



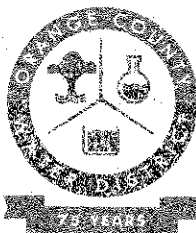
ORANGE COUNTY WATER DISTRICT

MAIN LABORATORY

QUALITY ASSURANCE MANUAL

DIRECTORS

CLAUDIA C. ALVAREZ, ESQ.
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ORANGE COUNTY WATER DISTRICT
 ORANGE COUNTY'S GROUNDWATER AUTHORITY

OFFICERS

President
 STEPHEN R. SHELDON

 First Vice President
 WES BANNISTER

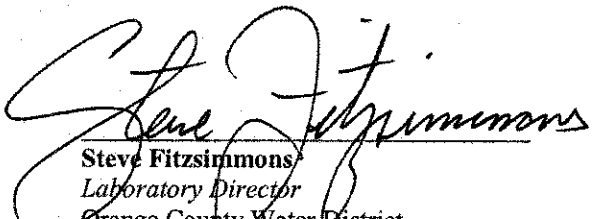
 Second Vice President
 DENIS R. BILODEAU, P.E.

 General Manager
 MICHAEL R. MARKUS, P.E.

LABORATORY QUALITY ASSURANCE MANUAL


November 2009

Approval
 Recommended:


 Steve Fitzsimmons
 Laboratory Director
 Orange County Water District
 Advanced Water Quality Assurance Laboratory

11/13/09
 Date

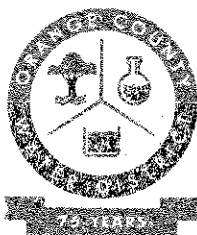
Approved:


 Mike Wehner
 Assistant General Manager
 Orange County Water District

11/13/09
 Date

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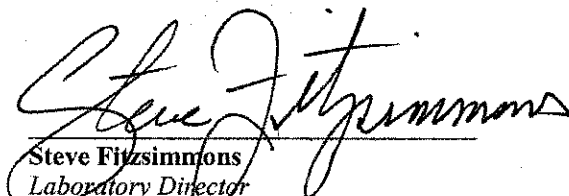
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Approved:


Mike Wehnel
Assistant General Manager
Orange County Water District

11/13/09
Date

Orange County Water District Main Laboratory

Quality Assurance Program

November 6th, 2009

Preface

This Quality Assurance Manual is generated, maintained, and utilized by the Orange County Water District's (OCWD) Advanced Water Quality Assurance Laboratory and its appropriate staff members. Efforts have been made to keep the QA and QC guidelines and protocols used within this manual updated with the most current federal and state monitoring requirements. This requires continued updating of this manual, along with the analytical SOPs contained within it.

Since January 1993, this laboratory has used Laboratory Information Management Systems (LIMS) for all sample login and reporting. We have worked through several generations of LIMS systems. Our current LIMS software system is called *Aspen* – Telecations. We have been on-line with this version of LIMS since February 2001. All water quality data transfers are conducted within the LIMS system – using specific instrument interfaces from a wide variety of analytical systems. The LIMS system provides daily downloading of approved information to our Water Resources Management System (WRMS), which provides direct reporting to the State and Groundwater Producers. Our LIMS system has been customized to provide early warning results on action level notifications – (ALNs), used to inform our water quality department when specific threshold levels have been exceeded.

All aspects of quality control and quality assurance practices are stringently monitored and documented. We have tried to add additional quality control processes within methods and techniques requiring a greater focus to produce reliable results. These may include additional spikes or standards to insure the quality of the data. The LIMS system has been an effective tool in keeping this documentation and reporting process within our ability.

Each staff member of the Orange County Water District's Advanced Water Quality Assurance Laboratory has made contributions to this Quality Assurance manual, and all members are collectively responsible for the success and direction of our quality assurance / quality control program. This laboratory and its staff members are committed to high quality data, and the utilizing of analytical methods, which allow for a better understanding of water quality issues facing our agency.

Major references used in preparing this manual to establish laboratory protocols are listed below. Instrument manufacturers' instructions that are Brand specific and are not related to the laboratory QA/QC practices are not included.

- Standard Methods for the Examination of Water and Wastewater. 20th, 19th, and 18th Editions
- EPA Manual for the Certification of Laboratories Analyzing Drinking water Criteria and Procedures, Quality Assurance, Third Edition. EPA/570/9-90/008, September, 1992
- Methods for the Determination of Organic Compounds in Drinking Water, EPA/600/4-88/039, Supplement I, II, III, EPA/600/R-93/100, EPA/600/R-94/111
- Technical Notes on Drinking Water Methods, EPA/600/R-94/173, October 1994
- Handbook for Analytical Quality Control in Water and Wastewater Laboratories. EPA-600/4-79-019
- California Safe Drinking Water Act and Related Laws, California Department of Health Services – web site information
- California Health and Safety Code and the California Administrative Code, Title 22, Chapter 15, Domestic Water Quality and Monitoring. October 1988
- Federal Register, July 1, 2008, 40CFR Parts 136 to 149, National primary drinking water regulations.
- DHS – ELAP – web site

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1. ORGANIZATION AND RESPONSIBILITIES

SECTION 1

ORGANIZATION AND RESPONSIBILITY

Laboratory Organization

An organizational chart of the District's laboratory is provided for review. The OCWD's Advanced Water Quality Assurance Laboratory (AWQAL) is under the supervision of the Assistant General Manager – Mr. Mike Wehner, who reports directly to the District's General Manager - Mr. Mike Markus. Mr. Wehner also directs the research and water quality departments, both having significant process relationships with the laboratory.

The AWQAL consists of 28 full time employees, with 4 part-time temporary student interns. The laboratory director manages the laboratory processes and staff, to insure that the data produced by this agency is both reliable and cost effective. The laboratory is divided into four main working sections: organic – semi-volatiles, organic – volatiles, inorganic wet chemistry, and inorganic instrumentation. All staff work within rotational schedules, usually working in strictly the organic or inorganic areas. However, we have shown the need to cross train staff where required, so that all processes can be covered. Supervising chemists within the four main sections oversee the daily operational workload – and report directly to the laboratory director. The laboratory director will report on the status and needs of the laboratory to the Assistant General Manager. The laboratory also has an assigned LIMS administrator, who is responsible for the development of the laboratory information system and data reporting functions.

Again, the laboratory is connected closely with both the water quality (WQ) department and the research department of this agency. The WQ department will coordinate sampling schedules for the groundwater producer wells, and permitted plant-monitoring requirements for the main water recycling facility – the Ground Water Replenishment System (GWRS). We receive the majority of our samples from this department. The research department will also generate incoming sample loads, mostly directed towards investigations on RO rejection, UV disinfection, and plant performance. The GWRS Operations department will also generate samples, usually supporting operational needs and data feedback requirements, to allow for the proper operation of this facility.

Laboratory Responsibilities

The OCWD's laboratory core function is to provide analytical support to all District processes and projects. We are a service-oriented department, to serve the District in its efforts to protect and manage the groundwater basin. Primary responsibilities include meeting water quality objectives and analytical data; to provide support for water purveyors, operations, research, water quality, and other regulatory agencies. The laboratory must cover both regulated target requirements, while also investigating new emerging targets of concern. Laboratory activities include applied research into new methods of analysis and the continued development of a solid quality assurance / quality control program. Since we operate a permitted water facility our laboratory must remain certified through the California Department of Public Health – ELAP program.

