates that the percent recovery for NDMA d6 is between 70 and 130 percent."
23.6.4.4.	Display Lab#, +/-30%, NDMA d6, %Rec
23.6.4.4.1	Calculate %Rec (% recovery) based on true value = 25 ug/L.
23.6.5.	LIMS shall print a surrogate standard report for 522
23.6.5.1.	Display title "522 Surrogate Data"
23.6.5.2.	Surrogate TestID = 14DIOX-d8
23.6.5.3.	Display text "A Pass designation indicates that the percent recovery for 14DIOX-d8 is between 70 and 130 percent."
23.6.5.4.	Display Lab#, +/-30%, 14DIOX-d8, %Rec
23.6.5.4.1	Calculate %Rec (% recovery) based on true value = 2.5 ug/L.
23.6.6.	LIMS shall print a surrogate standard report for 524 and 524.3
23.6.6.1.	524
23.6.6.1.1	Display title "524 Surrogate Data"
23.6.6.1.2	Surrogate TestIDs = SURR1 (BFB), SURR2 (12DCLBENZ)
23.6.6.1.3	Display text "A Pass designation indicates that the percent recovery for SURR1 and SURR2 is between and percent."
23.6.6.1.4	Display Lab#, +/-30%, SURR1, %Rec, SURR2, %Rec
23.6.6.1.4.1	Calculate %Rec (% recovery) based on true value = ug/L.
23.6.6.2.	524.3
23.6.6.2.1	Display title "524.3 Surrogate Data"
23.6.6.2.2	Surrogate TestIDs = S1, S2, S3
23.6.6.2.3	Display text "A Pass designation indicates that the percent recovery for S1, S2 and S3 are between 70 and 130 percent." Display 'Fail' if one or more surrogates are not within +/- 30%.
23.6.6.2.4	Display the Lab#, Sample ID, Collect Date, S1, S1 % Recovery, S2, S2 % Recovery, S3, S3 % Recovery, +/- 30%
23.6.6.2.4.1	Calculate %Rec (% recovery) based on true value = 0.5 ug/L.
23.6.7.	LIMS shall print a surrogate standard report for 525
23.6.7.1.	Display title "525 Surrogate Data"
23.6.7.2.	Surrogate TestIDs = S1, S2, S3, S4
23.6.7.3.	Display text "A Pass designation indicates that the percent recovery for S1, S2, S3 and S4 are between 70 and 130 percent." Display 'Fail' if one or more surrogates are not within +/- 30%.
23.6.7.4.	Display the Lab#, Sample ID, Collect Date, S1, S1 % Recovery, S2, S2 % Recovery, S3, S3 % Recovery, S4, S4 % Recovery, +/- 30%
23.6.7.4.1	Calculate %Rec (% recovery) based on true value = 5 ug/L.
23.6.8.	LIMS shall print a surrogate standard report for 532

23.6.8.1.	Display title "532 Surrogate Data"
23.6.8.2.	Surrogate TestID = S1
23.6.8.3.	Display text "A Pass designation indicates that the percent recovery for S1 is between 70 and 130 percent."
23.6.8.4.	Display the Lab#, Sample ID, Collect Date, S1, S1 % Recovery, +/- 30%
23.6.8.4.1	Calculate %Rec (% recovery) based on true value = 5 ug/L.
23.6.9.	LIMS shall print a surrogate standard report for 537
23.6.9.1.	Display title "537 Surrogate Data"
23.6.9.2.	Surrogate TestIDs = SUR1, SUR2
23.6.9.3.	Display text "A Pass designation indicates that the percent recovery for SUR1 and SUR2 is between 70 and 130 percent." Display 'Fail' if one or more surrogates are not within +/- 30%.
23.6.9.4.	Display the Lab#, Sample ID, Collect Date, S1, S1 % Recovery, +/- 30%
23.6.9.4.1	Calculate %Rec (% recovery) based on true value = 0.04 ug/L.
23.6.10.	LIMS shall print a surrogate standard report for 539
23.6.10.1.	Display title "539 Surrogate Data"
23.6.10.2.	Surrogate TestID = S1
23.6.10.3.	Display text "A Pass designation indicates that the percent recovery for S1 is between 70 and 130 percent."
23.6.10.4.	Display the Lab#, Sample ID, Collect Date, S1, S1 % Recovery, +/- 30%
23.6.10.4.1	Calculate %Rec (% recovery) based on true value = 70 ng/L.
23.6.11.	LIMS shall print a surrogate standard report for 551
23.6.11.1.	Display title "551 Surrogate Data"
23.6.11.2.	Surrogate TestID = S1
23.6.11.3.	Display text "A Pass designation indicates that the percent recovery for S1 is between 80 and 120 percent."
23.6.11.4.	Display the Lab#, Sample ID, Collect Date, S1, S1 % Recovery, +/- 20%
23.6.11.4.1	Calculate %Rec (% recovery) based on true value = 1 ug/L.
23.6.12.	LIMS shall print a surrogate standard report for 552
23.6.12.1.	Display title "552 Surrogate Data"
23.6.12.2.	Surrogate TestID = 23DBPA-SS
23.6.12.3.	Display text "A Pass designation indicates that the percent recovery for 23DBPA-SS is between 70 and 130 percent."
23.6.12.4.	Display the Lab#, Sample ID, Collect Date, 23DBPA-SS, 23DBPA-SS % Recovery, +/- 30%
23.6.12.4.1	Calculate %Rec (% recovery) based on true value = 12.5 ug/L.
23.6.13.	LIMS shall print a surrogate standard report for 556
23.6.13.1.	Display title "556 Surrogate Data"
23.6.13.2.	Surrogate TestID = SS(TFAPN)
23.6.13.3.	Display text "A Pass designation indicates that the percent recovery for SS(TFAPN) is between 70 and 130 percent."
23.6.13.4.	Display the Lab#, Sample ID, Collect Date, SS(TFAPN), SS(TFAPN)% Recovery, +/- 30%
23.6.13.4.1	Calculate %Rec (% recovery) based on true value = 20 ug/L.
23.6.14.	LIMS shall print a surrogate standard report for 531
23.6.14.1	Display title "531 Surrogate Data"
23.6.14.2	Surrogate TestID = BDMC
23.6.14.3	Display text "A Pass designation indicates that the percent recovery for BDMC is between 70 and 130 percent."
23.6.14.4	Display the Lab#, Sample ID, Collect Date, BDMC, BDMC % Recovery, +/- 30%

23.6.14.4.1	Calculate %Rec (% recovery) based on true value = 5 ug/L.
23.6.15.	All results shall be reported to 4 decimals (for example 123.4567).
23.7.	LIMS shall print Internal Standard Reports - Activated when importing data. Display Internal Standard Area Counts on the following reports. Display Lab#, SampleID and Collect Date for each sample.
23.7.1.	LIMS shall print an internal standard report for 14DIOX
23.7.1.1.	Display title "1,4 DIOX Internal Standard Report"
23.7.1.2.	Internal Standard TestIDs: IS1 FBENZ, 123TCP-d5
23.7.2.	LIMS shall print an internal standard report for 507
23.7.2.1.	Display title "507 Internal Standard Report"
23.7.2.2.	Internal Standard TestID: NTOL
23.7.3.	LIMS shall print an internal standard report for 508
23.7.3.1.	Display title "508 Internal Standard Report"
23.7.3.2.	Internal Standard TestID: PCNB8-IS
23.7.4.	LIMS shall print an internal standard report for 515
23.7.4.1.	Display title "515 Internal Standard Report"
23.7.4.2.	Internal Standard TestID: DBOB-IS
23.7.5.	LIMS shall print an internal standard report for 521
23.7.5.1.	Display title "521 Internal Standard Report"
23.7.5.2.	Internal Standard TestID: NDPA_d14
23.7.5.3.	First 'C' Standard Area Counts
23.7.5.4.	Display text "A Pass designation indicates that the percent recovery for NDPA_d14/First 'C' Standard Area Counts is between 70 and 130 percent."
23.7.5.4.1	Percent Recovery calculated by NDPA_d14/First 'C' Standard Area Counts
23.7.6.	LIMS shall print an internal standard report for 522
23.7.6.1.	Display title "522 Internal Standard Report"
23.7.6.2.	Internal Standard TestID: THF-d8
23.7.6.3.	First 'C' Standard Area Counts
23.7.6.4.	Display text "A Pass designation indicates that the percent recovery for THF-d8/First 'C' Standard Area Counts is between 70 and 130 percent."
23.7.6.4.1	Percent Recovery calculated by THF-d8/First 'C' Standard Area Counts
23.7.7.	LIMS shall print an internal standard report for 524
23.7.7.1.	Display title "524 Internal Standard Report"
23.7.7.2	Internal Standard TestID: IS1 FBENZ
23.7.8.	LIMS shall print an internal standard report for 524.3
23.7.8.1.	Display title "524.3 Internal Standard Report"
23.7.8.2.	Internal Standard TestIDs: I1, I2, I3
23.7.9.	LIMS shall print an internal standard report for 525
23.7.9.1.	Display title "525 Internal Standard Report"
23.7.9.2.	Internal Standard TestIDs: I1, I2, I3
23.7.10.	LIMS shall print an internal standard report for 537
23.7.10.1.	Display title "537 Internal Standard Report"
23.7.10.2.	Internal standards are listed sorted by internal standard (IS1, IS2 and IS3), then sorted by TestID, and finally sorted by Lab#. The Peak Area is displayed for each internal standard.
23.7.11.	LIMS shall print an internal standard report for 539

23.7.11.1.	Display title "539 Internal Standard Report"
23.7.11.2.	Internal standards are listed sorted by internal standard (IS1, IS2 and IS3), then sorted by TestID, and finally sorted by Lab#. The Peak Area is displayed for each internal standard.
23.7.12.	LIMS shall print an internal standard report for 548
23.7.12.1.	Display title "548 Internal Standard Report"
23.7.12.2.	Internal Standard TestID: IS1
23.7.13.	LIMS shall print an internal standard report for 552
23.7.13.1.	Display title "552 Internal Standard Report"
23.7.13.2.	Internal Standard TestID: 123TCP-IS
23.7.14.	LIMS shall print an internal standard report for 556
23.7.14.1.	Display title "556 Internal Standard Report"
23.7.14.2.	Internal Standard TestID: IS(DBP)
23.7.15.	LIMS shall print an internal standard report for CEC
23.7.15.1.	Display title "CEC Internal Standard Report"
23.7.15.2.	Internal Standard TestID: EPITES_IS, PRGSTR_IS, TESTOR_IS, ACTMNP_IS, ATENOL_IS, ATRAZ_IS, AZTMCN_IS, CAFFE1_IS, CBMAZP_IS, DEET_IS, DILANT_IS, ERYTHN_IS, FLUXET_IS, LINURN_IS, PRIMDN_IS, SIMAZ_IS, SULTHZ_IS, TCEP_IS, TRIMTP_IS,
23.7.15.3.	Internal standards are listed sorted by internal standard (IS1, IS2 and IS3), then sorted by TestID, and finally sorted by Lab#. The Peak Area is displayed for each internal standard.
23.7.16.	LIMS shall print an internal standard report for NDMA
23.7.16.1.	Display title "NDMA Internal Standard Report"
23.7.16.2.	Internal Standard TestIDs: NDMA d-6, NDPhA d-6, NMOR d-8
23.7.17.	LIMS shall print an internal standard report for X200.8U
23.7.17.1.	Displays the Lab#, Sample ID, Collect Date, Analysis Time, Internal Standard Recovery (in percent) for In, Sc, and Tb, and a PASS/FAIL designation for all samples in the instrument file. A PASS designation is displayed if the internal standard recoveries for In, Sc and Tb are between 60% and 120%. A FAIL designation is displayed if any of the internal standard recoveries are below 60% or above 120%.
23.7.17.2.	Note that diluted samples will have the same Lab# and each sample, both undiluted and diluted, shall be listed separately. In Aspen, the analysis time is used to distinguish between samples with the same Lab#.
23.8.	LIMS shall print a Sample Tally Report - Displays the number of samples and analyses (sub totals and totals) in a user selected time period.
23.8.1.	LIMS shall provide the capability to enter a time period - a start date and an end date.
23.8.2.	This report shall display the number of samples and analyses are arranged by Project (Project# field in Aspen), Lab Section and Test Series (RefID in Aspen) in the date range.
23.8.3.	This report shall display subtotals for number of Samples and Analyses by Lab Section.
23.8.4.	This report shall display subtotals for number of Samples and Analyses by Project.
23.8.5.	This report shall display grand totals for number of Samples and Analyses by Lab Section.
23.8.6.	This report shall display grand totals for number of Samples and Analyses.
23.8.7.	This report shall display the title "OCWD-Sample Tally"
23.8.8.	This report shall display the text "Time Period: <Start Date> To <End Date>"
23.9.	LIMS shall print the Tests Reported NA report
23.9.1.	LIMS shall print the Test Reported NA Organic Section
23.9.1.1.	A list of Organic tests that were reported NA and not archived.
23.9.1.2.	Display title "Organic Tests Reported NA"

23.9.1.3.	Include the text 'These samples were approved by the Organic Supervisor between <enter a start date> and <enter an end date>.'
23.9.1.4.	Display Lab#, Sample ID, Collect Date, Test Series, Method (TestGroupID), Test (TestID), Result, Analysis Date, Analyzed By, Resample Requested, and Notes.
23.9.2.	LIMS shall print the Test Reported NA Inorganic Section
23.9.2.1.	A list of Inorganic tests that were reported NA and not archived.
23.9.2.2.	Display title "Inorganic Tests Reported NA"
23.9.2.3.	Include the text 'These samples were approved by the Inorganic Supervisor between <enter a start date> and <enter an end date>.'
23.10.	LIMS shall print the 524 UCMR QA/QC Report - A list of Lab#, Sample ID, Collect Date, MTBE result and NBENZ result.
23.11.	LIMS shall print the Inorganic Tests Analyzed Past the Expiration Date - A list of tests that are supervisor approved and analyzed after the expiration date.
23.11.1.	The report shall display the title "Tests Analyzed Past the Expiration Date".
23.11.2.	The report shall display this text below the title - "The analysis date exceeds the expiration date for the tests listed below."
23.11.3.	The report shall display the Lab#, SampleID, TestGroupID, TestID, Result, Units, Expiration Date, Analysis Date, Collect Date, Hold Days, Analyzed By, Supervisor Approval Date, and Resample Requested (Yes/No).
23.12.	LIMS shall print the Inorganic Workload Report (Weekly) - A number of samples logged in for a given TestGroupID (method) in a user defined date range (usually a week). The only entries that are counted by TestID instead of TestGroupID are DOC and TOC.
23.12.1.	For DOC and TOC, if the number of DOC samples exceeds 25, the weekly limit for TOC samples is 90. If the number of DOC samples is 25 or less, the weekly limit for TOC samples is 100.
23.13.	LIMS shall print the IWF RES OPS Spec Report
23.13.1	LIMS shall retrieve the following data from both the current and archive databases based on the following criteria.
23.13.1.1	Project# = 'GWRS' or 'GWRSCOM' Or 'GWRSOPS' Or 'IWFRES' Or 'IWFOPS'
23.13.1.2	Collect_Date is between <Enter Begin Date> and <Enter End Date>
23.13.1.3	LabSection = Inorganic
23.13.1.4	LabSection = Organic
23.13.1.4.1	Test Series = NDMA-LOW or NDMA (for Organic section only)
23.13.2	LIMS shall display the following information in the report
23.13.2.1	LIMS shall display the title "<Project#> Monitoring Program"
23.13.2.2	LIMS shall display the SampleID below the title
	LIMS shall display TestID, Collect Date, Reported Result, Units, Test Series (aka Sample Reference), Lab# and Analyzing Chemist. LIMS shall display only one SampleID per page. LIMS shall sort ascending by Project#, SampleID, TestID and CollectDate
23.14.	LIMS shall print the IWFPDR Report
23.14.1	LIMS shall retrieve the following data from both the current and archive databases based on the following criteria.
23.14.1.1	Project# = 'IWFPDR' or 'GWRSPDR'
23.14.1.2	Collect_Date is between <Enter Begin Date> and <Enter End Date>
23.14.1.3	LabSection = Inorganic
23.14.2	LIMS shall display the following information in the report
23.14.2.1	LIMS shall display the title "<Project#> Monitoring Program"
23.14.2.2	LIMS shall display the SampleID below the title