Personnel Responsibilities

Providing the first line of quality assurance are the **Laboratory Technicians** and **Student Interns**. These are full and part-time laboratory support personnel. Interns make sure that the glassware and sample containers are absolutely clean. Washing, drying and storing procedures, recommended by the EPA and state CDPH, for glassware and containers in the monitoring of trace organics and inorganics are strictly adhered to. Lab Techs assist with sample preparation such as extraction and concentration. They act as sample custodians, receiving and logging-in samples using both LIMS procedures and manual methods. They route and file chain-of-custodies and lab reports, enter lab data onto electronic media, and assist in the preparation of many of the lab's reports.

OCWD main laboratory **Chemists and Senior Chemists** are critical personnel carrying out the daily laboratory sample analyses. This includes sample and standard preparation, instrument calibration, running samples, and collecting and evaluating data to conform to the final reporting formats using LIMS systems. Preventive maintenance of the instruments, gas supplies inventory, and QC checks are performed and documented by these chemists. Spike recovery, control charts, linear range and detection limit studies are all a part of daily operations. Senior Chemists, being technically experienced, work on the most complex instrument procedures such as GC/MS/MS, LC/MS/MS and ICP/MS, assist in the preparation of standard operating procedures of these instruments and the training of chemists. Senior chemists also have more input on laboratory methods development projects and applied research. They share the supervisory responsibility in the absence of Supervising Chemists.

Supervising Chemists are working supervisors. Under the general direction of laboratory director, Supervising Chemists train and supervise other chemists, lab techs and interns. Supervising Chemists perform analyses as required. In addition to training and supervising, major responsibilities of Supervising Chemists include reviewing analytical results, both from chemists and the LIMS database. They troubleshoot LIMS data transfers and make necessary corrections and modifications. Supervisors assess coworkers' QA/QC work performances and actively assist in the recruitment of new employees. They're responsible for coordinating section workload, troubleshooting, and administering QA/QC programs. Supervising Chemists have the constant task of providing pertinent information on sample test series, test files; evaluating LIMS system performance, making recommendations to upgrade and customize the LIMS system to meet laboratory special needs and to ensure its success in improving lab operations.

Laboratory Director supervises the operations of both organic and inorganic sections of the lab. Lab Director provides direction within the District's objectives of the groundwater management program. The lab director furnishes water quality data to the end users within the District, and to other regulatory agencies as needed. Responsibilities also include laboratory resource management, budget preparation and forecast, staff recruitment, performance evaluations, laboratory instrument requirement studies, lab waste management, coordination of lab internal and external quality control practices, water quality research work coordination, and assures laboratory certification from the State's CDPH-ELAP.

A copy of laboratory job descriptions is given in the appendix.

TRAINING

The most important aspect of quality control is the laboratory's personnel. Laboratory personnel are the most crucial link in the analytical quality chain; it is their intelligence, training, and integrity that define data quality. The availability of skilled technical personnel and quality of performance are the key competitive factors in laboratory services. Rapid changes in analytical technology and regulations create obsolescence in laboratory technical resources as well as in equipment and products. The District must be able to retain qualified laboratory personnel, remain competitive in the market place, and become more productive with a higher quality output. To attain these goals the District has developed a solid employee development program, able to address the skill sets required of our laboratory staff. We have staff members that have moved through our lab organization – from student intern all the way to senior chemist.

At the District, those who can influence the correctness of the laboratory information must be included in the training program:

- * Laboratory Director
- * Supervising Chemists
- * Chemists
- * Technicians
- * Student Interns
- * Laboratory Support Personnel
- * LIMS - QA/QC Administrator

Types of training include technical and QA training that are essential to provide competence and skills in job performance, and supplemental training for updates of special knowledge. QA training addresses regulatory requirements, basic quality control practices, responsibilities of the technical staff and individuals, responsibilities of the lab QA personnel (Lab Director and Supervising Chemists), the reporting of non-compliance and the corrective action process, the performance of audits by CDPH inspectors, principles and applications of QC samples and control charts, and documentation of laboratory QA activities.

TRAINING RECORDS

As long-term investments, Orange County Water District has an educational reimbursement program and supports its employees in continuing job related education and training. Laboratory places emphasis on both group and individual training by taking part in the following specialized schools, seminars, and workshops.

Quality Assurance Workshop
Drinking Water Quality Monitoring Regulations Workshop
Total Quality Management (TQM) Workshop

Partial List of Technical Training:

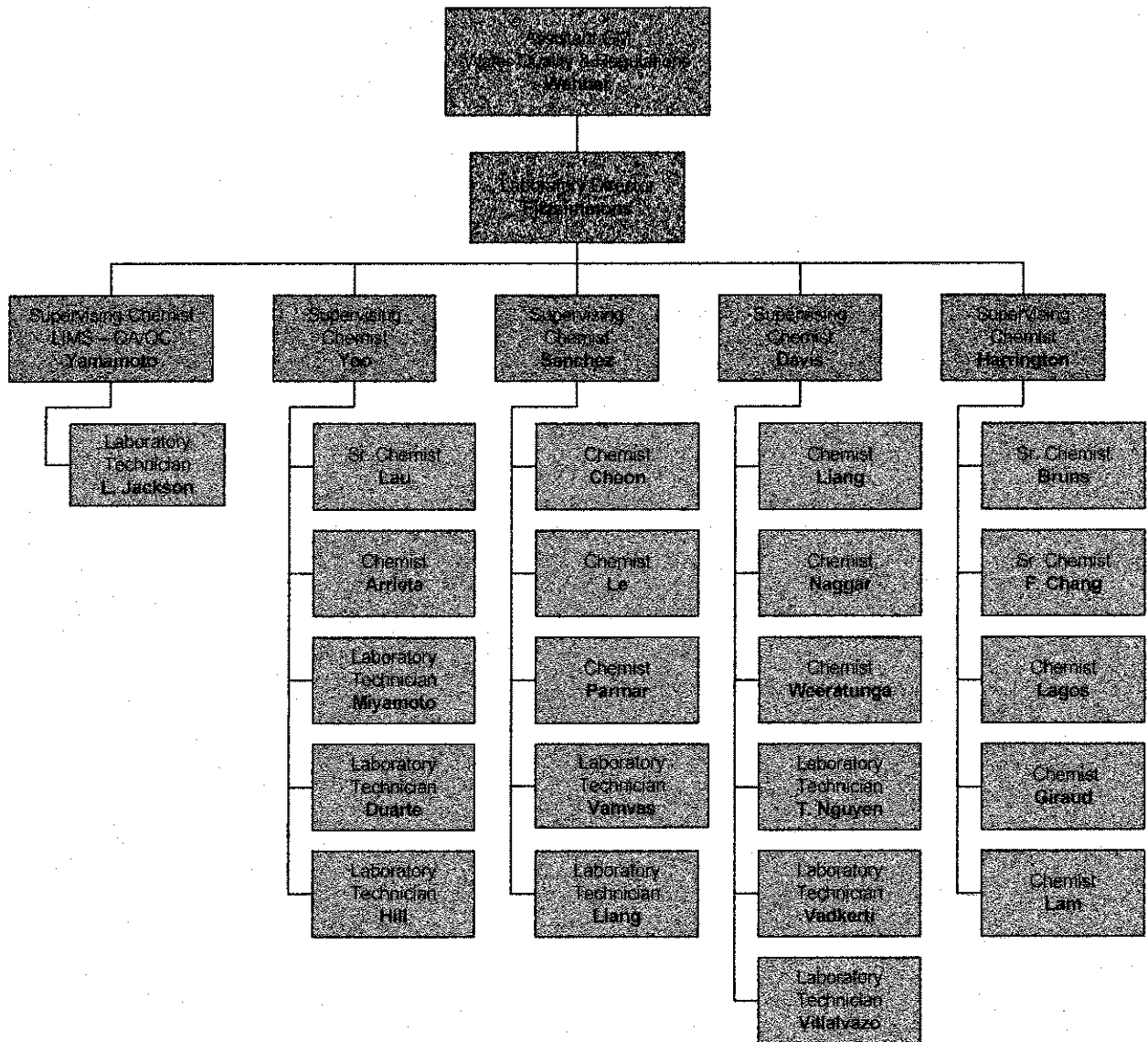
Ion Chromatography
ICP Spectrometer
FIA AutoAnalyzer
Graphite Furnace AA