	LIMS shall display TestID, Collect Date, Flag, Reported Result, Units, Test Series (aka Sample Reference), Lab# and Analyzing Chemist. LIMS shall display only one SampleID per page. LIMS shall sort ascending by SampleID, TestID and CollectDate
23.15.	LIMS shall print the Tests Without Reported Results
23.15.1	LIMS shall retrieve the following data when the user retrieves a backlog report.
23.15.1.1	Rotation Staff Name = <Rotation_Staff_Name> (entered by user when opening backlog report)
23.15.1.2	Reported Result is null and Worksheet# is not null
23.15.1.3	LabSection = Inorganic
23.15.2	LIMS shall display the following information in the report
23.15.2.1	LIMS shall display the title Orange County Water District Main Laboratory
23.15.2.2	LIMS shall display "<TestGroupID> Tests Without Reported Results" below the title
23.15.2.3	LIMS shall display Lab#, TestID (aka Test), Date Analyzed, Analyzed By, Date Approved and Worksheet#. LIMS shall sort ascending by Lab#.
23.16.	LIMS shall print the reports in Data Packet - Note that the reports in the data packet for the Organic Section differ from the Inorganic Section.
23.16.1.	LIMS shall print the Corrective Action Report
23.16.1.1.	Inorganic Section - Displays the following text: "The information in this data package was reviewed by two qualified chemists. Both the analytical and the reviewing chemist will certify that reports generated from this data package are valid."
23.16.1.2.	Organic Section - Displays the following text: "The chromatograms in this data package were reviewed by two qualified chemists. . Both the analytical and the reviewing chemist will certify that reports generated from this data package are valid. It is the responsibility of the reviewing chemist to list any abnormalities or inconsistencies below."
23.16.1.3.	For both sections, display the TestGroupID, 5 lines for comments, and a section for the dates and signatures of the Analytical Chemist, Reviewing Chemist and Supervising Chemist.
23.16.2.	LIMS shall print the Quality Control Report and display quality control samples that may need further investigation based on calculations in section 9.14.
23.16.2.1.	LIMS shall print the Quality Control Report - Inorganic Section
23.16.2.1.1	The report shall display the following information in Part 1: LRB (B), MDL (M), RDL (W), IPC (E), ICCS (C), CCCS (A), ECCS (T), CCS(U), QCS (N) and LFB (F). A QC Sample is displayed only if the result is NOT within the acceptance range. See Exhibit A for the True Value, Lower Limit and Upper Limit for each Inorganic TestID.
23.16.2.1.1.1	The report shall display MDL (M) in the Inorganic section (M is not displayed in the Quality Control Report for the Organic section). There may be more than one MDL per run.
23.16.2.1.1.2	LIMS shall check if all QC Samples were analyzed. Displays a list of QC Sample types that were not analyzed.
23.16.2.1.1.3	The report shall displays the Lab#, Analysis Date, TestID, Result, Units, True Value, Lower Limit and Upper Limit.
23.16.2.1.1.4	LIMS shall display the following QC Sample types for X200.7 and X200.7D: LRB (B), ICCS (C), LFB (F), LFM1 Spike (S), LFM1 Spike Dup (K), MDL (M), QCS (N), RDL (W)
23.16.2.1.1.5	LIMS shall display the following QC Sample types for X200.8, X200.8D and X200.8U: LRB (B), ICCS (C), LFB (F), LFM1 Spike (S), LFM1 Spike Dup (K), MDL (M), QCS (N), RDL (W)
23.16.2.1.1.6	LIMS shall display the following QC Sample types for X1-351.2: LRB (B), ICCS (C), LFB (F), LFM1 Spike (S), LFM1 Spike Dup (K), MDL (M), QCS (N), RDL (W)

23.16.2.1.1.7	LIMS shall display the following QC Sample types for X1-335.4: LRB (B), ICCS (C), CCS (U), LFB (F), LFM1 Spike (S), LFM1 Spike Dup (K), MDL (M), QCS (N), RDL (W)
23.16.2.1.1.8	LIMS shall display the following QC Sample types for X1-300.0: LRB (B), ICCS (C), LFB (F), LFM1 Spike (S), LFM1 Spike Dup (K), MDL (M), QCS (N), RDL (W)
23.16.2.1.1.9	LIMS shall display the following QC Sample types for X1-218.7: LRB (B), ICCS (C), CCCS (A), ECCS (T), LFB (F), LFM1 Spike (S), LFM1 Spike Dup (K), LFM2 Spike (X), LFM2 Spike Dup (Z), MDL (M), QCS (N)
23.16.2.1.1.10	X1-218.6 - LRB (B), LPC (C), LFB (F), LFM1 Spike (S), LFM1 Spike Dup (K), MDL (M), QCS (N), RDL (W)
23.16.2.1.1.11	LIMS shall display the following QC Sample types for CLO4: LRB (B), ICCS (C), IPC (E), CCCS (A), ECCS (T), LFB (F), LFM1 Spike (S), LFM1 Spike Dup (K), LFM2 Spike (X), LFM2 Spike Dup (Z), MDL (M), QCS (N), RDL (W)
23.16.2.1.1.12	LIMS shall display the following QC Sample types for 5310C: LRB (B), LOW IPC (C), HIGH IPC (T), 0.05 PPM (E), LOW LFB (A), HIGH IPC (T), HIGH QCS (F), HIGH LFB (U), LOW LFM Spike (S), LOW LFM Spike Dup (K), HIGH LFM Spike (X), HIGH LFM Spike Dup (Z), MDL (M), LOW QCS (N), RDL (W)
23.16.2.1.1.13	LIMS shall display the following QC Sample types for 4500NO3F: LRB (B), ICCS (C), CCCS (A), LFB (F), LFM1 Spike (S), LFM1 Spike Dup (K), MDL (M), QCS (N), RDL (W)
23.16.2.1.1.14	LIMS shall display the following QC Sample types for 4500NH3H: LRB (B), ICCS (C), IPC (E), LFB (F), LFM1 Spike (S), LFM1 Spike Dup (K), MDL (M), QCS (N), RDL (W)
23.16.2.1.1.15	LIMS shall display the following QC Sample types for 4500H+B: ICCS (C), IPC (E), CCCS (A), CCS (U) (No Spikes)
23.16.2.1.1.16	LIMS shall display the following QC Sample types for 2510B: ICCS (C), IPC (E), CCCS (A), ECCS (T), QCS (N) (No Spikes)
23.16.2.1.1.17	LIMS shall display the following QC Sample types for 365.1: LRB (B), ICCS (C), LFB (F), LFM1 Spike (S), LFM1 Spike Dup (K), MDL (M), QCS (N), RDL (W)
23.16.2.1.1.18	LIMS shall display the following QC Sample types for 300.1B: LRB (B), ICCS (C), CCCS (A), ECCS (T), MID LFB (U), LFB (F), LFM1 Spike (S), LFM1 Spike Dup (K), LFM2 Spike (X), LFM2 Spike Dup (Z), MDL (M), QCS (N), RDL (W)
23.16.2.1.2	The report shall display the following information in Part 2: Spike Recovery for two spiked levels (Inorganic Section only).
23.16.2.1.3	The report shall display the following information in Part 3: Relative Percent Deviation for two spiked levels and all duplicate analyses (Inorganic Section only).
23.16.2.1.3.1	2 spike levels: Low Spike and Mid Spike with 2 RPD levels: Low Spike RPD and Mid Spike RPD
23.16.2.1.3.2	Displays Lab#, Analysis Date, TestID, Duplicate Result, Sample Result, Units, % RPD, Lower Limit, and Upper Limit.
23.16.2.1.3.3	Upper Limit and Lower Limit shall display 4 decimal places, for example, 0.0345 ug/L.
23.16.2.1.4	LIMS shall print UCMR RPD Quality Control Report
23.16.2.1.4.1	The report shall display information for TestGroupIDs X1-218.7, 300.1B, and X200.8U
23.16.2.1.4.2	The report shall display 2 spike levels: Low Spike and Mid Spike
23.16.2.1.4.3	The report shall display 2 RPD levels: Low Spike RPD and Mid Spike RPD
23.16.2.1.4.4	The report shall displays Lab#, Date of Analysis, TestID, Result, Lower Limit, Upper Limit, Accuracy and Precision.
23.16.2.1.4.5	The report shall display Upper Limit and Lower Limit shall display 4 decimal places, for example, 0.0345 ug/L.

23.16.2.2.	LIMS shall print Quality Control Reports - Organic Section. Each method has a specific set of QC Samples. Each method contains a MDL (M), Blank (B) and Duplicate (D). There may be more than one QC Type per run. For example, there may be more than one MDL (M) or CC_3 ( C ) QC Sample in a worksheet. A QC Sample is displayed only if the result is NOT within the acceptance range.
23.16.2.2.1	The report shall display the following information in Part 1: See Exhibit B for the True Value, Lower Limit and Upper Limit for each Organic TestID.
23.16.2.2.1.1	The report shall not display MDL (M) in the Organic Section on the Quality Control Report. MDL results are used to calculate a Method Detection Limit using calculations in 23.19.2.2.
23.16.2.2.1.2	The report shall display for TestGroupID 14DIOX: CC_1 (W), CC_3 ( C ), Spike_2 (S), Spike_2 Dup (K), Duplicate (D)
23.16.2.2.1.3	The report shall display for TestGroupID 504: CC_1 (W), CC_2 (E), CC_3 ( C ), LFB_1 (F), LFB_2 (U), LFB_3 (L), Spike_2 (S), Spike_2 Dup (K), Duplicate (D) , Blank (B)
23.16.2.2.1.4	The report shall display for TestGroupID 507: CC_1 (W), CC_3 ( C ), LFB_1 (F), LFB_3 (L), Spike_2 (S), Spike_2 Dup (K), Duplicate (D), Blank (B)
23.16.2.2.1.5	The report shall display for TestGroupID 508: CC_1 (W), CC_3 ( C ), LFB_1 (F), LFB_3 (L), Spike_2 (S), Spike_2 Dup (K), Duplicate (D), Blank (B)
23.16.2.2.1.6	The report shall display for TestGroupID 515: CC_1 (W), CC_3 ( C ), CC_4 (T), LFB_1 (F), LFB_3 (L), Spike_2 (S), Spike_2 Dup (K), Duplicate (D), Blank (B)
23.16.2.2.1.7	The report shall display for TestGroupID 521: CC_1 (W), CC_3 ( C ), LFB_2 (U), LFB_3 (L), Spike_3 (X), Spike_3 Dup (Z), Duplicate (D) , Blank (B)
23.16.2.2.1.8	The report shall display for TestGroupID 522: CC_1 (W), CC_2 (E), CC_3 ( C ), CC_4 (T), LFB_1 (F), LFB_3 (L), LFB_4 (N), Spike_1 (I), Spike_1 Dup (J), Spike_2 (S), Spike_2 Dup (K), Spike_3 (X), Spike_3 Dup (Z), Duplicate (D) , Blank (B)
23.16.2.2.1.9	The report shall display for TestGroupID 524: CC_1 (W), CC_2 (E), CC_3 ( C ), CC_6 (P), CC_2 (E), Spike_2 (S), Spike_2 Dup (K), Duplicate (D) , Blank (B). LIMS reports QC Code P in the same section ("Standards") as QC Code C. TestIDs in the P standard are AAVE, ACETNE, ACROLN, ACRYLO, MBK and FREN22. The following TestIDs are not in the "Standards" section but in the "Low 2 Std" section and uses QC Code E. The TestIDs are CHTFEE, CS2, DIPE, ETBE, FR123A, TAME, and TBA.
23.16.2.2.1.10	The report shall display for TestGroupID 524.3: CC_1 (W), CC_2 (E), CC_3 ( C ), CC_5 (A), CC_4 (T), Spike_1 (I), Spike_1 Dup (J), Spike_2 (S), Spike_2 Dup (K), Spike_3 (X), Spike_3 Dup (Z), Duplicate (D) , Blank (B)
23.16.2.2.1.11	The report shall display for TestGroupID 525: CC_1 (W), CC_2 (E), CC_3 ( C ), CC_4 (T), LFB_1 (F), LFB_2 (U), Spike_2 (S), Spike_2 Dup (K), Duplicate (D), Blank (B)
23.16.2.2.1.12	The report shall display for TestGroupID 531: CC_1 (W), CC_3 ( C ), LFB_1 (F), LFB_3 (L), Spike_2 (S), Spike_2 Dup (K), Duplicate (D), Blank (B)
23.16.2.2.1.13	The report shall display for TestGroupID 532: CC_1 (W), CC_3 ( C ), LFB_1 (F), LFB_3 (L), Spike_2 (S), Spike_2 Dup (K), Duplicate (D), Blank (B)
23.16.2.2.1.14	The report shall display for TestGroupID 537: CC_1 (W), CC_2 (E), CC_3 ( C ), CC_4 (T), LFB_1 (F), LFB_3 (L), LFB_4 (N), Spike_2 (S), Spike_2 Dup (K), Spike_3 (X), Spike_3 Dup (Z), Duplicate (D) , Blank (B)
23.16.2.2.1.15	The report shall display for TestGroupID 539: CC_1 (W), CC_2 (E), CC_3 ( C ), CC_4 (T), LFB_1 (F), LFB_3 (L), LFB_4 (N), Spike_2 (S), Spike_2 Dup (K), Spike_3 (X), Spike_3 Dup (Z), Duplicate (D) , Blank (B)

23.16.2.2.1.16	The report shall display for TestGroupID 547: CC_1 (W), CC_3 ( C), LFB_1 (F), LFB_3 (L), Spike_2 (S), Spike_2 Dup (K), Duplicate (D), Blank (B)
23.16.2.2.1.17	The report shall display for TestGroupID 548: CC_1 (W), CC_3 ( C), LFB_1 (F), LFB_3 (L), Spike_2 (S), Spike_2 Dup (K), Duplicate (D), Blank (B)
23.16.2.2.1.18	The report shall display for TestGroupID 549: CC_1 (W), CC_3 ( C), LFB_1 (F), LFB_3 (L), Spike_2 (S), Spike_2 Dup (K), Duplicate (D), Blank (B)
23.16.2.2.1.19	The report shall display for TestGroupID 550: CC_1 (W), CC_3 ( C), LFB_1 (F), LFB_3 (L), Spike_2 (S), Spike_2 Dup (K), Duplicate (D), Blank (B)
23.16.2.2.1.20	The report shall display for TestGroupID 551: CC_1 (W), CC_3 ( C), LFB_1 (F), LFB_3 (L), Spike_2 (S), Spike_2 Dup (K), Duplicate (D), Blank (B)
23.16.2.2.1.21	The report shall display for TestGroupID 552: CC_1 (W), CC_3 ( C), LFB_1 (F), LFB_3 (L), Spike_2 (S), Spike_2 Dup (K), Duplicate (D), Blank (B)
23.16.2.2.1.22	The report shall display for TestGroupID 556: CC_1 (W), CC_3 ( C), LFB_1 (F), LFB_3 (L), Spike_2 (S), Spike_2 Dup (K), Duplicate (D), Blank (B)
23.16.2.2.1.24	The report shall display for TestGroupID NDMA: CC_1 (W), CC_3 ( C), LFB_1 (F), LFB_3 (L), Spike_2 (S), Spike_2 Dup (K), Duplicate (D), Blank (B)
23.16.2.2.1.25	The report shall display for TestGroupIDs CEC_NH, CEC_NP, CEC_PH, CEC_PP, CEC_Xray, and CEC_PHE: CC_1 (W), CC_2 (E), CC_3 ( C), CC_4 (T), LFB_1 (F), LFB_2 (U), LFB_3 (L), Spike_2 (S), Spike_2 Dup (K), Duplicate (D) , Blank (B)
23.16.2.2.3	LIMS shall print the UCMR RPD Quality Control Report
23.16.2.2.3.1	LIMS shall print this report for UCMR Samples Only
23.16.2.2.3.2	LIMS shall print this report for TestGroupID = 521, 522, 524.3, 537, and 539
23.16.2.2.3.3	The report shall display 3 spike levels: Spike, High Spike and Low Spike
23.16.2.2.3.4	The report shall display 3 RPD levels: Spike RPD, High Spike RPD and Low Spike RPD
23.16.2.2.3.5	The report shall display Lab#, Date of Analysis, TestID, Result, Lower Limit, Upper Limit, Accuracy and Precision.
23.16.2.2.3.6	The report shall display the Upper Limit and Lower Limit shall display 4 decimal places, for example, 0.0345 ug/L.
23.16.2.2.4	LIMS shall print the Duplicate RPD Quality Control Report
23.16.2.2.4.1	LIMS shall print this report for TestGroupID = CEC only.
23.16.2.2.4.2	The report shall display the Lab#, TestGroupID, Analysis Date, TestID, Result, Units and RPD for duplicate samples that are outside the acceptance range. The acceptance range for TestGroupID = CEC_NH, CEC_NP, CEC_PH, CEC_PP, CEC_Xray, or CEC_PHE is +/- 30%.
23.16.2.2.4.3	LIMS shall print this report when the Quality Control Reports are printed.
23.16.2.3.	LIMS shall check the first character of the Lab# for all QC Samples for Inorganic and Organic Sections,. If the first character is numeric, then LIMS alerts the user with the following message: "<Lab#> was not imported into LIMS. The first character shall be a letter." LIMS shall not import this sample.
23.16.3	LIMS shall print the Quality Control Exception Report and display samples that may need further investigation. This report displays the results of an examination based on the test results in a worksheet. This examination is primarily a comparison of the current result with historical results. The report is printed from a worksheet. The algorithms and presentation of results differs for the Inorganic Section and Organic Section. Each section is discussed separately.
23.16.3.1.	LIMS shall display 'Yes' for Inorganic tests listed in this report if any of three flags are 'Yes'. The three flags are named MaxFlag, MinFlag and Out of Range.

23.16.3.1.1	LIMS searches both current data and archived data based on the SampleID, TestID, and ReportedResult. If the ReportedResult is N/A or a blank value, this SampleID and TestID combination is not used in examining historical data. Blank values occur when a SampleID was recently sampled frequently and there may not be a result for a sample or samples.
23.16.3.1.2	LIMS shall add 19 to the start of the Lab# if the Lab# begins in 9, otherwise add 20 and save this to the ID field. This allows LIMS to arrange the test results chronologically.
23.16.3.1.3	LIMS shall calculate the mean, high value, low value, number of test results and standard deviation of test results for each SampleID and TestID combination. This does not include the sample most recently logged in. The standard deviation is only calculated if the number of test results is greater than or equal to 2.
23.16.3.1.4	LIMS shall display 'Yes' for Out of Range if the current result is greater or less than 3 standard deviations from the mean.
23.16.3.1.5	LIMS shall not include SampleID = 'MISC' or a SampleID and TestID combination that does not have a historical result.
23.16.3.1.6	LIMS shall display 'Yes' for MaxFlag the current result is greater than 2 times the maximum historical result.
23.16.3.1.7	LIMS shall display 'Yes' for MinFlag if the current result is less than 50% of the minimum historical result.
23.16.3.1.8	LIMS shall display 'Yes' for MaxFlag if the Current Result is greater than 0 and the maximum historical result equals 0.
23.16.3.1.9	LIMS shall display 'No' for MinFlag if the Current Result is greater than 0 and the minimum historical result equals 0.
23.16.3.1.10	LIMS shall display 'Yes' for MaxFlag if the Current Result is greater than 0 and the maximum historical result is less than 0.
23.16.3.1.11	LIMS shall display 'No' for MinFlag if the Current Result is greater than 0 and the minimum historical result is less than 0.
23.16.3.1.12	LIMS shall display 'No' for MaxFlag if the Current Result equals 0 and the maximum historical result is greater than 0.
23.16.3.1.13	LIMS shall display 'Yes' for MinFlag if the Current Result equals 0 and the minimum historical result is greater than 0.
23.16.3.1.14	LIMS shall display 'No' for MaxFlag if the Current Result equals 0 and the maximum historical result equals 0.
23.16.3.1.15	LIMS shall display 'No' for MinFlag if the Current Result equals 0 and the minimum historical result equals 0.
23.16.3.1.16	LIMS shall display 'No' for MaxFlag if the Current Result equals 0 and the maximum historical result is less than 0.
23.16.3.1.17	LIMS shall display 'No' for MinFlag if the Current Result equals 0 and the minimum historical result is less than 0, then the MinFlag is set to 'No'.
23.16.3.1.18	LIMS shall display 'No' for MaxFlag if the Current Result is less than 0 and the maximum historical result is greater than 0.
23.16.3.1.19	LIMS shall display 'Yes' for MinFlag if the Current Result is less than 0 and the minimum historical result is greater than 0.
23.16.3.1.20	LIMS shall display 'No' for MaxFlag if the Current Result is less than 0 and the maximum historical result equals 0.
23.16.3.1.21	If the Current Result is less than or equal to 0 and the minimum historical result is less than 0 then

23.16.3.1.21.1	LIMS shall display 'Yes' for MinFlag if the absolute value of the Current Result divided by the RDL * 0.5 is greater than or equal to 1.
23.16.3.1.21.2	LIMS shall display 'No' for MinFlag if the absolute value of the Current Result divided by the RDL * 0.5 is less than 1.
23.16.3.1.24	If the Current Result is less than 0 and the maximum historical result is less than 0, then
23.16.3.1.25	LIMS shall display 'Yes' for MaxFlag if the absolute value of the Current Result divided by the RDL * 0.5 is greater than or equal to 1 then the MaxFlag is set to 'Yes'.
23.16.3.1.26	LIMS shall display 'No' for MaxFlag if the absolute value of the Current Result divided by the RDL * 0.5 is less than 1.
23.16.3.1.27	LIMS shall display 'No' for MinFlag and 'No' for MaxFlag if the Current Result is less than the RDL and the Mean is less than the RDL.
23.16.3.1.28	LIMS shall not display a SampleID and TestID combination where the Number of Results is less than 5 and the MinFlag = 'No' and MaxFlag = 'No'.
23.16.3.1.29	LIMS shall display the results in the Quality Control Exception Report. The Quality Control Exception Report shall display the Max Flag, Min Flag, Out of Range, Standard Deviations from the Mean, Lab#, SampleID, TestID, Current Result, Last Numeric Result, Max Result, Average Result, Min Result, Standard Deviation, # of Results in LIMS, RDL, Reanalyzed Sample (circle Yes or No), Analyzing Chemist
23.16.3.2	LIMS shall display Organic Section tests on the Exception Report based primarily on the historical results for a SampleID and TestID. The Organic Section does not use MaxFlag, MinFlag or the Out or Range Flag.
23.16.3.2.1	LIMS shall search both current data and archived data based on the SampleID, TestID, and ReportedResult. The ReportedResult can't equal N/A or a blank value. Blank values occur when a SampleID was recently sampled frequently and there may not be a result for a sample or samples.
23.16.3.2.2	LIMS shall add 19 to the start of the Lab# if the Lab# begins in 9, otherwise add 20 and save this to the ID field. This allows LIMS to arrange the test results chronologically.
23.16.3.2.3	LIMS shall not examine SampleIDs that equal 'MISC' or 'TB'.
23.16.3.2.4	LIMS shall search for the last 5 historical results.
23.16.3.2.5	LIMS shall display a TestID will appear on this report if any of the 5 historical results is above the Trace Level (Trace Levels equals the RDL except for 524 where it is ½ the RDL).
23.16.3.2.6	The Quality Control Exception Report for the Organic Section displays SampleID, Collect Date, Lab#, Analysis Date, TestID, Result, Units, NR2 (Numeric Result 2), NR3 (Numeric Result 3), NR4, NR5, NR6, RDL, Action Level, Count and MCL. The Result is the current result. NR2, NR3, NR4, NR5 and NR6 are the last 5 historical results.
23.16.3.3	This report shall be generated in less than 2 minutes, preferably less than 1 minute, for worksheets containing 1000 TestIDs.
23.16.4	LIMS shall print the Data Review Report - Inorganic Section Only. Lists all tests and results for this worksheet.
23.16.4.1	The report shall provide the capability in the report header for a user to enter notes, a signature, and a date.
23.16.4.2	The report shall display the Lat#, Sample ID, Date Sampled, Date Received, Prep Date, Analysis Date, TestID, Flag, Reported Result, Units, Limits (Action Level, MCL, RDL).
23.16.5.	LIMS shall print the UCMR Data Entry - Inorganic Section Only. Used for X200.8U TestGroupID only.
23.16.5.1.	The report shall display the Sample ID, Lab#, Test ID, Reported Result, Numeric Result, Units, Date Analyzed and RDL.
23.16.5.2.	LIMS shall place lines on the report between Lab# for easier reading. This data is read off this report and entered on on web site.

23.17.	LIMS shall print the OCWD-Inorganic ALN Report - Lists Action Level Notifications that were sent in the Inorganic section.
23.18.	LIMS shall print the OCWD-ALN Report - Lists all Action Level Notifications (both Organic and Inorganic Sections).
23.19.	LIMS shall print QC Charts - Printed to satisfy California State Environmental Laboratory Accreditation Program Requirements.
23.19.1.	LIMS shall print Shewhart Quality Control Chart (see Exhibit E)
23.19.1.1.	LIMS shall allow for the selection of a TestGroupID, Analysis Date Range, InstrumentID, QC Code and Detector.
23.19.1.2.	LIMS shall allow for the selection of a TestID.
23.19.1.3.	LIMS shall allow for the selection of the results to chart. LIMS shall allow for selection or deselection of all results.
23.19.1.4.	LIMS shall provide the capability to enter the STD Value, Units, Max Y and Min Y values. The Max and Min Y values are used to scale the Y axis appropriately - a range that is too wide or too narrow will produce charts that aren't legible. LIMS shall generate a QC Control Chart for the next test without having to conduct the search again.
23.19.1.5	The QC Chart shall display the upper and lower control limits (+/- 3 standard deviations from the mean) and the upper and lower warning limits (+/- 2 standard deviations from the mean).
23.19.1.6	The QC Chart shall display the QC Type (Control Standards, Lab Fortified Blanks, etc), the TestGroupID, the instrumentID, the detector, the standard value, analysis date, test results (number of decimals is 3) and the formulas used to calculate the limits.
23.19.2.	LIMS shall print Method Detection Limit and Method Detection Limit (MDL) Summary Report
23.19.2.1.	LIMS shall provide the functionality as described in 23.19.1. If the QC Code = M then LIMS shall provide the capability to print the MDL and the MDL Summary Report.
23.19.2.2.	The MDL report shall display the TestID (Compound), TestGroupID (Method), Instrument, Detector, Spike/Standard level, Units, t distribution @99% confidence limit used to calculate the MDL, MDL, the Analysis Date Range, % RSD (includes the Mean(X), Mean Squared, Standard Deviation), and the t distribution chart.
23.19.2.3.	The MDL Summary Report shall display the TestGroupID (Method), Instrument, Analysis Date range, TestID, MDL and the Units.
23.19.3.	LIMS shall print Initial Demonstration of Capability (IDC) Summary Report - Organic Section Only
23.19.3.1.	LIMS shall provide the functionality as described in 23.19.1.. If the QC Code = H then LIMS shall provide the capability to print the IDC and the IDC Summary Report.
23.19.3.2.	The IDC report shall display the TestID (Compound), TestGroupID (Method), Instrument, Detector, Standard level, Units, the Analysis Date Range and the % RSD (includes the Mean(X), Mean Squared, Standard Deviation).
23.19.3.3	The IDC Summary Report shall display the TestGroupID (Method), Instrument, Analysis Date range, TestID, Mean, Units and the %RSD (in percent, 2 decimals).
23.20.	LIMS shall print UCMR3 Site Blank Report
23.20.1.	The UCMR3 Site Blank report shall list all samples with the SampleID = "SB". The report shall display the Lab#, SampleID, Collect Date, Comments and results for Co mass 59, Cr mass 52, Mo mass 98, Sr mass 88 and V mass 51. The comments section is from the first Notes field only (there are 5 Notes fields, only display the first Note field.). This report links "SB" samples with the appropriate sampling location (for example, the comments may display W/BP-HOLD/1 for a particular "SB" sample).
23.20.2.	This report shall be printed from a worksheet that contains data from the TestGroupID "X200.8U" and only lists "SB" samples that are in the worksheet.

23.20.3.	This report shall display the results for Co mass 59, Cr mass 52, Mo mass 98, Sr mass 88 and V mass 51. If all results are below the following limits, LIMS displays a PASS designation for the SB. If any of the results are above the limits, a FAIL designation is displayed. The limit is 0.066 ug/L for Cr, 0.333 ug/L for Co, 0.333 ug/L for Mo, 0.066 ug/L for V and 0.1 ug/l for Sr.
23.20.4.	The report shall display the following notes on the report.
23.20.4.1.	The upper limit is 0.066 ug/L for Cr, 0.333 ug/L for Co, 0.333 ug/L for Mo, 0.066 ug/L for V and 0.1 ug/l for Sr.
23.20.4.2.	If all results are below the upper limit, then the sample is designated "PASS".
23.20.4.3.	All results are reported in ug/L.
23.21.	LIMS shall print CrVI and Cr QA/QC Report
23.21.1.	The report shall display the text "The CrVI result is greater than 20% of the Cr result. Please check your data and see your supervisor immediately."
23.21.2	The report shall display Lab#, SampleID, TestGroupID, TestID, CrVI Numeric Result, Cr Numeric Result.
23.21.3	The report shall display samples where the CrVI or CrVI-DIS result is greater than the Cr or Cr-DIS result by more than 20%.
23.22.	LIMS shall print Organic Tests Analyzed Past the Extract Hold Date - A list of tests that are supervisor approved and analyzed after the extract hold date.
23.22.1.	The report shall display the title "Organic Samples Analyzed Past the Extract Hold Date".
23.22.2.	The report shall display this text below the title - "The analysis date exceeds the extract hold date for the samples listed below."
23.22.3.	The report shall display the Lab#, SampleID, TestGroupID, Collect Date, Prep Date, Extract Hold Days, Extract Hold Date, Analysis Date, Analyzed By, Supervisor Approval Date, and Resample Requested (Yes/No).
23.23.	LIMS shall print Inorganic Sample Status Report - A list of the status of all samples that were not sent to WRMS.
23.23.1.	The report shall display the title "Inorganic Sample Status Report".
23.23.2.	The report shall display this text below the title - "Samples listed in this report were collected more than 10 days ago and not sent to WRMS."
23.23.3.	The report shall display the Lab#, SampleID, Collect Date, Method (TestGroupID), TestID, Result, Analyzed By, Analysis Date, Approved By, Approved Date, Worksheet Number, andMethod Assigned to.
23.24.	LIMS shall print Tests Analyzed And Not Approved - A list of tests that were analyzed but not approved.
23.25.	LIMS shall print OCWD-Analysis Date Report - A list of both inorganic and organic samples where the analysis date is before the received date. This report does not include field samples.
23.25.1.	The report shall display the title "Orange County Water District Main Laboratory".
23.25.2.	The report shall display this text below the title - "Analysis Date Report for"
23.25.3.	The report shall display the Lab#, Sample Reference (Test Series), SampleID, Test Group, Test, Analysis Date, Received Date, Supervisor Approved?, Date Sent to WRMS, Date Archived, WS# (Worksheet Number), and Notes.
23.26	LIMS shall display OCWD's logo on all reports.
23.27	Performance requirement for reports in section 23 is that each report shall display the information as described in the appropriate requirement and as described in the appropriate report in Exhibit E.
24	Administrative Tools

24.1	LIMS shall provide the functionality, through administrative tools, to create, modify, or delete the following data from reference tables described in section 6. These administrative tools provide an interface to reference tables such that, for example, the following data - QC limits, RDLs, QC samples, Holding Times, Test Series - can be created, modified, or deleted by laboratory staff. This complete list of data is described in section 6. These administrative tools remove the need to write custom code, design queries or access tables directly by laboratory staff when creating, modifying or deleted section 6 data.
24.2	LIMS shall provide the facility to interact with data for training purposes. Changes to this data does not affect active data and LIMS shall provide the same functionality for training data as for active data.
25	LIMS Vendor Services
25.1	LIMS vendor shall provide a comprehensive user manual for LIMS in both paper and electronic format which includes all configuration/customization done by the LIMS vendor.
25.2	LIMS vendor shall develop written technical and functional training material and conduct on-site training sessions with OCWD staff on all aspects of LIMS.
25.2.1	LIMS vendor shall provide on-site training on LIMS, optional modules, and third party software that are necessary to meet the requirements in this document. There shall be training classes all laboratory staff. These training classes shall address the specialized needs of the following user groups: Sample Login, Inorganic Section, Organic Section, Configuration Tools, System Administration, and LIMS Administration.
25.3	LIMS vendor shall provide Go-Live and Post Go-Live Support
26	Look and Feel Requirements
26.1	LIMS shall conform to the established look and feel of OCWD's website ( <a href="http://www.ocwd.com">www.ocwd.com</a> )
26.1.1	LIMS shall display OCWD's logo and "Orange County Water District" "Orange County's Groundwater Authority" on all screens
26.1.2	LIMS shall use OCWD's color palette on all screens
26.1.3	LIMS shall use approved OCWD images as appropriate
26.2	LIMS shall be authoritative - users feel they can rely on it and trust it
26.3	LIMS shall appear state of the art
26.4	LIMS shall be conservative
26.5	LIMS shall be approachable - simple to use



# Laboratory Information Management System (LIMS) Selection and RFP Process



# Goal

A LIMS that will contribute to the laboratory's goal of providing analytical services that enables the District to meet the growing demand for reliable, low cost, and high quality water.

## Objectives

- Move to an upgrade path where future LIMS upgrades are well-established; and move away from the current “run to failure” path and the associated risks.
- Implement all specifications in the Requirements Document.



# History

- 1991 – OCWD’s First LIMS – SmartLab by Telecation, Inc.
- 2001 - Aspen by Telecation, Inc.
- 2009 –The HACH Company ends technical support for Aspen. OCWD purchases Aspen’s source code from the HACH Company.
- 2012 – Laboratory staff actively begins the selection process for the next LIMS.
- 2014 - Consulting service from Astrix Technology group for LIMS selection & implementation.

# Current LIMS Utilization

- LIMS in production since 1991
- 18 concurrent users
- Action Level Notifications (ALNs)
- Quality Control Charts
- 100 reports – provide feedback to staff about data quality based on QC Criteria during data review
- 50 bi-directional instrument interfaces – data is transferred electronically to and from the instrument to LIMS
- Laboratory Monthly Report for Operations



# Why do we need a new LIMS?

- The current LIMS is at the end of its lifecycle.
- The current LIMS is not being developed to keep up with new technologies because the developer of LIMS is no longer in business.
- The developer of the new LIMS will provide a well established upgrade path that will keep the new LIMS up to date with rapidly changing technology.



# What are the benefits of a new LIMS?

- A LIMS that is at the beginning of its lifecycle that takes full advantage of new web-enabled technology.
- Oracle, an enterprise database, will allow for more data to be reviewed and stored in an electronic format rather than a paper format. The cost for paper document storage will be reduced and retrieval of electronic data will be instantaneous.
- Administrative tools that will allow laboratory staff to rapidly configure LIMS as laboratory workflows change.

# What kind of LIMS are we looking for?

- A LIMS that uses an enterprise database – Oracle.
- A LIMS that does not use Microsoft Access.
- A LIMS that has administrative tools which enables laboratory staff to configure LIMS.
- A LIMS that has the instrument interfaces and reports that are in the current LIMS.
- A LIMS that sends Action Level Notifications, prints Quality Control Charts, and provides data for the Monthly Report. These features are available in the current LIMS.

# Survey of LIMS Installations

Laboratory - Location	LIMS – Vendor (service years)
Metropolitan Water District of California – La Verne, CA	Nautilus – ThermoScientific (8 years)
Sanitation Districts of Los Angeles County - Whittier, CA	Horizon LIMS – ChemWare (8 years)
Orange County Sanitation District - Fountain Valley, CA	LabWare LIMS – LabWare (10 years)
City of Henderson - Henderson, Nevada	Matrix Gemini – Autoscribe (11 years)
Eurofins Eaton Analytical, Monrovia, CA	StarLIMS – Abbott Company (8 years)
City of Denver - Denver, Colorado	LabWare LIMS -LabWare
City of Long Beach - Long Beach, CA	Titan – ATL (1 year)
PUB - Singapore	StarLIMS – Abbott Company
Department of Water and Power - Los Angeles, CA	LABWORKS – Perkin Elmer



# RFP Process

- An RFP will be posted on the District's web site. All LIMS vendors will be able to request an RFP and participate in the LIMS selection process.
- The RFP is composed of a Technical Proposal and a Price Proposal.
- District Staff will evaluate **all** RFPs and will select those vendors that pass a set of minimum requirements and with a staff evaluation score above 90%.