Microbiological Analysis
ICP/MS Spectrometer
Saturn Ion-Trap GC/MS Spectrometer
Scientific Software Data Station for GC
Capillary GC - Trouble Shooting and Maintenance
LIMS
CEM Microwave Digestion Technique
PeakNet Data Station for Ion Chromatography
Millennium and Alliance software for HPLC

Partial List of Work Related Training:

Supervision and Performance Evaluation
Conducting Interview and Recruitment
Hazardous Waste Management
Laboratory Safety
Emergency Response and Use of Fire Extinguishers
First Aid and CPR
Earthquake Preparedness
Computer Software

ORANGE COUNTY WATER DISTRICT ADVANCED WATER QUALITY ASSURANCE LABORATORY



Summary information

Existing Staff – 28 FTEs

- 1 – Laboratory Director
- 1 – Supervising Chemist LIMS - QA/QC
- 4 – Supervising Chemists
- 3 – Senior Chemists
- 10 – Chemists
- 9 – Laboratory Technicians

2. QA OBJECTIVES FOR MEASUREMENT OF DATA

SECTION 2

QA OBJECTIVES FOR MEASUREMENT OF DATA

The role of a water quality laboratory is to provide information that is both qualitative and quantitative as a basis for making sound and often far-reaching decisions. To be valuable, the data must accurately describe the characteristics or the concentration of constituents in the sample submitted to the laboratory. In many cases, an approximate answer or incorrect result is worse than no answer at all, because it will lead to faulty interpretations. The concern of quality must be viewed within each step or process used to generate the data. Thus, specific controls, processes, or checks must be adhered to so that the data is reliable and accurate. This begins with sampling and goes all the way through final reporting and archiving. All steps must be linked to provide superior data quality, and the staff must be committed in keeping these objectives current. Quality assurance is not set or static, it will change based on the needs and objectives of the data set. Staff must keep these objectives in mind at all times, and must develop improvements needed to keep the quality assurance program a viable “*living*” system.

The key QA objective is to ensure that data meets the following requirements:

- * Data should be **accurate** in terms of agreement with a reference of "true" values.
- * Data should be **precise** in that there is agreement among individual measurements made under similar conditions.
- * Data should be **complete** in terms of the amount of valid data achieved vs. planned.
- * Data should be **comparable** to prior relevant data for evaluation and testing purposes.
- * Data should be **representative** of the overall population or database of parameter measurements.
- * Data should be **reproducible** under similar conditions, whether generated by the laboratory or elsewhere.

THE PROGRAM FUNCTION

The quality control program in the laboratory has two primary functions. First, the program should monitor the reliability (accuracy and precision) of the results reported. It should continually provide an answer to "How good are the results submitted?" This phase may be termed *measurement* of quality. The second function is the *control* of quality in order to meet the program requirements for reliability. For example, the processing of a spiked sample is the measurement of quality, while the use of analytical grade reagents is a control

measure. Just as each analytical method has a correct protocol, so the quality control associated with that test must also involve definite required steps to monitor and assure that the result is correct.

Data objectives will change over time, thus samples must be reviewed for the requested level of quality needed. While all Title 22, permitted, or drinking water monitoring support samples will have specified quality requirements, operational samples will have specific needs to insure data quality and program needs. This requires communication between the lab and the end-users or those who have requested the analysis. Thus, the District promotes a team quality assurance program, which involves input and responsibilities from all staff members assigned to the project. Since these objectives are known to change over time, documentation is a critical part of a quality assurance program. To this issue, the District utilizes our Laboratory Information Management System (LIMS) to track and report the conditions and status of data integrity. This system continues to evolve to meet these ever changing needs. We have found that this laboratory tool has been essential to us in the ability to track down process errors and correct them before data has been reported. We use our LIMS system to provide a feedback mechanism on how our processes are working.

QUOTE

FOUR LAWS OF QUALITY ASSURANCE:

"Do it right the first time."

"Detect errors as soon as possible."

"Correct the error as close as possible to its source."

"Document all actions taken."

SECTION 3

PROFICIENCY TESTING STUDIES

This chapter contains information on the results from this laboratory on Proficiency Testing Studies and CDPH microbiological performance evaluation studies. Information included here refers to 2002 - 2009.

Orange County Water District main laboratory began its participation in the EPA PE (performance evaluations) studies since 1986, in both water pollution (WP) and water supply (WS) series. EPA PE studies cover complete inorganic and organic analytes tested by the environmental labs, but they do not cover microbiological tests. For microbiological PE evaluation, this lab took part in Microbiology PE Study from DHS as well as from the contracted to third party sources - QC/3 and ERA programs. These programs check a lab's ability in handling complete bacti and analyses at a frequency of four times a year.

Chemists, after group discussion of the results, submit their corrective action responses for the results evaluated as "not acceptable" to the supervisors and lab director. The corrective action proposals include information on the cause(s) for each "not acceptable" answer and provide procedural changes necessary to improve future data quality.

Beginning in 2000, as a part of ELAP requirement, environmental laboratories in California are required to take part in the Proficiency Testing (PT) Studies provided by commercial vendors, which are approved by the National Institute of Standards and Technology (NIST). The Orange County Water District Laboratory is working with several commercial vendors to cover the needed targets for both inorganic parameters as well as organic.

Currently we have been using RTC to cover organic targets and ERA to cover the bulk of the inorganic performance testing targets. We have found that both of these vendors provide the needed technical support and customer service required of the PT testing program.

Philip Harrington
Orange County Water District
P.O. Box 8300
Fountain Valley, CA 92728

WP-174



Final Report

WatR™ Pollution Proficiency Testing

WatR™ Pollution Study

Open Date: 07/13/09

Close Date: 08/27/09

Report Issued Date: 09/14/09

WP-174 Final Complete Report

Philip Harrington
Supervising Chemist
Orange County Water District
P.O. Box 8300
Fountain Valley, CA 92728
714-378-3242

EPA ID: CA00043
ERA Customer Number: O127601
Report Issued: 09/14/09
Study Dates: 07/13/09 - 08/27/09

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Trace Metals (cat# 586)							
0001	Aluminum	µg/L		355	265 - 448	Not Reported	
0016	Antimony	µg/L		208	138 - 254	Not Reported	
0002	Arsenic	µg/L	712	723	608 - 846	Acceptable	EPA 200.8
1015	Barium	µg/L		145	125 - 163	Not Reported	
0003	Beryllium	µg/L		466	396 - 526	Not Reported	
1025	Boron	µg/L		836	694 - 975	Not Reported	
0004	Cadmium	µg/L		613	523 - 696	Not Reported	
0006	Chromium	µg/L		947	826 - 1070	Not Reported	
0005	Cobalt	µg/L		787	692 - 882	Not Reported	
0007	Copper	µg/L		262	236 - 290	Not Reported	
0008	Iron	µg/L		1440	1270 - 1620	Not Reported	
0012	Lead	µg/L		594	518 - 668	Not Reported	
0010	Manganese	µg/L		1100	988 - 1220	Not Reported	
0074	Molybdenum	µg/L		193	160 - 224	Not Reported	
0011	Nickel	µg/L		371	331 - 417	Not Reported	
0013	Selenium	µg/L		1150	915 - 1330	Not Reported	
0017	Silver	µg/L		156	133 - 179	Not Reported	
0075	Strontium	µg/L		131	112 - 150	Not Reported	
0018	Thallium	µg/L		711	583 - 846	Not Reported	
0014	Vanadium	µg/L		961	842 - 1070	Not Reported	
0015	Zinc	µg/L		619	531 - 713	Not Reported	



Study: **WP-174**

ERA Customer Number: **O127601**

Laboratory Name: **Orange County Water
District**

Microbiology Results

WP-174 Final Complete Report

Philip Harrington
Supervising Chemist
Orange County Water District
P.O. Box 8300
Fountain Valley, CA 92728
714-378-3242

EPA ID: CA00043
ERA Customer Number: O127601
Report Issued: 09/14/09
Study Dates: 07/13/09 - 08/27/09

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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WP WasteWatR™ Coliform MicrobE™ (cat# 576)

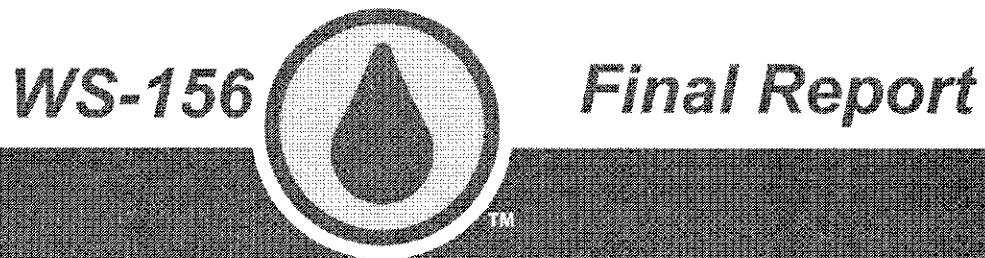
2500	Total Coliforms (MF)	CFU/100mL		402	153 - 1050	Not Reported	
2530	Fecal Coliforms (MF)	CFU/100mL		180	28.0 - 1170	Not Reported	
2525	E.coli (MF)	CFU/100mL		308	62.0 - 1520	Not Reported	
2500	Total Coliforms (MPN)	MPN/100mL	600	449	111 - 1820	Acceptable	SM9221B LTB
2530	Fecal Coliforms (MPN)	MPN/100mL	600	406	70.1 - 2350	Acceptable	SM9221E EC
2525	E.coli (MPN)	MPN/100mL		467	193 - 1130	Not Reported	

WP WasteWatR™ Coliform MicrobE™ (cat# 576)

2500	Total Coliforms (MF)	CFU/100mL		402	153 - 1050	Not Reported	
2530	Fecal Coliforms (MF)	CFU/100mL		180	28.0 - 1170	Not Reported	
2525	E.coli (MF)	CFU/100mL		308	62.0 - 1520	Not Reported	
2500	Total Coliforms (MPN)	MPN/100mL	727	449	111 - 1820	Acceptable	SM9223 COLertQT
2530	Fecal Coliforms (MPN)	MPN/100mL	727	406	70.1 - 2350	Acceptable	SM9223 COLertQT
2525	E.coli (MPN)	MPN/100mL		467	193 - 1130	Not Reported	



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WatRTM Supply Proficiency Testing

WatRTM Supply Study

Open Date: 07/07/09

Close Date: 08/20/09

Report Issued Date: 09/09/09

Study: **WS-156**

ERA Customer Number: **O127601**

Laboratory Name: **Orange County Water
District**

Microbiology Results



WS-156 Final Complete Report

Jeremy Davis
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P.O. Box 8300
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(714) 378-3244

EPA ID: CA00043
ERA Customer Number: O127601
Report Issued: 09/09/09
Study Dates: 07/07/09 - 08/20/09

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WS MicrobE™ (Coliforms) (cat# 080A)							
0254	Total Coliforms - Sample 1	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221B
0254	Total Coliforms - Sample 2	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B
0254	Total Coliforms - Sample 3	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B
0254	Total Coliforms - Sample 4	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221B
0254	Total Coliforms - Sample 5	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221B
0254	Total Coliforms - Sample 6	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B
0254	Total Coliforms - Sample 7	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B
0254	Total Coliforms - Sample 8	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221B
0254	Total Coliforms - Sample 9	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B
0254	Total Coliforms - Sample 10	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B
0255	Fecal Coliforms - Sample 1	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	Fecal Coliforms - Sample 2	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	Fecal Coliforms - Sample 3	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	Fecal Coliforms - Sample 4	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	Fecal Coliforms - Sample 5	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	Fecal Coliforms - Sample 6	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221E LTB EC
0255	Fecal Coliforms - Sample 7	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221E LTB EC
0255	Fecal Coliforms - Sample 8	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	Fecal Coliforms - Sample 9	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221E LTB EC
0255	Fecal Coliforms - Sample 10	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	E.coli - Sample 1	CFU/100mL		Absence	Absence	Not Reported	
0255	E.coli - Sample 2	CFU/100mL		Absence	Absence	Not Reported	
0255	E.coli - Sample 3	CFU/100mL		Absence	Absence	Not Reported	
0255	E.coli - Sample 4	CFU/100mL		Absence	Absence	Not Reported	
0255	E.coli - Sample 5	CFU/100mL		Absence	Absence	Not Reported	
0255	E.coli - Sample 6	CFU/100mL		Presence	Presence	Not Reported	
0255	E.coli - Sample 7	CFU/100mL		Presence	Presence	Not Reported	
0255	E.coli - Sample 8	CFU/100mL		Absence	Absence	Not Reported	
0255	E.coli - Sample 9	CFU/100mL		Presence	Presence	Not Reported	
0255	E.coli - Sample 10	CFU/100mL		Absence	Absence	Not Reported	

Total Coliforms Evaluation : Acceptable

Fecal Coliforms Evaluation : Acceptable

E.coli Evaluation : Not Reported

Fecal Coliform Organism - Escherichia coli, Samples 6, 7 and 9
Total Coliform Organism - Enterobacter cloacae, Samples 2, 3 and 10
Negative (1) Coliform Organism - Proteus mirabilis, Sample 1
Negative (2) Coliform Organism - Pseudomonas aeruginosa, Sample 4
Blank - No Organism, Samples 5 and 8



All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01



WS-156 Final Complete Report

Jeremy Davis
Supervising Chemist
Orange County Water District
P.O. Box 8300
Fountain Valley, CA 92728
(714) 378-3244

EPA ID: CA00043
ERA Customer Number: O127601
Report Issued: 09/09/09
Study Dates: 07/07/09 - 08/20/09

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WS MicrobE™ (Coliforms) (cat# 080B)							
0254	Total Coliforms - Sample 1	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 2	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 3	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 4	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 5	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 6	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 7	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 8	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 9	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 10	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	Fecal Coliforms - Sample 1	CFU/100mL		Absence	Absence	Not Reported	
0255	Fecal Coliforms - Sample 2	CFU/100mL		Absence	Absence	Not Reported	
0255	Fecal Coliforms - Sample 3	CFU/100mL		Absence	Absence	Not Reported	
0255	Fecal Coliforms - Sample 4	CFU/100mL		Absence	Absence	Not Reported	
0255	Fecal Coliforms - Sample 5	CFU/100mL		Presence	Presence	Not Reported	
0255	Fecal Coliforms - Sample 6	CFU/100mL		Absence	Absence	Not Reported	
0255	Fecal Coliforms - Sample 7	CFU/100mL		Absence	Absence	Not Reported	
0255	Fecal Coliforms - Sample 8	CFU/100mL		Presence	Presence	Not Reported	
0255	Fecal Coliforms - Sample 9	CFU/100mL		Absence	Absence	Not Reported	
0255	Fecal Coliforms - Sample 10	CFU/100mL		Presence	Presence	Not Reported	
0255	E.coli - Sample 1	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	E.coli - Sample 2	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	E.coli - Sample 3	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	E.coli - Sample 4	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	E.coli - Sample 5	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	E.coli - Sample 6	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	E.coli - Sample 7	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	E.coli - Sample 8	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	E.coli - Sample 9	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	E.coli - Sample 10	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT

Total Coliforms Evaluation : Acceptable

Fecal Coliforms Evaluation : Not Reported

E.coli Evaluation : Acceptable

Fecal Coliform Organism - Escherichia coli, Samples 5, 8 and 10
Total Coliform Organism - Enterobacter cloacae, Samples 2, 4 and 6
Negative (1) Coliform Organism - Proteus mirabilis, Sample 9
Negative (2) Coliform Organism - Pseudomonas aeruginosa, Sample 3
Blank - No Organism, Samples 1 and 7



PERFORMANCE EVALUATION

First Choice for Quality |



Quarterly Study
WS09-2

RT1143
RTC Labcode

CA00043
US EPA Labcode

15-Apr-2009 through 29-May-2009


Orange Co Water District
Lee J. Yoo
18700 Ward St.
Fountain Valley CA 92708

Thank you for participating in study WS09-2. Additional information about this study may be found online at www.rt-corp.com.
If you have any questions or comments about this study please contact me.

This report shall not be reproduced except in full, without written approval of the laboratory. RTC is accredited by A2LA to perform PT programs for the scope of accreditation under A2LA certificate 2122.01. A laboratory may not claim endorsement by A2LA or any other federal agency.

This report may contain data that are not covered by the A2LA accreditation.

Sincerely,

A handwritten signature in black ink, appearing to read "Christopher Rucinski".

Christopher Rucinski
Quality Director

2931 Soldier Springs Road
Laramie, WY 82070
(307) 742-5452
www.rt-corp.com





WS09-2
Concluded 05/29/2009



Dataset

PA 525.2

Dataset Analyst
Lab, Organic

Accreditors

Evaluations of this dataset will be sent to the accreditor(s) listed below using your laboratory's labcode listed above each accrediting agency. If any of the information listed below is incorrect, please contact RTC immediately.

Accrediting Labcode 1114

Environment Lab Accred. Program Branch
California Dept. of Public Health

104 Fred Choske
850 Marina Bay Parkway
Bldg. P, 1st Floor, MS 7103
Richmond CA 94804
UNITED STATES

Base/Neutrals

Base/Neutrals

Analysis

EPA 525.2 - Analyst: O. Lab

Method Number 10089608

	Result Units	Assigned Value	Accept.	Z	Evaluation
Acenaphthylene 1, 4, 5 5505 / O-006-2 - Lot 014580	7.20 µg/L	6.09	3.05 to 9.14	0.73	Acceptable
Anthracene 1, 4, 5 5555 / O-006-2 - Lot 014580	3.70 µg/L	5.25	2.63 to 7.88	-1.18	Acceptable
Benzo(a)anthracene 1, 4, 5 5575 / O-006-2 - Lot 014580	8.00 µg/L	8.55	4.28 to 12.8	-0.26	Acceptable
Benzo(a)pyrene 1, 3, 4 5580 / O-006-1 - Lot 014578	2.04 µg/L	1.64	0.723 to 2.56	0.87	Acceptable
Benzo(b)fluoranthene 1, 4, 5 5585 / O-006-2 - Lot 014580	5.00 µg/L	6.11	3.06 to 9.16	-0.73	Acceptable
Benzo(g,h,i)perylene 1, 4, 5 5590 / O-006-2 - Lot 014580	6.40 µg/L	7.53	3.77 to 11.3	-0.60	Acceptable
Benzo(k)fluoranthene 1, 4, 5 5600 / O-006-2 - Lot 014580	6.84 µg/L	8.07	4.03 to 12.1	-0.61	Acceptable
Butyl benzyl phthalate 1, 4 5670 / O-006-2 - Lot 014580	45.0 µg/L	40.80	16.3 to 65.3	0.34	Acceptable
Chrysene 1, 4, 5 5855 / O-006-2 - Lot 014580	5.30 µg/L	6.04	3.02 to 9.06	-0.49	Acceptable
Dibenz(a,h) anthracene 1, 4, 5 5895 / O-006-2 - Lot 014580	4.40 µg/L	5.37	2.68 to 8.06	-0.72	Acceptable
Di-n-butyl phthalate 1, 4, 5 5825 / O-006-2 - Lot 014580	35.6 µg/L	29.40	11.8 to 47.0	0.70	Acceptable



Base/Neutrals (continued)

Base/Neutrals

Analysis

EPA 525.2 - Analyst: O. Lab

(continued)

Method Number 10089608

	Result Units	Assigned Value	Accept.	Z	Evaluation
Di(2-ethylhexyl)adipate 1, 3, 4 6062 / O-006-1 - Lot 014578	15.4 µg/L	13.00	4.62 to 21.3	0.58	Acceptable
Di(2-ethylhexyl)phthalate 1, 3, 4 6065 / O-006-1 - Lot 014578	41.4 µg/L	43.20	18.8 to 67.6	-0.15	Acceptable
Diethyl phthalate 1, 4, 5 6070 / O-006-2 - Lot 014580	41.6 µg/L	37.50	15.0 to 60.0	0.36	Acceptable
Dimethyl phthalate 1, 4, 5 6135 / O-006-2 - Lot 014580	32.4 µg/L	28.40	11.4 to 45.4	0.47	Acceptable
Di-n-octyl phthalate 1, 4, 5 6200 / O-006-2 - Lot 014580	39.2 µg/L	38.80	15.5 to 62.1	0.03	Acceptable
Fluorene 1, 4, 5 6270 / O-006-2 - Lot 014580	4.93 µg/L	4.54	2.27 to 6.81	0.35	Acceptable
Indeno(1,2,3-cd) pyrene 1, 4, 5 6315 / O-006-2 - Lot 014580	7.12 µg/L	6.74	3.37 to 10.1	0.23	Acceptable
Phenanthrene 1, 4, 5 6615 / O-006-2 - Lot 014580	5.80 µg/L	5.65	2.83 to 8.48	0.11	Acceptable
Pyrene 1, 4, 5 6665 / O-006-2 - Lot 014580	5.80 µg/L	5.76	2.88 to 8.64	0.03	Acceptable

Group Analysis Summary

Acceptable 20 / 20

Score 100.0% - (Acceptable)

Herbicides

Herbicides

Analysis

EPA 525.2 - Analyst: O. Lab

Method Number 10089608

	Result Units	Assigned Value	Accept.	Z	Evaluation
Pentachlorophenol 1, 3, 4 6605 / O-005-4 - Lot 014632	61.3 µg/L	47.80	23.9 to 71.7	1.13	Acceptable
Dacthal (DCPA) 1, 4, 5 8550 / O-005-4 - Lot 014632	55.6 µg/L	38.40	0.00 to 80.1	0.83	Acceptable

Pesticides

Pesticides

Analysis

EPA 525.2 - Analyst: O. Lab

Method Number 10089608



Pesticides (continued)