# Staff Evaluation Scoring

Criteria	Score
1. Submission of all appropriately completed forms, Statutory Declaration and Certificates. Submission of separate Technical and Price Proposals as specified in the RFP.	Pass/Fail
2. LIMS shall use an Oracle database	Pass/Fail
3. LIMS shall not use Microsoft Access	Pass/Fail
4. Project Approach and Schedule	25
5. Experience and Qualifications of Project Manager	15
6. Experience and Qualifications of Bidder and Key Team Members	15
7. Configured Demo	15
8. Work Plan with Man-hour Estimate	10
9. Record of Success on Similar Projects	10
10. Time Commitment of Staff	10
<b>Total</b>	<b>100</b>



# Final Selection Process

- These LIMS vendors will be invited to present configured demonstrations; the configured demonstration will complete the Technical Proposal.
- Staff will open the Price Proposals for those LIMS vendors whose staff evaluation score is 90% or higher.
- Final selection is determined by the staff evaluation score.



## AGENDA ITEM SUBMITTAL

**Meeting Date:** June 10, 2015

**To:** Water Issues Committee  
Board of Directors

**From:** Mike Markus

**Staff Contact:** R.Herndon/D.Field

**Budgeted:** Yes

**Budgeted Amount:** \$273,000

**Cost Estimate:** \$525,550

**Funding Source:** R&R

**Program/ Line Item No.:** R14026

**General Counsel Approval:** N/A

**Engineers/Feasibility Report:** N/A

**CEQA Compliance:** Categorical Exemption  
to be filled upon project approval.

**Subject: DESTRUCTION OF OCWD-BSO9 MONITORING WELLS AND  
CONSTRUCTION OF REPLACEMENT MONITORING WELL OCWD-  
BS24**

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### SUMMARY

Seawater intrusion monitoring wells OCWD-BSO9A (BSO9A), OCWD-BSO9B (BSO9B) and OCWD-BSO9C (BSO9C), located on the Naval Weapons Station Seal Beach (NWSSB) are 52 years old and have corroded to the point that they need to be destroyed/sealed and replaced. Staff requests authorization to properly destroy monitoring wells BSO9A, BSO9B and BSO9C and construct replacement multi-depth monitoring well OCWD-BS24 (BS24). In addition, staff requests authorization to issue Amendment No. 2 to Agreement No. 0958 with CDM Smith to provide inspection services during destruction and construction work.

### RECOMMENDATION

Agendize for June 17 Board meeting:

1. Authorize filing of a Categorical Exemption for the construction of one monitoring well in compliance with the California Environmental Quality Act (CEQA) guidelines;
2. Authorize destruction of monitoring wells BSO9A, BSO9B and BSO9C, and construction of replacement monitoring well OCWD-BS24; and
3. Authorize issuance of Amendment No. 2 to Agreement No. 0958 with CDM Smith in the amount of \$56,550 for additional field inspection services required for the destruction of BSO9A, BSO9B and BSO9C, and construction of replacement nested monitoring well OCWD-BS24

### BACKGROUND/ANALYSIS

Monitoring wells BSO9A, BSO9B and BSO9C (BSO9 wells) were installed in 1963 by the California Department of Water Resources (DWR) in cooperation with OCWD to investigate seawater intrusion in the Sunset Gap area of Seal Beach. The BSO9 wells consist of a cluster of two nested multi-depth and one single-point monitoring wells installed approximately ten feet apart. These wells are located on the NWSSB within the Seal Beach National Wildlife Refuge. The locations of the BSO9 wells and

proposed replacement well BS24 are shown on Figure 1. As part of its ongoing seawater intrusion monitoring, District staff samples the BSO9 wells semi-annually, and gauges water levels six times per year. The wells have provided valuable information to the District to assist in managing the groundwater basin.

Unfortunately the mild steel and PVC well casings have deteriorated/corroded, causing production of sand and silt during airlift sampling. In addition, the water level draws down to the bottom of many of the casings during sampling, and recharges very slowly. Staff has concluded that the structural integrity of the wells has been compromised, calling into question the representativeness of any future data collected from them. Therefore, due to the irreparable problems listed above, the location in a sensitive wildlife habitat area, and the importance of salinity monitoring in this area, the BSO9 wells should be properly destroyed and replaced. Due to construction limitations in that area during bird nesting season, the work must be completed between September 15, 2015 and March 1, 2016. Replacement monitoring well BS24 will include six casings and well screens installed in a single borehole, providing groundwater level and quality data at different aquifer zones. The total estimated cost for destruction of the BSO9 wells and construction of replacement nested monitoring well BS24 is \$525,550 (Table 1). The existing budget of \$273,000 is for replacement of monitoring well BSO9A only. However, due to the problems listed above, staff has recently determined that both BSO9B and BSO9C also need to be replaced.

For the District's ongoing Sunset Gap groundwater investigation, CDM Smith (CDM) has been providing inspection services during the construction of six seawater intrusion monitoring wells on the NWSSB under Agreement No. 0958. CDM is currently approved by the Navy for entry onto the NWSSB. Given the habitat protection time constraints in completing the well destruction/construction, and CDM's base access status and inspection experience, staff recommends issuing an amendment to our current agreement to provide inspection services during the destruction of the BSO9 wells and construction of replacement well BS24. Staff requested and received a cost estimate from CDM for these services. As CDM was selected through a competitive proposal process and has performed well during the Sunset Gap monitoring well constructions, CDM is ideally qualified to provide these inspection services.

Staff has been coordinating with the US Fish and Wildlife Service and the Navy in preparation for the destruction of the BSO9 wells and construction of BS24. We have recently been cleared by both parties to destroy the BSO9 wells and construct BS24 after the nesting season.

**Table 1. Estimated Costs for BSO9 Monitoring Well Destructions and Construction of Replacement Monitoring Well OCWD-BS24**

Task	Cost Estimate
BSO9 Well Destructions	\$ 48,000
OCWD-BS24 Well Construction (replacement well)	360,000
Inspection Services	56,550
Geophysical Utility Clearance	1,400
Well Surveying	2,000
Navy License Agreement	9,600
SUBTOTAL:	477,550
CONTINGENCY:	48,000
<b>TOTAL:</b>	<b>\$ 525,550</b>

**PRIOR RELEVANT BOARD ACTION(S)**

None

**Figure 1 Location Map**





## AGENDA ITEM SUBMITTAL

**Meeting Date:** June 10, 2015

**To:** Water Issues Committee  
Board of Directors

**From:** Mike Markus

**Staff Contact:** J. Kennedy / C. Olsen /  
R. Bouley

**Budgeted:** Yes

**Budgeted Amount:** \$213,424

**Cost Estimate:** \$213,424

**Funding Source:** R&R fund

**Program/Line Item No.** R12034

**General Counsel Approval:** NA

**Engineers/Feasibility Report:** NA

**CEQA Compliance:** Yes

**Subject:** CONTRACT NO. B-2014-1: BURRIS PUMP STATION PROJECT PHASE 2  
**CONSTRUCTION: AMENDMENTS TO AGREEMENTS WITH TETRA TECH INC.,**  
**BUTIER ENGINEERING, INC. AND BEAVENS SYSTEMS, INC.**

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### SUMMARY

Construction of the Burris Pump Station Project - Phase 2 began in September of 2014. This phase of construction includes all structural, mechanical, electrical and final site improvements. Due to the duration and complexity of this phase of the project, staff recommends authorizing amendments to the agreements with Tetra Tech, Inc. (Tetra Tech) and Butier Engineering, Inc. (Butier) for additional construction engineering and construction management services. In addition, staff recommends authorizing an amendment to the agreement with Beavens Systems Incorporated (Beavens) to complete SCADA integration of the pump station concurrent with the completion of construction.

#### Attachment(s):

- Tetra Tech proposal dated April 27, 2015
- Butier proposal dated May 6, 2015
- Beavens proposal dated May 5, 2015

### RECOMMENDATION

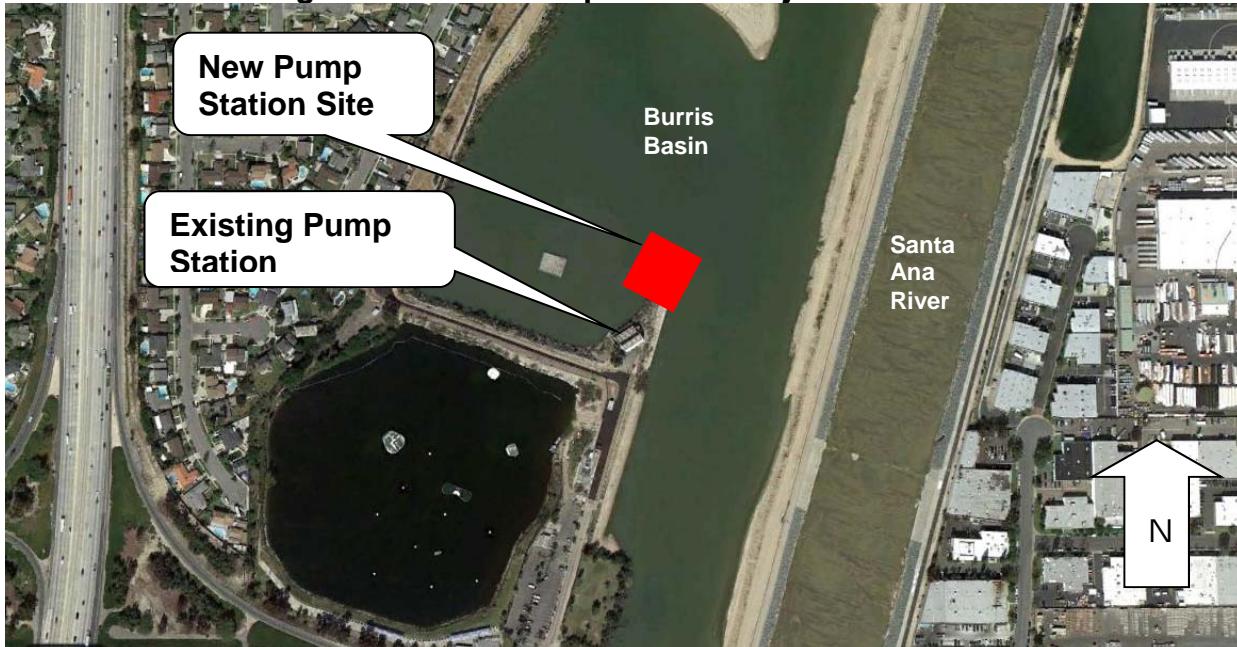
Agendize for June 17 Board meeting:

1. Authorize issuance of Amendment No. 2 to Agreement No. 0878 with Tetra Tech, Inc. for an amount not to exceed \$92,200 for additional construction engineering services;
2. Authorize issuance of Amendment No. 1 to Agreement No. 0982 with Butier Engineering, Inc. for an amount not to exceed \$96,000 for additional construction management, inspection and material testing services; and
3. Authorize issuance of a no cost Amendment No. 1 to Agreement No. 0920 with Beavens Systems Inc. to reallocate \$25,224 to Burris Pump Station SCADA Support and extend the expiration date of Agreement for On-Call Services for Control System Design Review Integration through June 30, 2017.

## BACKGROUND/ANALYSIS

The Burris Pump Station was constructed in 1989 as part of what was referred to as the "Santiago Creek Replenishment Project". This pump station allows the District to pump captured storm water from the Santa Ana River through a 66-inch pipeline for storage and recharge at the Santiago Basins. The Burris Pump Station typically operates in the winter following significant rain events, allowing OCWD to capture and recharge water that would otherwise be lost to the ocean. During a typical winter, an average of 34,000 acre-feet per year of water will be pumped from Burris Pump Station to the Santiago Basins and Santiago Creek for recharge. Figure 1 shows the layout of the Burris Basin and Burris Pump Station.

**Figure 1: Burris Pump Station Project Site Plan**



The Burris Pump Station is over 25 years old and the pumps and motors are nearly worn out. Staff developed a project to replace the existing Burris Pump Station due to concern that failure of one or more of the pumping units would occur and severely impact the District's ability to move water from Burris Basin to Santiago Basin. The Board authorized Agreement 0878 with Tetra Tech for Engineering Services for the Design of Burris Pump Station on October 17, 2012. Design of Phase 1 commenced in November of 2012, and Phase 2 final design was completed in April of 2014. The Board authorized Agreement 0982 with Butier for Construction Management Services for Burris Pump Station Project on April 16, 2014. A public works contract was advertised for the Burris Pump Station Phase 2 on June 18, 2014, and the Board of Directors awarded this contract to Pacific Hydrotech Corporation on August 20, 2014.

Tetra Tech is the design Engineer of Record for the Burris Pump Station Phases 1 and 2. The Board authorized Amendment No.1 to Agreement 0878 with Tetra Tech in August of 2014 for specialty structural inspections, project site visits, and additional shop drawing, submittal, and request for information (RFI) review to be performed on a Time and Materials Basis. Several submittals, including the pumps, motors, programmable logic controllers (PLCs), variable frequency drives (VFDs), SCADA programming, medium voltage switchgear, structural concrete rebar, and bridge crane require detailed review by the Engineer of Record to assure that the project is constructed properly in conformance with

the plans and specifications. Including Amendment No. 1, the Agreement with Tetra Tech includes reviewing 62 submittals with a budget of \$75,730 and 30 RFIs with a budget of \$17,380. The quantity of shop drawings, submittals, and RFIs reviewed so far during the Phase 2 construction is greater than previously anticipated, and the cost for Tetra Tech to review the shop drawings and submittals has exceeded their original budget by approximately \$190 per review. Based upon current project progress, Tetra Tech will require an amendment for 66 additional shop drawings/submittals and 20 additional RFIs. Tetra Tech has committed to completing the remainder of shop drawing and submittal reviews at the originally budgeted unit price per review, regardless of actual cost. Staff requests the issuance of Amendment No. 2 to Agreement No. 0878 with Tetra Tech for an amount not to exceed \$92,200 for additional shop drawing, submittal and RFI review.

Butier is assisting OCWD with Construction Management duties onsite during Phase 2 construction. Butier's scope of work includes day-to-day inspection and specialty structural, mechanical, and electrical inspections. Butier has enlisted the help of two sub consultants on the project: Leighton Group, Inc. (Leighton) to perform material testing; and On-Site Technical Services (On-Site) to perform mechanical inspection of the pumps. The total amount of the Agreement with Butier is 926,752. Leighton's portion of this Agreement is \$198,812, and On-Site's portion of this Agreement is \$75,080. Early in construction, additional injection grouting required additional observation and materials inspection time from Leighton. The duration of construction observation and the number of material tests required from Leighton during construction are greater than originally anticipated in OCWD's agreement with Butier. In addition, Butier will utilize On-Site's services to perform inspections at the pump manufacturers' facilities in Brazil and Pennsylvania. At the time this Agreement with Butier was executed, the location of this testing was not known. As a result, an amendment to the agreement with Butier is needed for Leighton and On-Site to assure that all components of the new Burris Pump Station are constructed in accordance with the project plans and specifications. Staff requests issuance of Amendment No. 1 to Agreement No. 0982 with Butier for an amount not to exceed \$96,000 for additional inspection and material testing services. This consists of approximately \$72,000 for Leighton to perform additional material testing and \$24,000 for On-Site to perform pump inspection at the manufacturers' facilities.

Staff has worked with Beavens to assure that the control systems installed in the new Burris Pump Station function properly and communicate with OCWD's existing SCADA system. The Board authorized Agreement 0920 with Beavens in June of 2013, with an expiration date of June 30, 2015. The scope of work consists of providing On-Call Services for Control System Design Review Integration for the design and construction of several OCWD projects. Agreement 0920 includes funding for Beavens to review the construction drawings and specifications for the Burris Pump Station, and Beavens has completed this task. In the time since this agreement was executed, other projects included in Agreement 0920 have been completed, or the scope of work has been included with other contracts. This has left a portion of the funds in Agreement 0920 unused. OCWD now requires Beavens' services to integrate the Burris Pump Station into the existing SCADA network and assure proper communication and functionality. Staff requests issuance of a no cost Amendment No. 1 to Agreement No. 0920 with Beavens to extend the agreement for SCADA Services through July/2017, and to reallocate unused budget in the agreement to the SCADA support and integration during construction of the Burris Pump Station.

The following is a summary of the additional work:

- Staff requested that Tetra Tech provide a proposed scope of services for additional shop drawing, submittal and RFI review. The total proposed additional cost is \$92,200.
- Staff requested that Butier provide a proposed scope of services for additional inspection and material testing services. The total proposed additional cost is \$96,000.
- Staff requested that Beavens provide a proposed scope of services for SCADA support and integration during the construction of Burris Pump Station. The total proposed cost of this work is \$25,224. The existing agreement with Beavens currently includes \$25,224 in scope that will not be performed by Beavens. This will allow Beavens to complete the additional work associated with the Burris Pump Station without increasing the overall amount of the existing agreement.

## SCHEDULE AND BUDGET

Burris Pump Station Phase 2 construction started in September of 2014 and is anticipated to take approximately 2 years to complete. Table 2 shows the current schedule for the project.