Pesticides
Analysis

EPA 525.2 - Analyst: O. Lab

(continued)
Method Number 10089608

	Result Units	Assigned Value	Accept.	Z	Evaluation
Acetochlor 4 4310 / O-005-3 - Lot 014419	17.0 µg/L	20.60	12.4 to 28.8	-0.87	Acceptable
Hexachlorobenzene 1, 3, 4 6275 / O-005-2 - Lot 014577	2.80 µg/L	2.46	1.31 to 3.62	0.59	Acceptable
Hexachlorocyclopentadiene 1, 3, 4 6285 / O-005-2 - Lot 014577	14.2 µg/L	12.60	2.94 to 22.3	0.33	Acceptable
Alachlor 1, 3, 4 7005 / O-005-3 - Lot 014419	16.0 µg/L	14.20	7.81 to 20.6	0.56	Acceptable
Aldrin 1, 3, 4 7025 / O-005-1 - Lot 014576	1.00 µg/L	0.87	0.435 to 1.31	0.59	Acceptable
Atrazine 1, 3, 4 7065 / O-005-3 - Lot 014419	30.6 µg/L	27.40	15.1 to 39.7	0.52	Acceptable
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane) 1, 3, 4 7120 / O-005-1 - Lot 014576	2.91 µg/L	2.70	1.49 to 3.91	0.35	Acceptable
Bromacil 1, 4, 5 7130 / O-005-3 - Lot 014419	8.60 µg/L	9.53	5.24 to 13.8	-0.43	Acceptable
Butachlor 1, 4 7160 / O-005-3 - Lot 014419	25.4 µg/L	18.60	10.9 to 26.3	1.77	Acceptable
Dieldrin 1, 3, 4 7470 / O-005-1 - Lot 014576	0.700 µg/L	0.77	0.453 to 1.06	-0.49	Acceptable
Endrin 1, 3, 4 7540 / O-005-1 - Lot 014576	2.30 µg/L	2.48	1.74 to 3.22	-0.48	Acceptable
Heptachlor 1, 3, 4 7685 / O-005-1 - Lot 014576	1.71 µg/L	2.10	1.15 to 3.04	-0.83	Acceptable
Heptachlor epoxide 1, 3, 4 7690 / O-005-2 - Lot 014577	2.00 µg/L	2.29	1.26 to 3.32	-0.56	Acceptable
Methoxychlor 1, 3, 4 7810 / O-005-2 - Lot 014577	58.0 µg/L	62.10	34.2 to 90.0	-0.29	Acceptable
Metolachlor 1, 4 7835 / O-005-3 - Lot 014419	41.2 µg/L	30.50	17.9 to 43.1	1.70	Acceptable
Metribuzin 1, 4 7845 / O-005-3 - Lot 014419	32.0 µg/L	20.40	5.42 to 35.3	1.55	Acceptable
Molinate 1, 4, 5 7875 / O-005-3 - Lot 014419	22.0 µg/L	20.00	11.0 to 29.0	0.44	Acceptable
Propachlor (Ramrod) 1, 3, 4 8045 / O-005-2 - Lot 014577	3.40 µg/L	3.33	2.01 to 4.65	0.11	Acceptable



Pesticides (continued)

Pesticides
Analysis

EPA 525.2 - Analyst: O. Lab

(continued)
Method Number 10089608

	Result Units	Assigned Value	Accept.	Z	Evaluation
Simazine 1, 3, 4 8125 / O-005-3 - Lot 014419	8.80 µg/L	8.99	2.42 to 15.6	-0.06	Acceptable
Trifluralin (Treflan) 1, 3, 4 8295 / O-005-2 - Lot 014577	2.20 µg/L	2.08	1.13 to 3.02	0.25	Acceptable

Group Analysis Summary

Acceptable 20 / 20
Score 100.0% - (Acceptable)

End of EPA 525.2



Dataset

Full Set

Dataset Analyst
Lab, Organic

Accreditors

Evaluations of this dataset will be sent to the accreditor(s) listed below using your laboratory's labcode listed above each accrediting agency. If any of the information listed below is incorrect, please contact RTC immediately.

Accrediting Labcode 1114

Environment Lab Accred. Program Branch

California Dept. of Public Health

104 Fred Choske

850 Marina Bay Parkway
Bldg. P, 1st Floor, MS 7103
Richmond CA 94804
UNITED STATES

Analysis

EPA 547 - Analyst: O. Lab

Method Number 10091802

	Result Units	Assigned Value	Accept.	Z	Evaluation
Glyphosate 9411 / O-097-1 - Lot 014617	383 µg/L	459.00	377 to 541	-1.85	Acceptable

Analysis

EPA 548.1 - Analyst: O. Lab

Method Number 10092601

	Result Units	Assigned Value	Accept.	Z	Evaluation
Endothall 7525 / O-097-2 - Lot 014581	87.5 µg/L	111.00	47.8 to 175	-0.74	Acceptable

Analysis

EPA 549.2 - Analyst: O. Lab

Method Number 10093206

	Result Units	Assigned Value	Accept.	Z	Evaluation
Diquat 9390 / O-097-1 - Lot 014617	16.1 µg/L	15.30	3.45 to 27.1	0.14	Acceptable
Paraquat 9528 / O-097-1 - Lot 014617	11.3 µg/L	8.90	4.45 to 13.3	1.08	Acceptable

Base/Neutrals

Base/Neutrals

Analysis

EPA 550.1 - Analyst: O. Lab

Method Number 10094005

	Result Units	Assigned Value	Accept.	Z	Evaluation
Naphthalene 1, 4, 5 5005 / O-008-2 - Lot 014580	38.0 µg/L	43.70	26.2 to 61.2	-0.65	Acceptable



Base/Neutrals (continued)

Base/Neutrals
Analysis

EPA 550.1 - Analyst: O. Lab

(continued)
Method Number 10094005

	Result Units	Assigned Value	Accept.	Z	Evaluation
Acenaphthene 1, 4, 5 5500 / O-006-2 - Lot 014580	7.79 µg/L	7.40	3.70 to 11.1	0.21	Acceptable
Acenaphthylene 1, 4, 5 5505 / O-006-2 - Lot 014580	4.34 µg/L	6.09	3.05 to 9.14	-1.15	Acceptable
Anthracene 1, 4, 5 5555 / O-006-2 - Lot 014580	4.52 µg/L	5.25	2.63 to 7.88	-0.56	Acceptable
Benzo(a)anthracene 1, 4, 5 5575 / O-006-2 - Lot 014580	7.58 µg/L	8.55	4.28 to 12.8	-0.45	Acceptable
Benzo(a)pyrene 1, 3, 4 5580 / O-006-1 - Lot 014578	1.68 µg/L	1.64	0.723 to 2.56	0.09	Acceptable
Benzo(b)fluoranthene 1, 4, 5 5585 / O-006-2 - Lot 014580	5.42 µg/L	6.11	3.06 to 9.16	-0.45	Acceptable
Benzo(g,h,i)perylene 1, 4, 5 5590 / O-006-2 - Lot 014580	6.76 µg/L	7.53	3.77 to 11.3	-0.41	Acceptable
Benzo(k)fluoranthene 1, 4, 5 5600 / O-006-2 - Lot 014580	7.05 µg/L	8.07	4.03 to 12.1	-0.50	Acceptable
Chrysene 1, 4, 5 5855 / O-006-2 - Lot 014580	5.48 µg/L	6.04	3.02 to 9.06	-0.37	Acceptable
Dibenz(a,h) anthracene 1, 4, 5 5895 / O-006-2 - Lot 014580	4.86 µg/L	5.37	2.68 to 8.06	-0.38	Acceptable
Fluoranthene 1, 4, 5 6265 / O-006-2 - Lot 014580	5.67 µg/L	6.34	3.17 to 9.51	-0.42	Acceptable
Fluorene 1, 4, 5 6270 / O-006-2 - Lot 014580	4.10 µg/L	4.54	2.27 to 6.81	-0.39	Acceptable
Indeno(1,2,3-cd) pyrene 1, 4, 5 6315 / O-006-2 - Lot 014580	6.04 µg/L	6.74	3.37 to 10.1	-0.42	Acceptable
Phenanthrene 1, 4, 5 6615 / O-006-2 - Lot 014580	5.16 µg/L	5.65	2.83 to 8.48	-0.35	Acceptable
Pyrene 1, 4, 5 6665 / O-006-2 - Lot 014580	5.54 µg/L	5.76	2.88 to 8.64	-0.15	Acceptable