**Table 2**  
**Burris Pump Station Project Schedule**

Description	Date
Advertise for Phase 1 Construction	June 2013
Award Phase 1 Construction	July 2013
Complete Phase 1 Construction	November 2013
Advertise Phase 2 Construction	June 2014
Award Phase 2 Construction	August 2014
Complete Phase 2 Construction	October 2016

Funds for the Burris Pump Station Project are included in the FY 2014-15 R&R Budget. Staff anticipates that approximately \$5,500,000 will be spent in FY 2014-15 and approximately \$12,000,000 will be spent in FY 2015-16, with the remainder of the project expenditures occurring in FY 16-17. A summary of the project budget can be seen in Table 3.

**Table 3**  
**Burris Pump Station Project Budget**

Description	Budgeted	Projected Expenses
<b>Design</b>		
Design Contract	\$ 990,980	\$ 990,980
- Amendment No. 1 (includes specialty structural inspection)	\$ 161,700	\$ 161,700
- <i>Amendment No. 2 to Tetra Tech for Construction Engineering Services</i>	\$ 0	\$ 92,200
<b>Construction</b>		
Construction Contract		

Phase 1 – Cofferdam	\$ 1,334,800	\$ 1,334,800
Change Order #1	\$ 51,250	\$ 51,250
Testing Services (Phase 1)	\$ 77,520	\$ 77,520
Phase 2 – Pump Station Construction	\$ 20,439,800	\$ 20,439,800
Construction Management/Inspection -	\$ 926,800	\$ 926,800
- <i>Amendment No. 1 to Butier Engineering for Inspection/ Material Testing Services</i>	\$ 0	\$ 96,000
<i>SCADA Integration and Programming</i>	\$ 0	\$ 25,224
<b>Project Contingency</b>	<b>\$ 1,217,150</b>	<b>\$ 1,003,726</b>
<b>Total</b>	<b>\$ 25,200,000</b>	<b>\$ 25,200,000</b>

Staff recommends issuing Amendment No. 2 to Agreement 0878 with Tetra Tech for an amount not to exceed \$92,200 for additional Construction Engineering Services, issuing Amendment No. 1 to Agreement No. 0982 with Butier for an amount not to exceed \$96,000 for additional inspection and material testing services, and issuing a no cost Amendment No. 1 to Agreement No. 0920 with Beavens to reallocate \$25,224 to Burris Pump Station SCADA Support and extend the expiration date of the Agreement for On-Call Services for Control System Design Review Integration through June 30, 2017.

#### **PRIOR RELEVANT BOARD ACTION(S):**

8/20/2014, R14-8-117 - Award the construction contract to Pacific Hydrotech Corp. for an amount not to exceed \$20,439,800, issue Amendment No. 1 to Agreement No. 0878 with Tetra Tech for additional work and specialty structural inspection, and to approve the total proposed project budget in the amount of \$25.2 million

4/16/2014, R14-4-54 - Authorize issuance of Agreement to Butier for an amount not to exceed \$926,800 for the Contract No. B-2104-1, Burris Pump Station Project - Phase 2 construction management services

3/19/2014, M14-00 - Ratify Change Order No. 1 to Pacific Hydrotech Corp for Contract No. B-2013-1, Burris Pump Station Project - Phase 1 in the amount of \$51,250, and accept completion of work and authorize filing of Notice of Completion

12/18/13, M13-176 1) Authorize publication of Notice Inviting Bids for Contract No. B-2014-1: Burris Pump Station Project Phase 2 Construction; and 2) Authorize issuance of a Request For Proposals for construction management services for the Burris Pump Station Project Phase 2 Construction

7/24/13, R13-7-95 - Award Contract No. B-2013-1, Burris Pump Station Project, To Pacific Hydrotech Corp and Authorize Issuance of Agreement to Leighton Consulting

6/19/13, R13-6-70 - Approve Final Design of Burris Pump Station Phase 1 Design and Adopt Final Initial Study/Mitigated Negative Declaration

4/17/13, M13-52 - Authorize publication of Notice Inviting Bids for Contract No. B-2013-1: Burris Pump Station Project Phase 1 Construction

10/17/12, R12-10-126 - Authorize Agreement to Tetra Tech for an amount not to exceed \$990,980 for the design of the Burris Pump Station

7/18/12, M12-111 - Issue Request for Proposals for the Burris Pump Station design

1/18/12, R12-1-5 – Agreement to Black & Veatch for an amount not to exceed \$98,800 for engineering services for evaluation of the Burris Pump Station



**TETRA TECH**

April 27, 2015

Mr. Chris Olsen, P.E., Assistant Director of Engineering  
Orange County Water District  
18700 Ward Street  
Fountain Valley, CA 92708

**Reference:      Burris Pump Station  
                  Additional Construction Support Services – Amendment No. 2**

Dear Mr. Olsen:

Tetra Tech has been providing construction support services on the Burris Pump Station Project since September 2014 under Agreement No. 0878, including Amendment No. 1. Our original approved budget for this project included \$112,000 for construction phase services. Amendment No. 1 added \$49,700 for additional shop drawings, structural observations/special inspections and site visits. Therefore, our approved budget for construction support services is \$161,700.

Tetra Tech has been providing construction support services on a Time and Material Basis. Construction support services depend greatly on the Contractor's construction schedule, the adequacy of his submittals, the requested changes in the shop drawings, the details of any modifications requested by the Contractor, the amount of re-submittals, and the amount of scope the construction manager will complete instead of the design engineer.

In the process of performing the construction support services, Tetra Tech has had to review an additional forty (40) shop drawings and ten (10) RFIs (Request for Additional Information). By this correspondence, Tetra Tech is requesting approval of Amendment No. 2 authorizing additional monies to allow Tetra Tech to continue providing the construction support services requested by the District.

**ADDITIONAL CONSTRUCTION SUPPORT SERVICES**

***Original Proposal***

Our original proposal included the following construction support services. It should be noted that the quantity assumed in the original proposal was established by the District within the RFP:

***Task 3.1: Project Management:*** Attend construction meetings as needed to support OCWD and OCWD's construction manager. For the proposal, the District specified a total of twelve (12) weekly construction meetings (one per month) of one hour in length. Budget of \$5,460.

***Task 3.2: Shop Drawing Review:*** Review Contractor submittals for completeness and conformity with the contract documents. Review any deviations or substitutions submitted by the Contractor and make recommendations to OCWD.

For the proposal, the District specified a total of 50 shop drawings and that each shop drawing review will require no more than the original and a second review. Budget of \$60,730.

**Task 3.3: Requests for Information (RFIs):** Review Contractors request for information (RFI) and prepare responses to the Contractor. Prepare any revisions to contract documents necessary to resolve conflicts. For the proposal, the District specified a total of 30 RFIs of which eight (8) will require minor revisions to the plans. Budget of \$17,380.

**Task 3.4: O & M Manual:** Prepare a complete O & M Manual, (6 hardcopies and 1 pdf). Provide complete operation and maintenance manuals which will include specifications and warranty information. Tetra Tech will collect and compile all equipment and product information and specifications from the Contractor, which will then be incorporated into the O&M manual. Budget of \$8,340.

**Task 3.5: Record Drawing Preparation:** As appropriate, Tetra Tech will incorporate OCWD comments and/or revisions to documents and finalize all record documents, this may include updating existing record drawings. Provide two copies each of the final documents in digital and hardcopy. All drawings shall be completed and provided in mylar format at the end of the project. A CD-ROM will be provided at the end of the project containing the drawings in both the most recent versions of AutoCAD (dwg format) and Adobe Acrobat (pdf format). Budget of \$13,310 and additional \$6,780 for reproduction/mileage.

#### ***Additional Construction Support Services (approved by Amendment No. 1)***

**Task No. 10: Additional Shop Drawings:** The District increase the total number of shop drawings from 50 to 62 or an additional 12 shop drawings. The additional budget for this optional task is **\$15,000**.

**Task No. 11: Structural Observations and Special Inspection:** Tetra Tech will perform site visits for structural observations and special inspections specified on Sheet S-002 as an “on-call” basis as requested by the District. We envision of the following items will require structural observations: the wet well mat foundation reinforcing; the wet well wall reinforcing; the wet well roof slab reinforcing; the pump station foundation reinforcing; the pump station wall panel reinforcing; and the structural steel installation. This task will be performed on a time and material basis with a budget of **\$30,000**.

**Task No. 12: Site Visits:** The District included a budget for a total of ten (10) site visits (of two hours in duration, maximum) by a civil, mechanical, structural, or electrical engineer to resolve issues that arise during construction. The site visits would be on an “on-call” basis to support the construction manager. The additional budget for this task is **\$4,700**.

The following is a summary of the approved construction support services and the corresponding budgets:

Mr. Chris Olsen, P.E.  
 April 27, 2015  
 Page 3

<b><i>Task Description</i></b>	<b><i>Original Quantity</i></b>	<b><i>Amend #1 Quantity</i></b>	<b><i>Total Quantity</i></b>	<b><i>Budget Amount</i></b>
Attend Construction Meetings	12	0	12	\$ 5,460
Review Shop Drawings	50	12	62	\$ 75,730
Respond to RFIs	30	0	30	\$ 17,380
Prepare O & M Manual	1	-	1	\$ 8,340
Prepare Record Drawings	1	-	1	\$ 20,090
Structural Observations/Inspections	-	25	25	\$ 30,000
Site Visits	-	10	10	\$ 4,700
<b>Total Not-to-Exceed Amount</b>	--	--	--	<b>\$ 161,700</b>

***Construction Support Services as of Date of Correspondence***

The following is a summary of the construction support services and corresponding costs if we assume the proposal unit price as of the date of this correspondence:

<b><i>Task Description</i></b>	<b><i>Quantity</i></b>	<b><i>Budget</i></b>	<b><i>Actual Quantity</i></b>	<b><i>Costs if Assume Proposal Unit Price</i></b>
Attend Construction Meetings	12	\$ 5,460	2	\$ 910
Review Shop Drawings	62	\$ 75,730	105	\$128,250
Respond to RFIs	30	\$ 17,380	40	\$ 23,170
Prepare O & M Manual	1	\$ 8,340	--	\$ 0
Prepare Record Drawings	1	\$ 20,090	--	\$ 0
Structural Observations/Inspections	25	\$ 30,000	8	\$ 9,600
Site Visits	10	\$ 4,700	2	\$ 940
<b>Totals</b>	--	<b>\$ 161,700</b>	--	<b>\$ 162,900</b>

Due to the large number of structural submittals and the Contractor's requested structural modifications, Tetra Tech's structural group was required to expend more labor to review the shop drawings than expected in the original proposal. The original proposal was based on about \$1,220 per shop drawing and currently we have had to spend about \$1,410 per shop drawing.

However, Tetra Tech will maintain the unit price per shop drawing submittal as assumed in our original proposal for the additional construction support services requested below.

## REQUESTED ADDITIONAL CONSTRUCTION SUPPORT SERVICES

Based on the status of the construction progress and the construction work remaining, Tetra Tech recommends the following additional construction support services be approved by the District:

<b>Task Description</b>	<b>Current Approved</b>		<b>Requested Additional</b>		<b>Total Recommended</b>	
	<b>Quantity</b>	<b>Budget</b>	<b>Quantity</b>	<b>Budget</b>	<b>Quantity</b>	<b>Budget</b>
Construction Meetings	12	\$ 5,460	0	\$0	12	\$ 5,460
Shop Drawings	62	\$ 75,730	66	\$ 80,610	128	\$ 156,340
RFIs	30	\$ 17,380	20	\$ 11,590	50	\$ 28,970
O&M Manual	1	\$ 8,340	--	\$0	1	\$ 8,340
Record Drawings	1	\$ 20,090	--	\$0	1	\$ 20,090
Structural Observations	25	\$ 30,000	--	\$0	25	\$ 30,000
Site Visits	10	\$ 4,700	--	\$0	10	\$ 4,700
<b>Totals</b>	--	<b>\$ 161,700</b>	--	<b>\$ 92,200</b>	--	<b>\$ 253,900</b>

Tetra Tech is requesting the approval of the additional construction support budget of **\$92,200**. In summary, Amendment No. 2 will increase our approved budget for Construction Support Services from \$161,700 to **\$253,900**. Our approved budget of \$1,152,680 will be increased to a total of **\$1,244,880**.

If you have any questions or require additional information, please do not hesitate to call.

Sincerely,



Tom Epperson, P.E.  
Project Manager, Vice President  
Water, Environment and Infrastructure

TLE/te

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Orange County Water District  
Orange County Sanitation Districts  
City of Santa Ana

June 4, 2015

Orange County Water District  
18700 Ward Street  
Fountain Valley, CA 92708  
Attn: Mr. Ryan Bouley, Project Manager.

**Subject: Change Order Request No 1: Construction Management Services and Materials Inspection Services for the Burris Pump Station Project—Phase 2**

Dear Mr. Bouley:

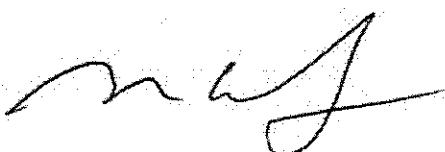
Based on our evaluation of the current project demands and the updated CPM schedule provided by Pacific Hydrotech, Butier is requesting an additional \$96,000.00 to complete our required services.

**Materials Testing: Leighton Group, Inc.:** Leighton is performing material testing as a sub-consultant to Butier. Additional injection grouting was required in the early construction phase of the project. Field conditions required supplementary observation and materials inspection time. The duration of construction observation and the number of material tests required during construction are greater than originally anticipated in OCWD's agreement with Butier. We are requesting an additional \$72,000 to complete the materials testing scope. Please see the attached breakdown of services.

**In-Plant Pump Fabrication/QA/QC, On-Site Technical:** The pumps for the Burris project will be fabricated outside the United States. Casting and motors are currently sourced from numerous international fabricators in different continents. Confirming that the design, materials and performance criteria are tightly monitored will be critical to meeting schedule milestones and overall product quality. Our ability to proactively address in-plant issues will eliminate post-delivery fixes and associated schedule impacts. Butier has engaged On-Site Technical services to perform these services. We are requesting a budget of \$24,000.00. This estimate will be adjusted up or down after confirmation of the shop locations.

If you have any questions regarding our proposal, please direct them to me for clarification at (714) 832-7222.

Respectfully Yours,  
**BUTIER**  
Construction Managers, Consulting Engineers



Mark M. Butier, Jr.  
Vice President/CFO

# BEAVENS SYSTEMS INCORPORATED

383 Van Ness • Suite 1604 • Torrance, CA 90501  
Phone 310.376.0506 • Fax 310.376.0599 • Email [greg@beavens.com](mailto:greg@beavens.com)

May 5, 2015

Ryan Bouley  
Orange County Water District  
10500 Ellis Ave.  
Fountain Valley, CA 92728-8300

RE: Burris Pump Station SCADA integration.

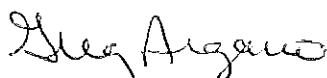
Ryan,

Here is your requested cost estimate for the integration of the Burris Pump Station Wonderware application into the FHQ Wonderware SCADA system. The project will have a couple of phases. In the first phase we will connect the “un commissioned” pump station into the SCADA system with a extra Allen-Bradley Ethernet module and Moxa switch. This will allow SCADA to monitor the 3 existing stations that are connected via the existing Burris Pump Station. The existing stations communications will need to be programmed into the new Burris Pump Station (We have supplied the polling code to the contractor). The communications will be from the remotes to the new pump station PLC, then through the new Ethernet module to SCADA. We also will provide and incorporate new radios for communications to Riverview Basin and a future connection to Fletcher Basin. All of these communications channels will be moved, when ready, but most likely before the new pump station is complete and commissioned. After commissioning, the two networks will be connected together and the system will continue to function seamlessly. We also will be integrating a subset of the contractor supplied graphics and data into the current SCADA system. We are providing all the configuration for the communications equipment, new radios, switches and SCADA.

The cost breakdown is:

Hardware and sales tax	\$ 6,083.63
Custom Software and support	\$19,140.00
<hr/> <b>\$25,223.63 Total</b>	

Regards;



Greg Argano



## AGENDA ITEM SUBMITTAL

**Meeting Date:** June 10, 2015

**To:** Water Issues Committee  
Board of Directors

**From:** Mike Markus

**Staff Contact:** B. Smith / C. Olsen

**Budgeted:** Yes

**Budgeted Amount:** \$27,868.50

**Cost Estimate:** \$27,868.50

**Funding Source:** R&R

**Program/Line Item No.** R07002

**General Counsel Approval:** N/A

**Engineers/Feasibility Report:** N/A

**CEQA Compliance:** N/A

**Subject: AGREEMENT TO CINNABAR FOR HALLWAY CONSTRUCTION AND EGRESS LIGHTING SUPPORT SERVICES**

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### SUMMARY

The ongoing Hallway Education Corridor Project's construction has been executed in phases. The current construction phases to install new walls, add a door, and install exhibit lighting are nearing completion. As part of preparing the corridor space for the exhibits provided under the existing Discovery Science Center agreement, new egress lighting and construction plans were required and designed by Cinnabar.

### RECOMMENDATION

Agendize for the June 17 Board meeting: Authorize issuance of Agreement to Cinnabar for an amount not to exceed \$27,868.50 for hallway construction and egress lighting support services.

### BACKGROUND/ANALYSIS

In 2012, the District entered into an agreement with Discovery Science Center to design and fabricate exhibits for the Education Corridor. In order to support the future exhibits, the District has hired various Contractors, under the General Manager's signing authority, to execute demolition and improvements within the space. The next phase of work was to remove the wall furring along both sides of the hallway, remove the soffit, remove existing lighting, construct structurally supportive furring walls, construct soffit with new egress lighting, construct new doorway, and modify existing electrical circuits. The hallway walls have been reconstructed to structurally support the new exhibits and a new door way has been constructed to separate the hallway from the mail and break rooms. As part of the original Discovery Science Center agreement, a design for lighting to accent and enhance the exhibits has been prepared.