Group Analysis Summary

Acceptable 16 / 16
Score 100.0% - (Acceptable)

Carbamates



Carbamates (continued)

Analysis

EPA 531.1 - Analyst: O. Lab

Method Number 10090809

	Result Units	Assigned Value	Accept.	Z	Evaluation
Aldicarb (Temik) 1, 3, 4 7010 / O-001 - Lot 014583	27.9 µg/L	35.30	26.7 to 44.0	-1.71	Acceptable
Aldicarb sulfone 1, 3, 4 7015 / O-001 - Lot 014583	36.4 µg/L	37.40	29.0 to 45.8	-0.24	Acceptable
Aldicarb sulfoxide 1, 3, 4 7020 / O-001 - Lot 014583	27.6 µg/L	28.00	21.2 to 34.8	-0.12	Acceptable
Carbaryl (Sevin) 1, 4 7195 / O-001 - Lot 014583	48.9 µg/L	47.50	37.7 to 57.3	0.29	Acceptable
Carbofuran (Furaden) 1, 3, 4 7205 / O-001 - Lot 014583	46.8 µg/L	49.30	27.1 to 71.5	-0.23	Acceptable
3-Hydroxycarbofuran 1, 4 7710 / O-001 - Lot 014583	22.9 µg/L	24.00	19.6 to 28.4	-0.50	Acceptable
Methiocarb (Mesurol) 1, 4, 5 7800 / O-001 - Lot 014583	53.7 µg/L	54.80	24.2 to 85.4	-0.07	Acceptable
Methomyl (Lannate) 1, 3, 4 7805 / O-001 - Lot 014583	54.7 µg/L	61.30	49.6 to 72.9	-1.13	Acceptable
Oxamyl 1, 3, 4 7940 / O-001 - Lot 014583	49.5 µg/L	51.00	39.2 to 62.8	-0.25	Acceptable
Propoxur (Baygon) 1, 4, 5 8080 / O-001 - Lot 014583	40.6 µg/L	42.60	34.4 to 50.7	-0.49	Acceptable

Group Analysis Summary

Acceptable 10 / 10

Score 100.0% - (Acceptable)

Haloacetic acids

Analysis

EPA 552.2 - Analyst: O. Lab

Method Number 10095600

	Result Units	Assigned Value	Accept.	Z	Evaluation
Monobromoacetic acid 1, 3, 4 9312 / O-098 - Lot 014619	26.9 µg/L	26.00	15.6 to 36.4	0.17	Acceptable
Monochloroacetic acid 1, 3, 4 9336 / O-098 - Lot 014619	25.6 µg/L	31.70	19.0 to 44.4	-0.96	Acceptable
Dibromoacetic acid 1, 3, 4 9357 / O-098 - Lot 014619	25.9 µg/L	24.80	14.9 to 34.7	0.22	Acceptable
Dichloroacetic acid 1, 3, 4 9360 / O-098 - Lot 014619	34.4 µg/L	32.00	19.2 to 44.8	0.38	Acceptable



Haloacetic acids (continued)

Analysis

EPA 552.2 - Analyst: O. Lab

(continued)

Method Number 10095600

	Result Units	Assigned Value	Accept.	Z	Evaluation
Trichloroacetic acid 1, 3, 4 9642 / O-098 - Lot 014619	16.1 µg/L	15.50	9.30 to 21.7	0.19	Acceptable

Group Analysis Summary

Acceptable 5 / 5

Score 100.0% - (Acceptable)

Herbicides

Herbicides

Analysis

EPA 515.4 1 (2000) - Analyst: O. Lab

Method Number 10088503

	Result Units	Assigned Value	Accept.	Z	Evaluation
Pentachlorophenol 1, 3, 4 6605 / O-005-4 - Lot 014632	60.5 µg/L	47.80	23.9 to 71.7	1.07	Acceptable
Acifluorfen 1, 3, 4 8505 / O-005-4 - Lot 014632	17.5 µg/L	16.40	2.21 to 30.7	0.15	Acceptable
Bentazon 1, 4, 5 8530 / O-005-4 - Lot 014632	120 µg/L	86.30	38.5 to 134	1.41	Acceptable
2,4-D Total 1, 3, 4 8545 / O-005-4 - Lot 014632	121 µg/L	131.00	65.5 to 197	-0.30	Acceptable
Dacthal (DCPA) 1, 4, 5 8550 / O-005-4 - Lot 014632	22.1 µg/L	38.40	0.00 to 80.1	-0.78	Acceptable
Dalapon 1, 3, 4 8555 / O-005-4 - Lot 014632	45.9 µg/L	25.10	0.00 to 56.8	1.32	Acceptable
Dicamba 1, 3, 4 8595 / O-005-4 - Lot 014632	81.5 µg/L	61.00	19.5 to 103	0.99	Acceptable
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP) 1, 3, 8620 / O-005-4 - Lot 014632	44.1 µg/L	31.00	8.05 to 54.0	1.14	Acceptable
Picloram 1, 3, 4 8645 / O-005-4 - Lot 014632	42.5 µg/L	44.80	12.8 to 76.8	-0.14	Acceptable
Silvex (2,4,5-TP) 1, 3, 4 8650 / O-005-4 - Lot 014632	61.1 µg/L	54.50	27.3 to 81.8	0.49	Acceptable

Group Analysis Summary

Acceptable 10 / 10

Score 100.0% - (Acceptable)

Organic Disinfection By-Products



Organic Disinfection By-Products (continued)

Analysis

EPA 551.1 - Analyst: O. Lab

Method Number 10094607

	Result Units	Assigned Value	Accept.	Z	Evaluation
Chloral hydrate 1, 3, 4 4460 / O-077 - Lot 014585	23.1 µg/L	23.30	5.83 to 40.8	-0.02	Acceptable

Analysis

EPA 552.2 - Analyst: O. Lab

Method Number 10095600

	Result Units	Assigned Value	Accept.	Z	Evaluation
Bromochloroacetic acid 1, 3, 4 9315 / O-098 - Lot 014819	37.2 µg/L	33.80	20.2 to 47.0	0.54	Acceptable
Total haloacetic acids 9414 / O-098 - Lot 014819	166 µg/L	151.00	90.6 to 211	0.50	Acceptable