To obtain biddable documents for these respective construction phases, District staff asked Cinnabar to provide construction support services in the form of design plan sheet production and project coordination. Staff also asked Cinnabar to perform electrical engineering tasks associated with egress lighting of the main administration building corridor. Additionally, a trim piece needs to be designed, procured, and installed along the exhibit lighting opening in the hallway soffit. Cinnabar has provided a

quote to perform these services. Staff recommends issuance of an Agreement to Cinnabar for an amount not to exceed \$27,868.50 for Hallway Construction and Egress Lighting Support Services.

### **PRIOR RELEVANT BOARD ACTION(S)**

5/20/15, R15-5-XX: Agreement to Academy Electric Inc. for Hallway Exhibit Lighting Installation

4/1/15, R15-4-39 - Authorize issuance of Amendment No. 1 to A2Z Construct, Inc. for an amount not to exceed \$2,710 for electrical and structural changes.

2/18/15, R15-2-20 - Authorize Agreement to A2Z Construct, Inc. for Hallway Demolition and Construction of Walls and Doorway for an amount not to exceed \$32,600.

7/2/14, M14-103 – Authorize budget increase for Water Education Corridor Project.

6/20/12, R12-6-74 - Agreement with the Discovery Science Center in an amount not to exceed \$1,230,500 to design, fabricate, install and provide project management of the OCWD Water Education Corridor Project.



## AGENDA ITEM SUBMITTAL

**Meeting Date:** June 10, 2015

**To:** Water Issues Committee  
Board of Directors

**From:** Mike Markus

**Staff Contact:** C. Olsen/B. Dunivin

**Budgeted:** Yes

**Proposed Budget:** \$24,750

**Cost Estimate:** \$24,750

**Funding Source:** R&R

**Program/Line Item No.** R14003

**General Counsel Approval:** NA

**Engineers/Feasibility Report:** NA

**CEQA Compliance:** NA

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**Subject: AGREEMENT TO OLIVER TWIST CHIMNEY SWEEP FOR  
ADMINISTRATION BUILDING HVAC DUCT CLEANING**

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### SUMMARY

Staff received quotes for cleaning the administration building HVAC duct system and recommends issuing an agreement to Oliver Twist Chimney Sweep for an amount not to exceed \$24,750.

Attachment(s): Oliver Twist Chimney Sweep proposal dated May 29, 2015

### RECOMMENDATION

Agendize for June 17 Board meeting: Authorize issuance of an Agreement to Oliver Twist Chimney Sweep for an amount not to exceed \$24,750 for the Administration Building HVAC duct cleaning.

### BACKGROUND/ANALYSIS

The Orange County Water District currently has two related projects underway for the Admin Building: the Fire Alarm System Upgrade (Agreement awarded to Cal Building for installation services) and the HVAC Upgrade Project (design Agreement awarded Rosenberg +Associates). Both projects involve working with the HVAC ducting and the Fire Alarm System Upgrade Project includes replacing 22 duct detectors within the next two months.

The Administration Building duct cleaning was originally scheduled with the HVAC Upgrade Project that will take place in the Winter of 2016; however staff verified with Cal Building and Rosenberg that it would be beneficial to perform the duct cleaning prior to installing the new duct detectors located inside the HVAC ducting.

A Request for Quotes (RFQ) for duct cleaning services for the Admin Building was prepared and three firms responded. Quotes were received from Oliver Twist Chimney Sweep and Airtek; American Air Balance declined to bid. Those results are presented in Table 1.

**Table 1: Cost Proposal**

<b>Firm</b>	<b>Proposed Fee</b>
Oliver Twist Chimney Sweep	\$ 24,750
Airtek	\$ 47,528
American Air Balance	Declined

Oliver Twist Chimney Sweep has performed duct cleaning for the District in the past and staff recommends awarding a Professional Services Agreement to Oliver Twist Chimney Sweep for an amount not to exceed \$24,750 for the Administration Building HVAC duct cleaning.

Since the duct cleaning includes the Municipal Water District of Orange County (MWDOC). The project will be cost shared with MWDOC.

**PRIOR RELEVANT BOARD ACTION(S)**

3/18/15 R15-3-34: Authorize issuance of a Agreement to Rosenberg + Associates for an amount not to exceed \$88,000 for the OCWD Administration Building HVAC Upgrade Project.

1/21/15 M15- 11: Authorize issuance of a Request for Proposals for the OCWD Admin Building HVAC Upgrade Project.



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## Air Duct Cleaning Bid

May 29, 2015

Orange County Water District  
Attn: Chris Olsen  
18700 Ward Street  
Fountain Valley, CA 92708

Re: Cleaning of the 4 multi - ton HVAC systems on the roof and corresponding air ducts and register grills.  
All other HVAC units will be locked out and tagged out per OSHA requirements.

Dear Chris:

Thank you for having me provide you with this proposal. The following is a description of the Fountain Valley offices.

There are 4 multi- ton HVAC rooftop units servicing the office and work areas. The air conditioners are complimented with sheet metal and flex ducts that correspond to the supplies and returns. There are approximately 300 supplies and returns servicing the office areas.

We will remove filters that were installed in ceiling air supplies that are blocking air flow. If new filters are desired consult HVAC contractor.

We will clean the entire systems by brushing, power scrubbing, and vacuuming all interior surfaces as needed, using HEPA (High Efficiency Particle Arrestor) filtered collection vacuums. This method of cleaning will ensure that dirt and dust is removed. The HEPA filtered vacuums will prevent the dust and other contaminants, which are in the systems, from being blown into or throughout the offices during our cleaning process. All of our equipment is manufactured to meet or exceed OSHA, EPA, & NADCA standards for cleaning the air of nuisance dust.



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We are one of the most referred companies in the industry of Southern California. We have built a reputation for both our service and the quality of our product.

### Scope of Work:

Cleaning of the HVAC systems on the roof and corresponding air ducts and register grills and inspection of the air filters. Reseal leaking and loose plenums and ducts with mastic if needed. Any rolling scaffolding will be supplied by Oliver Twist Company.

### General Conditions:

Supervision: Work shall be supervised by foreman, JC and Steve Lovsteen, who have thorough knowledge and experience in the cleaning of air conditioning systems. We are state licensed contractors #772513. We are also OSHA certified for lock tag. The work shall be performed by experienced and qualified personnel.

Labor and Materials: Oliver Twist Company shall furnish all labor, materials, supplies, tools, equipment, supervision, transportation and any other services or items necessary to accomplish the work.

Work can be done at hours convenient to the customer so as not to interfere with existing operation (i.e. at night or on weekends).

Material safety data sheet and Workman's Comp. is available upon request.

### General Specifications for Cleaning:

**As necessary, furnishings and equipment will be protected with plastic tarps and cotton drop cloths where work is being performed.**



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The cleaning process shall include a thorough visual inspection of the interior of the systems. Upon completion of cleaning, every interior surface will have been cleaned to a point where it is visibly free of accumulated debris and dust.

The HVAC units will be locked out and tagged as per OSHA specifications before cleaning.

The work, while in progress, will be subject to random unannounced inspections by a Oliver Twist company representative. As many inspections may be performed as desired to confirm that the work is being carried out according to these specifications.

Any mechanical problems discovered during the course of cleaning will be reported in writing.

### Cleaning of Units:

#### Blower Assembly – Coil Cleaning Procedure List

1. Remove blower panels and vacuum thoroughly.
2. Apply cleaning agent to blower wheel and housing, then spray clean.
3. Wipe outside of motor and blow dust/dirt out of windings with compressed air.
4. Be sure condensate drain is not stopped up, if it is then clean before proceeding.
5. Inspect evaporators and condenser coils inside of air handler unit, and then brush off excess dirt build-up if necessary and spray coil cleaning agent. Wait about 10 minutes then rinse coil with water.
6. Test blower for proper operation.
7. New filters will not be installed at the time of cleaning.
8. All interior dampers, screens, filter racks, etc. shall be cleaned and vacuumed.
9. In the units and plenums, repair all tears or rips in the surface of the salvageable fiberglass liner with adhesive or encapsulate.
10. Brush and vacuum clean all screen louvers and rusted areas inside vents.



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### Cleaning of Ducts:

- 1) All return and supply grilles, registers, and diffusers shall be washed with a mild paint-safe detergent solution, and replaced.
- 2) All flexible ducts shall be hand-brushed and power scrubbed with patented HEPA vacuums.
- 3) All interior surfaces of the supply and return air ducts shall be thoroughly brushed or vacuumed as needed using HEPA-filtered collection vacuums.
- 4) All flexible ducts shall be inspected and sealed using approved duct tape or nylon collar straps so as to be airtight. Any loose ducts observed shall be resealed to increase efficiency.
- 5) In the supply and return duct systems, inspect all ducts and duct joints for damage, disconnections and leaks.
- 6) All air ducts, plenums and HVAC units will be sanitized with an EPA-registered anti-bacterial disinfectant. Material safety data sheet is available upon request.
- 7) All dampers will be reset and adjusted after cleaning.

### Cost for Services:

The total cost for the completion of above-mentioned services is \$24,750.00

### Payment Terms:

Payment is due upon completion of work, unless otherwise agreed upon.

This quote is valid for 30 days. I look forward to working with you soon on this project. I will call you soon.



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**3 references to contact:**

1. CalTrans State of California (contact: Administrator, Steve Wagner) 213-620-4852
2. Smurfit Stone Container Corp. (contact: Chuck Downing) 562-483-1205
3. Long Beach Fire Department (contact: John Lanstrom) 562-591-7631

Note: We have performed this service for OCWD before.

Sincerely,

**Steve Lovsteen, St. Lic. #772513**

Cert. #3206, F.I.R.E. Cert. #FP-022  
Member National Chimney Sweep Guild  
Member Golden State Chimney Sweep Guild  
Certified by Chimney Safety Institute of America  
[www.csia.org](http://www.csia.org)

Approved and accepted by:

---

for OCWD

**OSHA Certified**

Please fax signed copy of this proposal to Oliver Twist Air Duct Cleaning Co. to 714-500-5770



## AGENDA ITEM SUBMITTAL

**Meeting Date:** June 10, 2015

**To:** Water Issues Committee  
Board of Directors

**From:** Mike Markus

**Staff Contact:** B. Smith / C. Olsen

**Budgeted:** Yes

**Proposed Budget:** \$1,000,000

**Cost Estimate:** \$911,639

**Funding Source:** CIP/State Loan

**Program/Line Item No.** C14004

**General Counsel Approval:** N/A

**Engineers/Feasibility Report:** Complete

**CEQA Compliance:** In Progress

**Subject: AGREEMENT TO TETRA TECH INC. FOR MID-BASIN INJECTION:  
CENTENNIAL PARK PROJECT DESIGN SERVICES**

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### SUMMARY

On April 15, 2015, the Board authorized staff to issue a Request for Proposals for the Mid-Basin Injection: Centennial Park Project Design Services. A total of two proposals were received on May 18, 2015. Staff has evaluated the proposals, interviewed the consultants, and prepared a recommendation for award of the design services.

### RECOMMENDATION

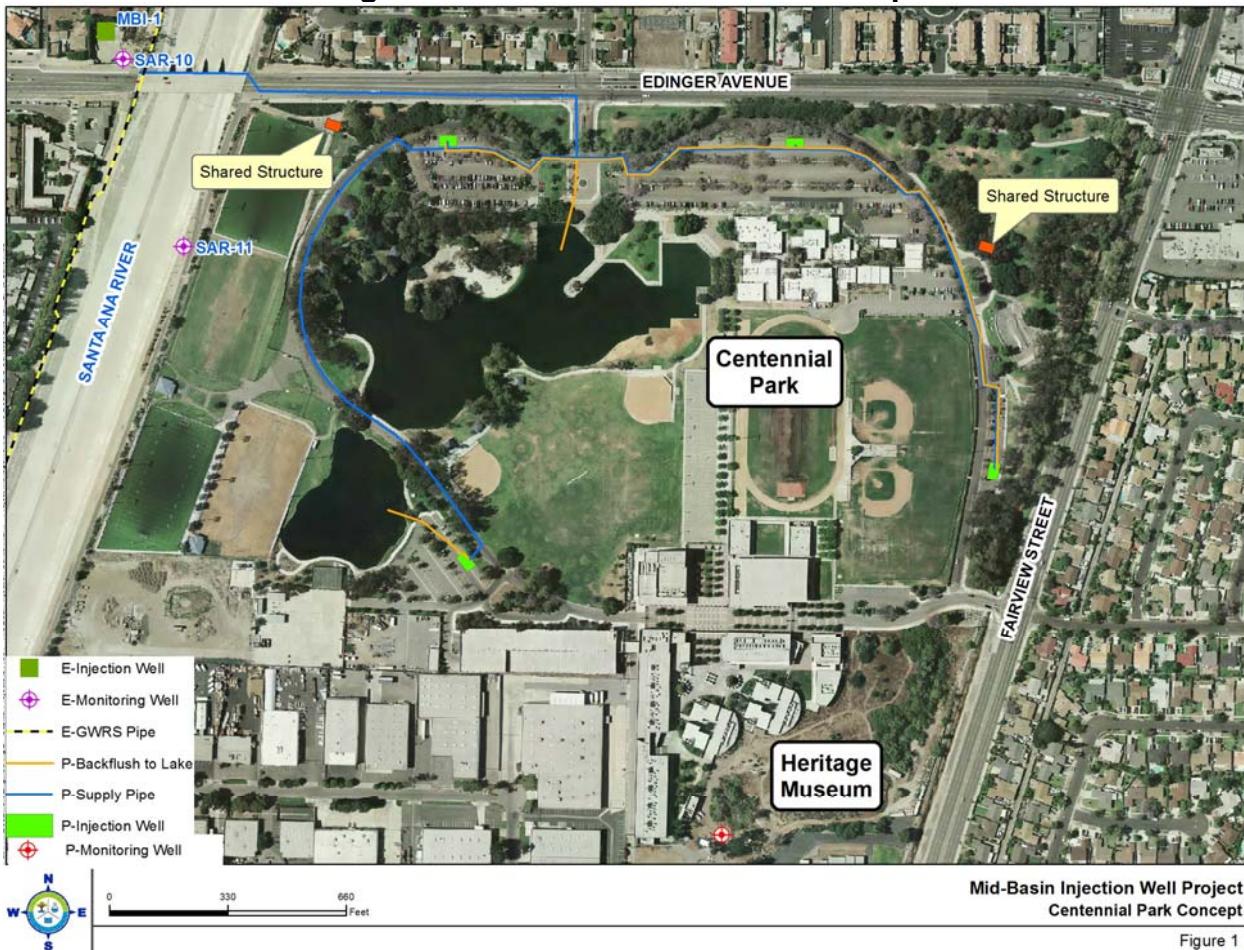
Agendize for June 17 Board meeting: Authorize issuance of Agreement to Tetra Tech, Inc. for an amount not to exceed \$911,639 for the Mid-Basin Basin Injection: Centennial Park Project Design Services.

### BACKGROUND/ANALYSIS

The District's Mid-Basin Injection (MBI) project in Centennial Park would construct 4 wells to inject GWRS product water directly into the principal aquifer near areas of significant water table drawdown. Each well is expected to provide another 1-3 million gallons per day (MGD) of recharge capacity. The project will provide additional basin recharge capacity that must be developed to support the GWRS Final Expansion Project (130 MGD total production capacity), raise groundwater levels in the principal aquifer, and reduce the amount of GWRS water that has to be sent to the Anaheim recharge basins allowing those facilities to be concentrated on capturing Santa Ana River storm flows and recharging untreated imported water.

The injection well locations and conceptual pipeline alignments in Santa Ana's Centennial Park are shown in Figure 1. The District approved a Memorandum of Understanding (MOU) with the City of Santa Ana in July 2014 that outlined the general concepts of the project within Centennial Park. The injection well heads will be contained in underground vaults that will allow normal vehicle parking upon their covers. Limitations to the duration and quantity of construction impacts were outlined in the MOU. In exchange for pipeline and well land licenses, the MOU states that the District will replace the majority of pavement in the park. Staffs from the City and District are currently drafting a license agreement to finalize the terms and project approach.

**Figure 1: MBI Centennial Park Concept**



A Request for Proposals (RFP) for design services of the Mid-Basin Injection: Centennial Park Project was publicized on April 17, 2015. A total of two proposals were received by the RFP due date of May 18, 2015. The proposals were independently reviewed and scored by a panel of engineering, operations, and regulatory staff members. The scoring of the proposals included evaluating qualifications of the firm and key staff, project approach, estimated level of effort, related project experience, bid and construction support, and permitting experience. Fees for these services were submitted separately in a sealed envelope and opened after the scores were determined. The scoring and fee results are presented in Table 1.

**Table 1: MBI Centennial Park Design Services Proposal Scores and Fees**

Firm	Score (out of a possible 100)	Proposed Fee
Tetra Tech	86	\$ 911,639
Black and Veatch	84	\$ 1,295,400

Both proposals provided strong teams, excellent understanding of the project needs, and consisted of design staff that the District has been pleased with in previous work.

This means that both firms essentially received the same evaluation score from the staff. A panel of five engineering, operation, and regulatory staff members interviewed these firms to help determine the most qualified firm for the design award. Upon completion of the interview process, it was determined that the qualifications and project approach were above average for both firms. Since both firms were found to be qualified and prepared for this design project, the firm with the lowest fee was chosen for award recommendation. The projected project expenses are shown in Table 2. When available, staff will be pursuing the first round of Proposition 1 funding.

**Table 2: MBI Centennial Park Budget**

Description	Proposed Budget
Design, Permitting, CEQA	\$ 1,000,000
Construction	\$ 20,000,000
Construction Management	\$ 2,000,000
Project Contingency	\$ 3,000,000
Total	\$ 26,000,000

In an effort to conclude construction of the Centennial Park wells around the time the GWRS final expansion is completed, several project components must be completed including CEQA, permitting, design, and construction. The CEQA process is being performed in-house with the assistance of outside technical consultants for studies. The tentative project schedule is shown in Table 3.

**Table 2: MBI Centennial Park Tentative Schedule**

Description	Date
Execute MOU with City of Santa Ana	July 2014
Minimum Operation of Demonstration MBI Well	Apr 2015 – Sep 2015
Prepare Environmental Documentation	Apr 2015 – Jan 2016
MBI Centennial Park Well & Pipeline Design	Jun 2015 – Aug 2016
Construction & Regulatory Permitting	Jan 2016 – Feb 2017
Apply for Project Financing	Aug 2016 – Nov 2016
Construction of Pipelines, Wells, & Equipping	Jan 2017 – Jul 2019
Begin Operation of MBI Centennial Park Wells	August 2019

#### **PRIOR RELEVANT BOARD ACTION(S)**

4/15/15 R15-4-48: Receive and file Engineer's Report for Mid-Basin Injection: Centennial Park Project and declare project duly instituted, and authorize issuance of RFP for project design services

7/16/14 R14-7-100: Approve MOU with the City of Santa Ana for Construction and Operation of Injection Wells at Centennial Park



# Mid-Basin Injection: Centennial Park Award of Design Services

Water Issues Committee

June 10, 2015



# Major Design Components

- Connection to GWRS pipeline
- Edinger Bridge crossing
- Supply & backflush pipelines
- Injection well vaults
- Shared structures
- Backflush discharge to Centennial Park lakes
- Monitoring well



Figure 1



# Demonstration MBI Well



Complete Construction April 2015

- Operate for 6 months
- Determine water quality impacts
- Determine sustained injection rate (currently ~ 1.5 MGD)



# Design Services Proposals

Design scope includes:

- Supply & Backflush Pipelines
- Bridge Crossing
- Below Grade Well Vaults
- Well Equipping
- Shared Structures
- Paving & Site Improvements

OCWD staff to design wells

Request for Proposals (RFP)  
advertised April 17, 2015

- Publicly advertised on OCWD website & 8 firms attended pre-proposal meeting

Proposals Due: May 18, 2015

- Two proposals were received



# Design Proposal Scores & Fees

Firm	Score (out of 100)	Proposed Fee
Tetra Tech	86	\$ 911,639
Black and Veatch	84	\$ 1,295,400

- Staff from Engineering, Operations, and Regulatory Affairs performed the evaluation.
- Both firms presented strong teams, project understanding, and similar project experience through the written proposals and in-person interviews.
- Since both firms are equally qualified, the firm with the lower fee has been recommended for award.



# Project Budget

TASK	Estimated Cost (Millions)
Design, Permitting, CEQA	\$ 1.00
4 Injection Wells: Drilling & Construction	\$ 6.92
4 Injection Wells: Equipping & Site Work	\$ 9.46
Pipeline Connections and Laterals	\$ 2.87
Monitoring Well: Drilling & Construction	\$ 0.75
Construction Management	\$ 2.00
Project Contingency	\$ 3.00
<b>Total</b>	<b>\$ 26.00</b>



# Tentative Project Schedule

TASK	DATE
Execute MOU with City of Santa Ana	July 2014
Minimum Operation of Demonstration MBI Well	Apr 2015 – Sep 2015
Prepare Environmental Documentation	Apr 2015 – Jan 2016
MBI Centennial Park Well & Pipeline Design	Jun 2015 – Aug 2016
Construction & Regulatory Permitting	Jan 2016 – Feb 2017
Apply for Project Financing	Aug 2016 – Nov 2016
Construction of Pipelines, Wells, & Equipping	Jan 2017 – Jul 2019
Begin Operation of Centennial Park MBI Wells	Aug 2019



# Recommendation

Agendize for June 17 Board Meeting:

Authorize issuance of Agreement to Tetra Tech, Inc. for an amount not to exceed \$911,639 for the Mid-Basin Basin Injection: Centennial Park Project Design Services.



# End of Presentation



## AGENDA ITEM SUBMITTAL

**Meeting Date:** June 10, 2015

**Budgeted:** Yes

**Budgeted Amount:** \$1,051,600 CIP/  
\$ 844,800 R&R

**To:** Water Issues Committee  
Board of Directors

**Cost Estimate:** \$1,118,830 CIP  
\$ 844,800 R&R

**From:** Mike Markus

**Funding Source:** Small Capital PAYGO,  
R&R, and Prop 84 Grant

**Staff Contact:** R. Herndon/D. Field

**Program/ Line Item No.:** C13005 & R12030

**General Counsel Approval:** N/A

**Engineers/Feasibility Report:** Yes

**CEQA Compliance:** Yes

**Subject:** **CONTRACT NO SG-2014-1: SUNSET GAP SEAWATER INTRUSION  
INVESTIGATION PROJECT: AMENDMENT TO SERVICES AGREEMENT NO.  
0958 WITH CDM SMITH AND AGREEMENT TO NINYO & MOORE FOR  
GEOTECHNICAL INVESTIGATION**

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### SUMMARY

The District awarded Contract No. SG-2014-1 to Yellow Jacket Drilling Services (Yellow Jacket) to install six multi-depth monitoring wells to investigate the extent of seawater intrusion in the Sunset Gap. During drilling of one of the nested monitoring wells (OCWD-BS13 [BS13]) on the Bolsa Chica Flood Channel levee access road, Yellow Jacket experienced equipment failures that ultimately resulted in approximately one foot of ground subsidence around the well, damaging both the levee and adjacent perimeter fence for the Naval Weapons Station (NWS) Seal Beach. OCWD has been directed by Orange County Public Works to retain a geotechnical firm to investigate the extent of damage to the levee and to submit recommendations for repair. These problems and other project delays have necessitated additional construction inspection hours by our consultant, CDM Smith (CDM).

### RECOMMENDATION

Agendize for June 17 Board meeting:

- 1) Authorize issuance of Amendment No. 1 to Agreement No. 0958 with CDM Smith in the amount of \$127,935 for additional field inspection services required for the Sunset Gap Project; and
- 2) Authorize issuance of Agreement to Ninyo & Moore for geotechnical investigation services at the OCWD-BS13 well site for an amount not to exceed \$58,078.

## **BACKGROUND/ANALYSIS**

The Board approved the Sunset Gap Groundwater Investigation Monitoring Well Installations and Destructions project in September 2013. In December 2013 the Board authorized issuance of a Service Agreement to CDM for construction management; and, in May 2014, the Board awarded Contract SG-2014-1 to Yellow Jacket to construct six nested multi-depth monitoring wells and destroy three existing monitoring wells that were in need of replacement. The project has been beset by numerous problems and delays, as summarized below.

In September 2014 Yellow Jacket began drilling at the first monitoring well site, OCWD-BS22 (BS22) (Figure 1). Between September 11 and October 23, 2014 Yellow Jacket failed to complete the first monitoring well despite two separate attempts. The first attempt culminated in a collapse of the borehole, subsidence at the ground surface, and abandonment/sealing of the borehole with cement. The second attempt culminated in a partial borehole collapse and abandonment/sealing of the borehole with cement. Based on staff's experience and CDM recommendations, staff instructed Yellow Jacket to make modifications to its drilling fluids circulation system, and to drill and maintain drilling fluid levels around the clock, as recommended in the Contract. After making these modifications, Yellow Jacket successfully completed monitoring well BS22 on December 22, 2014, on the third attempt. In January 2015, monitoring well OCWD-BS21 (BS21) was successfully constructed by Yellow Jacket.

Between January 14 and 31, 2015, Yellow Jacket failed to successfully construct nested monitoring well OCWD-BS13 (BS13), which is located on the Bolsa Chica Flood Control Channel levee road (Figure 1). Again, Yellow jacket did not maintain drilling fluid circulation due to equipment failures. As a consequence, during borehole drilling, the ground surface around the borehole subsided approximately one foot over an approximately 60- to 70-foot radius. In addition to subsidence, substantial cracking of the ground occurred along the edge of the subsided area. The subsidence and cracking extends onto the NWS Seal Beach and along the southern face of the flood control channel levee. The borehole was abandoned and sealed with cement. Staff has attributed the ground subsidence and cracking to excess removal of borehole cuttings during drilling resulting from Yellow Jacket's inadequate drilling fluid circulation process.

Yellow Jack moved its equipment away from the BS13 site and constructed monitoring wells OCWD-BS14 (BS14) and OCWD-BS17 (BS17); so, to date, four of six monitoring wells have been installed by Yellow Jacket. Until the channel levee road subsidence is investigated and repaired to the Orange County Public Works Department's (Public Works) satisfaction, the construction of the final two monitoring wells (BS13 and BS12) is delayed.

Public Works has directed OCWD to retain a geotechnical firm to investigate the extent of damage to the levee, and to design and construct an acceptable repair, before any further work can be conducted on the levee. This direction resulted from OCWD's obligations under its encroachment permit with the County.

Due to the additional time (approximately 715 hours) that was necessary for CDM to inspect the failed attempts and associated delays during well construction, as well as 157 hours of out-of-scope time for inspection of well development and video surveys requested by the District, staff recommends amending CDM's Services Agreement to increase the budget by \$127,935. This represents a 66 percent increase in CDM's total budget.

### Geotechnical Consultant

Per Public Works' directives, staff sent a Request for Proposal (RFP) to three geotechnical firms to conduct a geotechnical investigation of the nature and extent of land subsidence and associated damage to the flood control levee and NWS Seal Beach perimeter fence, design repairs acceptable to the County and Navy, and provide field oversight of the repairs (to be contracted following the investigation and repair design). In response to the RFP, two written proposals were received from the following firms:

- Ninyo & Moore
- American Geotechnical, Inc.

Three OCWD staff and one Public Works staff evaluated the proposals prior to opening separately-sealed cost proposal envelopes for both firms. Staff's technical evaluation of the written proposals included consideration of personnel qualifications, experience, record of success on similar projects, work plan (including number of hours), and time commitment of key staff. Table 1 below shows a summary of staff's review in addition to the proposed hours, average hourly rates and the proposed total fee.

**Table 1**  
**Summary of Geotechnical Investigation Proposal Evaluations**

Firm	Score <sup>1</sup>	Proposed Hours	Average Hourly Rate <sup>2</sup>	Proposed Fee
Ninyo & Moore	4.24	449	\$129	\$58,078
American Geotechnical, Inc.	3.23	450	\$119	\$53,351

<sup>1</sup> Scoring scale: 1=poor, 5=excellent

<sup>2</sup> Average hourly rate = Proposed Fee (including expenses)/Proposed Hours

OCWD and Public Works staffs' evaluation of the proposals resulted in a recommendation for the selection of Ninyo & Moore for the geotechnical investigation services at the OCWD-BS13 well site for the following key reasons:

- Project Manager and team have experience successfully managing field projects for OCWD and Orange County Public Works involving levees and slope stability.
- Provided a detailed proposal with appropriate investigation methods to clearly define the extent of damage to the levee.

District staff and Yellow Jacket have exchanged correspondence regarding their respective views as to the causes and responsibilities for costs associated with the borehole collapses. Discussions are continuing, but there is no resolution at present.

Table 2 summarizes the approved capital and R&R budgets and anticipated expenditures and contracted work for the Sunset Gap Monitoring Well Installations and Destructions. Table 2 does not include estimated costs for the ground subsidence repairs. Those costs will be determined following design of the repairs.

**Table 2**  
**Summary of Sunset Gap Project Budget and Anticipated Expenditures**  
**(excludes to-be-determined ground subsidence repair costs)**

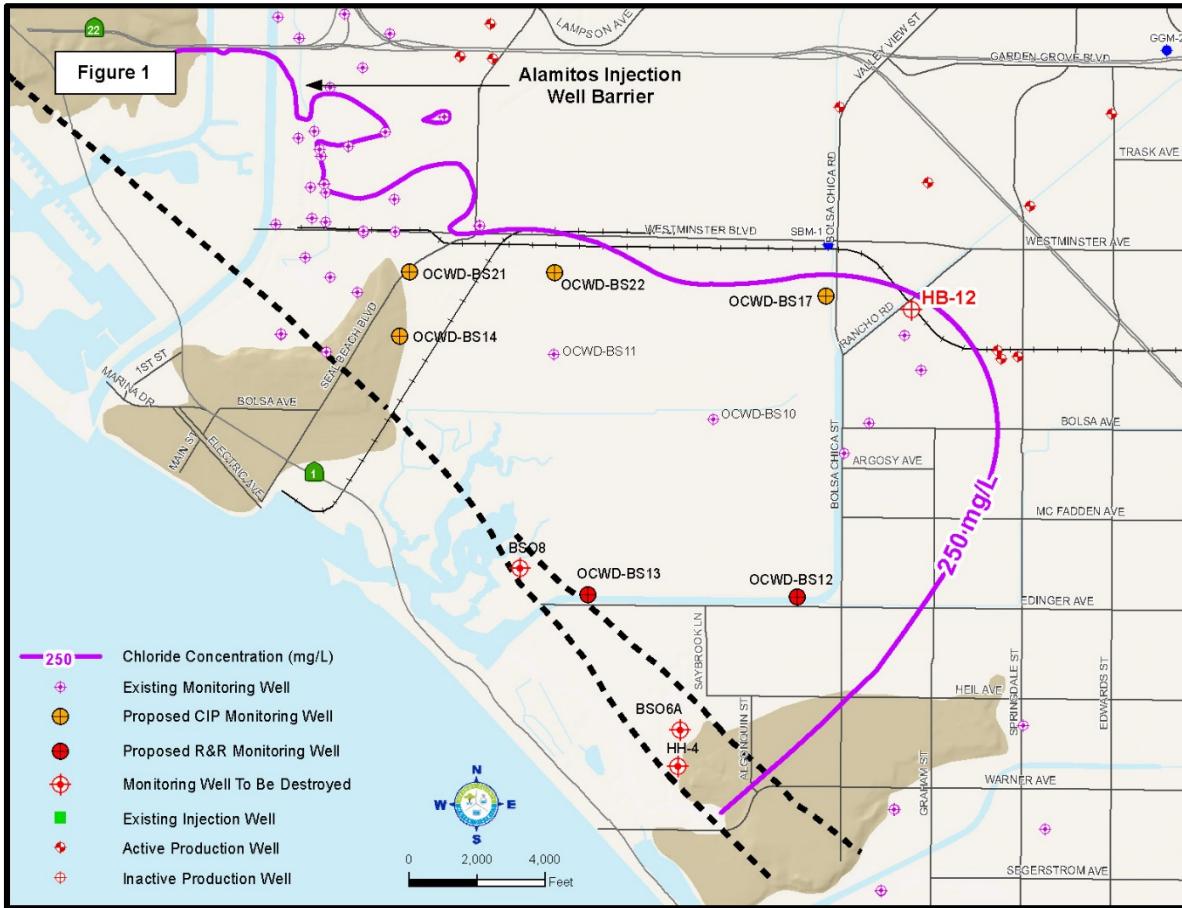
Task	Approved Budget	Anticipated Expenditures & Contracted Work
<b>Capital Improvement Project (CIP)<sup>a</sup></b>		
Construction of 4 New Monitoring Wells <sup>b</sup>	\$829,000	\$904,000
Construction Inspection Services <sup>c</sup>	121,000	205,730
Geophysical Utility Clearance	0	2,700
Surveying Services	6,000	6,400
Subtotal:	956,000	1,118,830
Contingency:	95,600	0
<b>CIP TOTAL:</b>	<b>\$1,051,600</b>	<b>\$1,118,830</b>
DWR Grant Funding (applied to CIP)	-\$158,450	-\$158,450
<b>Replacement &amp; Refurbishment (R&amp;R)</b>		
Monitoring Well Destructions (3) and Construction of Replacement Monitoring Wells (2) <sup>b</sup>	648,000	648,000
Destructions and Construction Inspection Services <sup>c</sup>	102,000	116,322
Geotechnical Services	15,000	58,078
Surveying Services	3,000	3,000
Subtotal:	768,000	825,400
Contingency:	76,800	19,400
<b>R&amp;R PROJECT TOTAL:</b>	<b>\$844,800</b>	<b>\$825,400</b>
<b>PROJECT TOTAL (CIP + R&amp;R):</b>	<b>\$1,896,400</b>	<b>\$1,944,230</b>

<sup>a</sup> Applicable to DWR Grant

<sup>b</sup> Contract SG-2014-1

<sup>c</sup> Agreement 0958

## Figure 1 Well Location Map



### PRIOR RELEVANT BOARD ACTIONS

05/21/2014, R14-5-66 – Award Contract SG-2014-1 Construction and Destruction of Sunset Gap Monitoring Wells to Yellow Jacket Drilling Services.

12/18/2013, R13-12-00 – Authorize Service Agreement to CDM Smith for construction inspection management of the Sunset Gap Monitoring Well Installations and Destructions.

09/18/2013 R13-9-121 – Approve the Sunset Gap Groundwater Investigation and monitoring well installations and destructions, certify the final IS/MND, approve the Geologist Report, and authorize issuance of an RFP for inspection services during well installations and destructions.

06/20/2012 R12-6-70 – Authorize application for California Department of Water Resources Local Groundwater Assistance Grant.



## AGENDA ITEM SUBMITTAL

**Meeting Date:** June 10, 2015

**To:** Water Issues Committee  
Board of Directors

**From:** Mike Markus

**Staff Contact:** G. Woodside/M. Westropp

**Budgeted:** N/A

**Budgeted Amount:** N/A

**Cost Estimate:** N/A

**Funding Source:** N/A

**Program/Line Item No.:** N/A

**General Counsel Approval:** N/A

**Engineers/Feasibility Report:** N/A

**CEQA Compliance:** Exemption to be filed upon Board approval of plan

**Subject:** FINAL DRAFT GROUNDWATER MANAGEMENT PLAN 2015 UPDATE

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### SUMMARY

The District's Groundwater Management Plan (GWMP) was last updated in 2009. The Draft GWMP 2015 Update was available for public review from April 13 to May 22, 2015. Three agencies provided comments on the draft plan. Responses to these comments were incorporated into the final draft. Staff recommends that the Board adopt the updated plan

#### Attachment(s):

Final Draft Groundwater Management Plan 2015 Update, June 17, 2015

### RECOMMENDATION

Agendize for June 17 Board meeting:

1. Adopt the Groundwater Management Plan 2015 Update; and
2. Authorize the filing of a Notice of Exemption.

### BACKGROUND/ANALYSIS

The District adopted its first GWMP in 1989 pursuant to authority under the District Act to manage the Orange County Groundwater Basin. Plan updates were prepared approximately every five years with the latest update adopted in 2009.

The draft version of the GWMP 2015 Update was made available for public review on April 13, 2015. Notices soliciting comments were published in the Orange County Register on April 13 and 21, as well as on the District's website beginning on April 13. The District's on-line newsletter, *Hydrospectives*, included articles concerning the intention to prepare the update in February 2015 and the availability of the draft document in the April 2015 issue.

Comments on the draft plan were received from Mesa Water District, East Orange County Water District (EOCWD), and Peer Swan of the Irvine Ranch Water District. Mesa Water District requested that the district's name be corrected in the document. EOCWD requested discussion of low groundwater elevations in the vicinity of the Santiago Basins, the impact of low groundwater levels on EOCWD pumping and the potential for increasing recharge at Santiago Basins to increase groundwater elevations. Mr. Swan requested additional discussion concerning conjunctive use of the groundwater basin related to use of imported water to maintain groundwater elevations and suggested that OCWD's purchase of land behind Prado Dam in the 1960s be added to the history section. In addition, staff made some corrections to the list of wells that will be included in Appendix E in response to review of the list by the Producers.

### Environmental Analysis

The Groundwater Management Plan discusses the groundwater basin's physical features, the District's facilities and monitoring and operating programs, and the management tools available to manage the basin. The Groundwater Management Plan does not bind, commit, or predispose the District to further consideration, approval or implementation of any potential project.

Adoption of the Plan also does not approve any potential project for further analysis, design or construction. Each project that the District approves must be separately initiated and approved by the District's Board of Directors. If any individual potential project is carried forward, an Engineer's Report will be prepared for that potential project for consideration by the Board of Directors, as required by Section 20.7 of the District Act. The District will also concurrently conduct appropriate environmental analysis in accordance with the California Environmental Quality Act (CEQA) with respect to each potential project that is carried forward for consideration by the Board of Directors.

Therefore, the Groundwater Management Plan will not cause either a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment. The Groundwater Management Plan further is exempt from CEQA pursuant to the provisions of State CEQA Guidelines Sections 15262 (Statutory—feasibility and planning studies), 15306 (Categorical Class 6—information gathering), 15307 (Categorical Class 7—actions by regulatory agencies for protection of natural resources) and/or 15308 (Categorical Class 8—actions by regulatory agencies for protection of the environment). Staff recommends that a notice of exemption be filed for the Plan.

The final draft document has been completed. Staff recommends the Board approve and adopt the updated plan.

### **PRIOR RELEVANT BOARD ACTION(S)**

7/15/09 M9-80: Adoption of Groundwater Management Plan 2009 Update.



# Final Draft Groundwater Management Plan 2015 Update

Water Issues Committee  
June 10, 2015



## Schedule

- Draft plan available for public review from April 13 to May 22.
- Comments received from 3 agencies
- Final Draft ready for Board to consider adoption on June 17



# Responses to Comments

- Responses added to text to address comments from
  - East Orange County Water District
  - Mr. Peer Swan
  - Mesa Water District



# Recommendation

- Approve and adopt the Groundwater Management Plan 2015 Update
- Authorize filing of CEQA notice of exemption



## AGENDA ITEM SUBMITTAL

**Meeting Date:** June 10, 2015

**To:** Water Issues Committee  
Board of Directors

**From:** Mike Markus

**Staff Contact:** A. Hutchinson/G. Woodside

**Budgeted:** N/A

**Budgeted Amount:** N/A

**Cost Estimate:** N/A

**Funding Source:** N/A

**Program/Line Item No.:** N/A

**General Counsel Approval:** N/A

**Engineers/Feasibility Report:** N/A

**CEQA Compliance:** N/A

**Subject:** **DROUGHT RESPONSE OUTREACH PROGRAM FOR SCHOOLS (DROPS) GRANT AWARDS TO RIO VISTA ELEMENTARY AND KATELLA HIGH SCHOOLS**

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### SUMMARY

In December 2014, the City of Anaheim requested the District share the cost of preparing a grant under the State Water Resources Control Board's Drought Response Outreach Program for Schools (DROPS). The purpose of DROPS is to raise awareness of water conservation through construction of a project at a school using Low Impact Development (LID) techniques that reduce storm water pollution and provide multiple benefits, including water conservation and groundwater recharge. In collaboration with District staff, Anaheim submitted two DROP grant applications for Rio Vista Elementary and Katella High Schools. Both grant applications were awarded for a total amount of \$2.9 million.

#### Attachment(s):

- Approved DROPS Funding List

### RECOMMENDATION

Informational

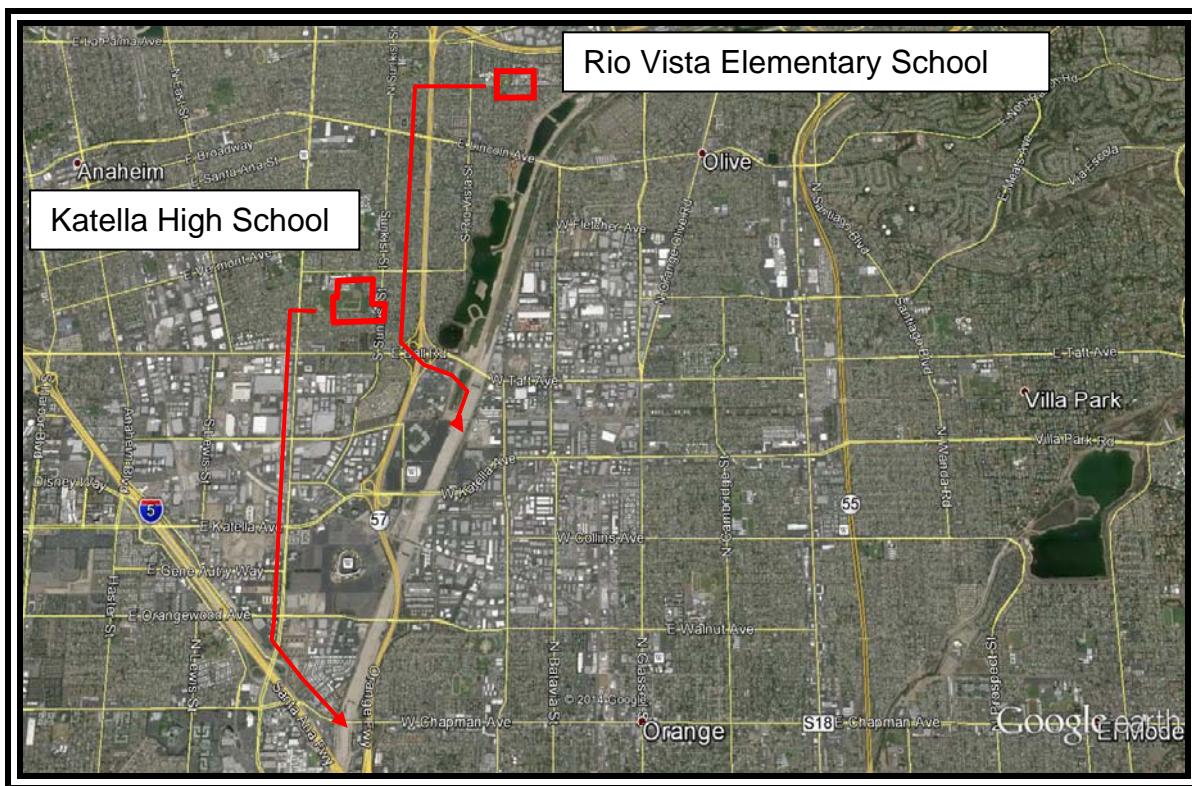
### DISCUSSION/ANALYSIS

#### Background

In 2014, the State Water Resources Control Board (SWRCB) established the Drought Response Outreach Program for Schools (DROPS). Through this program, the SWRCB made \$25.5 million available to Local Education Agencies for projects that reduce storm water pollution and provide multiple benefits, including water conservation, water supply augmentation, energy savings, increased awareness of water resource sustainability, and reduced dry weather runoff. The types of projects envisioned by the DROPS program is removal of paved areas and installation of Low Impact Development (LID) projects, such as rain gardens, vegetated swales, permeable pavers, constructed wetlands and dry wells, to name a few.

## OCWD Collaboration

In December 2014, staff from the City of Anaheim requested that the District collaborate with the City in developing DROPS grant applications. Upon review of the different schools located in Anaheim, District staff identified the Rio Vista Elementary and Katella High Schools as areas where on-site infiltration of storm water could contribute to the groundwater supplies of the basin. Currently runoff from the Rio Vista Elementary school, which is part of the Placentia-Yorba Linda Unified School District, drains to the Chantilly Storm Drain, which exits to the District's Ball Road Basin and then to the Santa Ana River channel. Runoff from Katella High School, which is part of the Anaheim Union High School District, drains to a storm drain that parallels State College Boulevard before exiting to the Santa Ana River near Chapman Avenue. Much of the storm water that enters the Santa Ana River at these locations is lost to the ocean. As a result, on-site infiltration of storm water at these schools could augment the groundwater supplies of the basin. The figure below shows the locations of these schools and the approximate drainage route for storm water from both locations under existing conditions.



**Locations of Rio Vista Elementary School and Katella High School And Approximate Route of Storm Drains**

At the Rio Vista Elementary School, 15 different sites covering nearly 1 acre were identified for LID projects. At Katella High School, it is proposed to replace impervious hardscape with permeable pavers, construct underground (low discharge) storm water tanks, and a series of gardens to slow and retain rainfall.

In January 2015, the District approved contributing one-half (50 percent) of the cost to prepare the grant application for the Rio Vista Elementary School. The total cost to prepare the Rio Vista grant was \$9,000, so the District's contribution was \$4,500. In addition, the District submitted letters of support to the SWRCB for the DROPS grant applications for the Rio Vista Elementary and Katella High Schools.

## DROPS Awards

The SWRCB awarded grants to both Rio Vista Elementary and Katella High Schools totaling approximately \$2.9M. Katella High School received \$2,000,000, which is the largest award any project could have received. Only one other project in the region, Fontana Unified School District, received such a large grant. Both Rio Vista Elementary and Katella High Schools are classified as disadvantaged schools, which was an important award criterion. The table below shows the grant amount, local match and total project cost.

Project Title	Applicant	Grant	Match	Total
Katella High School Storm Water Capture Project	Anaheim Union High School District	\$2,000,000	\$4,399,690	\$6,399,690
Rio Vista Elementary School	Placentia-Yorba Linda Unified School District	\$852,200	\$147,738	\$999,938
<b>Totals</b>		<b>\$2,852,200</b>	<b>\$4,547,428</b>	<b>\$7,399,628</b>

Going forward, District staff will provide in-kind technical support. District staff will continue to collaborate with the City of Anaheim and school staff during the design process and ongoing educational outreach. One outreach element described in the grant submittal is annual field trips to the District's recharge operations where the students can learn about the importance of large-scale storm water capture efforts. This will provide a good nexus between the smaller scale on-site storm water capture at the schools and the District's larger scale storm water capture efforts.

## PRIOR RELEVANT BOARD ACTION(S)

- 1/2015, M15-3      Authorize reimbursement to City of Anaheim for one-half of the cost for the preparation of the DROPS grant application for Rio Vista Elementary School for an amount not to exceed \$4,500, and, Authorize the General Manager to submit letters of support for DROPS grant applications for Rio Vista Elementary and Katella High School to the State Water Resources Control Board.

12/3/14

Informational Item re Drought Response Outreach Program  
for Schools (DROPS)



## Approved Funding List: Drought Response Outreach Program for Schools (DROPS)

PIN	Region	Project Title	Applicant	Grant <sup>2</sup>	Match	Total
29717	1	Sinkin' the Stormwater in Humboldt County	Northern Humboldt Union High School District	\$999,461	\$296,358	\$1,295,819
29813	1	Anderson Valley Unified Schools LID Retrofit Program	Anderson Valley Unified School District	\$124,432	\$30,014	\$154,446
29673	2	DROPS - OPS (Oakland and Piedmont Schools)	StopWaste	\$1,491,503	\$380,218	\$1,871,721
29873	2	Downtown College Preparatory Native Landscapes and Bioswale Project	Downtown College Preparatory <sup>1</sup>	\$164,280	\$33,120	\$197,400
29468	3	Bay View Elementary School LID and Water Conservation Retrofit	Santa Cruz City Schools	\$486,200	\$151,532	\$637,732
29602	3	Atascadero Junior High School Storm Water Management	Atascadero Unified School District	\$999,999	\$2,006,653	\$3,006,652
29616	3	LMUSD Ground Water Recovery Projects	Lucia Mar Unified School District	\$903,933	\$170,742	\$1,074,675
29794	3	Paso Robles Joint Unified School District LID Project	Paso Robles Joint Unified School District	\$999,305	\$207,750	\$1,207,055
29815	3	Rancho El Chorro Water Conservation, Reuse, and LID Project	San Luis Obispo County Office of Education	\$628,566	\$126,549	\$755,115
29049	4	Will Rogers Learning Community SW Capture, WQ Improvement & WS Education	Santa Monica-Malibu Unified School District	\$621,256	\$213,070	\$834,326
29637	4	Schurr High School	Montebello Unified School District <sup>1</sup>	\$991,575	\$148,736	\$1,140,311
29645	4	LNSD DROPS Stormwater Pollution Reduction and Bioretention Project	Los Nietos School District <sup>1</sup>	\$124,999	\$374,501	\$499,500
28245	5	Project CLEAR (Constructing LID Environments, Awareness and Resources)	Elk Grove Unified School District <sup>1</sup>	\$1,000,000	\$703,052	\$1,703,052
29656	5	Fresno Unified Green Infrastructure Initiative	Fresno Unified School District <sup>1</sup>	\$1,946,418	\$4,086,287	\$6,032,705
29758	5	Grizzly Hill Stormwater Management Project	Twin Ridges Elementary School District <sup>1</sup>	\$121,657	\$20,000	\$141,657
29776	5	Regional Stormwater Learning Lab Project	Butte County Office of Education <sup>1</sup>	\$350,590	\$62,371	\$412,961
29787	5	Grant Union High School's Pacer Quad	Twin Rivers Unified School District	\$725,703	\$262,851	\$988,554
29831	5	Chico Unified School District LID Implementation and Stormwater Education Program	Chico Unified School District	\$445,220	\$135,239	\$580,459
28211	8	Clearwater Project: A Stormwater Water Regenerative Program	Perris Elementary School District <sup>1</sup>	\$982,138	\$169,143	\$1,151,281
29595	8	Fontana Unified School District Watershed Education Initiative	Fontana Unified School District	\$2,000,000	\$400,000	\$2,400,000
29664	8	Katella High School Stormwater Capture Project	Anaheim Union High School District <sup>1</sup>	\$2,000,000	\$4,399,690	\$6,399,690
29714	8	Davis Magnet School Outdoor STEAM Learning Center	Newport-Mesa Unified School District	\$209,027	\$36,887	\$245,914
29739	8	Rio Vista Elementary School	Placentia-Yorba Linda Unified School District <sup>1</sup>	\$852,200	\$147,738	\$999,938
29752	8	Garden Grove Unified School District	Garden Grove Unified School District <sup>1</sup>	\$1,990,092	\$499,219	\$2,489,311
29772	8	Harvest Valley Elementary School	Romoland School District <sup>1</sup>	\$765,235	\$136,000	\$901,235
29161	9	Go Clean Go Green Stormwater Improvement Project	San Diego Unified School District <sup>1</sup>	\$1,243,445	\$310,862	\$1,554,307
29167	9	Santee Schools Water Conservation and Storm Water Recharge Program	Santee School District	\$1,000,000	\$150,000	\$1,150,000
29621	9	Encinitas Union School District S.W.E.L.L. Stormwater Education Through Lifelong Learning	Encinitas Union School District	\$585,005	\$103,896	\$688,901
29633	9	Great Oak High School Storm Water Retention and Bioretention Basin	Temecula Valley Unified School District	\$568,150	\$103,500	\$671,650

<sup>1</sup> - 100% Disadvantaged Schools in Project

<sup>2</sup> - Subject to change by the Deputy Director of the Division of Financial Assistance

Totals (without LAUSD):	\$25,320,389	\$15,865,978	\$41,186,367
Los Angeles Unified School District <sup>1</sup> Total:	\$5,000,000	\$3,210,048	\$8,210,048
TOTALS:	\$30,320,389	\$19,076,026	\$49,396,415
100% Disadvantaged Schools Total:	\$12,532,629		
100% Disadvantaged Schools Percent of DROPS Funding:	41%		