Oxygenates - Gasoline Additives

Analysis

EPA 524.2 - Analyst: O. Lab

Method Number 10088605

	Result Units	Assigned Value	Accept.	Z	Evaluation
T-amylmethylether (TAME) 1, 4, 5 4370 / O-075 - Lot 014608	45.8 µg/L	37.90	22.7 to 53.1	1.04	Acceptable
tert-Butyl alcohol 1, 4, 5 4420 / O-075 - Lot 014608	34.2 µg/L	32.30	19.4 to 45.2	0.29	Acceptable
Carbon disulfide 4 4450 / O-075 - Lot 014608	29.8 µg/L	21.80	13.1 to 30.5	1.83	Acceptable
Ethyl-t-butylether (ETBE) 1, 4, 5 4770 / O-075 - Lot 014608	33.2 µg/L	35.70	21.4 to 50.0	-0.35	Acceptable
Methyl tert-butyl ether (MTBE) 4 5000 / O-075 - Lot 014608	31.3 µg/L	32.90	19.7 to 46.1	-0.24	Acceptable
n-Propylbenzene (1-Phenylpropane) 4 5090 / O-075 - Lot 014608	39.8 µg/L	40.00	24.0 to 56.0	-0.03	Acceptable
Trichlorofluoromethane 4 5175 / O-075 - Lot 014608	34.9 µg/L	35.80	21.5 to 50.1	-0.13	Acceptable
1,2,3-Trichloropropane 1, 4, 5 5180 / O-075 - Lot 014608	0.840 µg/L	0.65	0.390 to 0.910	1.46	Acceptable
Trichlorotrifluoroethane (Freon 113) 1, 4, 5 5185 / O-075 - Lot 014608	43.5 µg/L	43.30	26.0 to 60.6	0.02	Acceptable
Di-isopropylether (DIPE) 1, 4, 5 9375 / O-075 - Lot 014608	24.3 µg/L	25.70	5.14 to 46.3	-0.14	Acceptable



Oxygenates - Gasoline Additives (continued)

Group Analysis Summary

Acceptable 10 / 10
Score 100.0% - (Acceptable)

PCBs in Water

Analysis

EPA 508 - Analyst: O. Lab

Method Number 10085004

	Result Units	Assigned Value	Accept.	Z	Evaluation
PCB Aroclor Identification 1 8872 / O-003 - Lot 014616	1254				Acceptable
Aroclor-1016 (PCB-1016) 1, 4 8880 / O-003 - Lot 014616	<0.150 µg/L	0.00	0.0 to 0.0		Acceptable
Aroclor-1221 (PCB-1221) 1, 4 8885 / O-003 - Lot 014616	<0.150 µg/L	0.00	0.0 to 0.0		Acceptable
Aroclor-1232 (PCB-1232) 1, 4 8890 / O-003 - Lot 014616	<0.150 µg/L	0.00	0.0 to 0.0		Acceptable
Aroclor-1242 (PCB-1242) 1, 4 8895 / O-003 - Lot 014616	<0.150 µg/L	0.00	0.0 to 0.0		Acceptable
Aroclor-1248 (PCB-1248) 1, 4 8900 / O-003 - Lot 014616	<0.150 µg/L	0.00	0.0 to 0.0		Acceptable
Aroclor-1254 (PCB-1254) 1, 4 8905 / O-003 - Lot 014616	1.35 µg/L	1.21	0.00 to 2.42	0.23	Acceptable
Aroclor-1260 (PCB-1260) 1, 4 8910 / O-003 - Lot 014616	<0.150 µg/L	0.00	0.0 to 0.0		Acceptable

Pesticides

Pesticides

Analysis

EPA 507 - Analyst: O. Lab

Method Number 10084409

	Result Units	Assigned Value	Accept.	Z	Evaluation
Alachlor 1, 3, 4 7005 / O-005-3 - Lot 014419	13.6 µg/L	14.20	7.81 to 20.6	-0.19	Acceptable
Atrazine 1, 3, 4 7065 / O-005-3 - Lot 014419	27.9 µg/L	27.40	15.1 to 39.7	0.08	Acceptable
Bromacil 1, 4, 5 7130 / O-005-3 - Lot 014419	9.26 µg/L	9.53	5.24 to 13.8	-0.13	Acceptable
Butachlor 1, 4 7180 / O-005-3 - Lot 014419	19.7 µg/L	18.60	10.9 to 26.3	0.29	Acceptable



Pesticides (continued)

Pesticides
Analysis

EPA 507 - Analyst: O. Lab

(continued)
Method Number 10084409

	Result Units	Assigned Value	Accept.	Z	Evaluation
Metolachlor 1, 4 7835 / O-005-3 - Lot 014419	35.8 µg/L	30.50	17.9 to 43.1	0.84	Acceptable
Metribuzin 1, 4 7845 / O-005-3 - Lot 014419	23.9 µg/L	20.40	5.42 to 35.3	0.47	Acceptable
Molinate 1, 4, 5 7875 / O-005-3 - Lot 014419	18.6 µg/L	20.00	11.0 to 29.0	-0.31	Acceptable
Simazine 1, 3, 4 8125 / O-005-3 - Lot 014419	9.59 µg/L	8.99	2.42 to 15.6	0.18	Acceptable

Analysis

EPA 508 - Analyst: O. Lab

Method Number 10085004

	Result Units	Assigned Value	Accept.	Z	Evaluation
Hexachlorobenzene 1, 3, 4 6275 / O-005-2 - Lot 014577	2.28 µg/L	2.46	1.31 to 3.62	-0.31	Acceptable
Hexachlorocyclopentadiene 1, 3, 4 6285 / O-005-2 - Lot 014577	10.2 µg/L	12.60	2.94 to 22.3	-0.50	Acceptable
Aldrin 1, 3, 4 7025 / O-005-1 - Lot 014576	0.865 µg/L	0.87	0.435 to 1.31	-0.03	Acceptable
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane) 1, 3, 4 7120 / O-005-1 - Lot 014576	2.45 µg/L	2.70	1.49 to 3.91	-0.41	Acceptable
Chlordane (total) 1, 3, 4 7250 / O-005-5 - Lot 014568	9.74 µg/L	9.37	5.15 to 13.6	0.18	Acceptable
Dieldrin 1, 3, 4 7470 / O-005-1 - Lot 014576	0.620 µg/L	0.77	0.453 to 1.06	-1.04	Acceptable
Endrin 1, 3, 4 7540 / O-005-1 - Lot 014576	2.73 µg/L	2.48	1.74 to 3.22	0.67	Acceptable
Heptachlor 1, 3, 4 7685 / O-005-1 - Lot 014576	1.83 µg/L	2.10	1.15 to 3.04	-0.57	Acceptable
Heptachlor epoxide 1, 3, 4 7690 / O-005-2 - Lot 014577	2.01 µg/L	2.29	1.26 to 3.32	-0.54	Acceptable
Methoxychlor 1, 3, 4 7810 / O-005-2 - Lot 014577	62.0 µg/L	62.10	34.2 to 90.0	-0.01	Acceptable
Propachlor (Ramrod) 1, 3, 4 8045 / O-005-2 - Lot 014577	2.67 µg/L	3.33	2.01 to 4.65	-1.00	Acceptable
Toxaphene (Chlorinated camphene) 1, 3, 4 8250 / O-005-6 - Lot 014570	9.89 µg/L	9.82	5.40 to 14.2	0.03	Acceptable



Pesticides (continued)

Pesticides
Analysis

EPA 508 - Analyst: O. Lab

(continued)
Method Number 10085004

	Result Units	Assigned Value	Accept.	Z	Evaluation
Trifluralin (Treflan) 1, 3, 4 6295 / O-005-2 - Lot 014577	1.90 µg/L	2.08	1.13 to 3.02	-0.38	Acceptable

Group Analysis Summary

Acceptable 13 / 13
Score 100.0% - (Acceptable)

Regulated VOCs

Analysis

EPA 504.1 - Analyst: O. Lab

Method Number 10082607

	Result Units	Assigned Value	Accept.	Z	Evaluation
1,2-Dibromo-3-chloropropane (DBCP) 1, 3, 4 4570 / O-007-4 - Lot 014611	1.16 µg/L	1.04	0.624 to 1.46	0.58	Acceptable
1,2-Dibromoethane (EDB, Ethylene dibromide) 1, 3, 4 4585 / O-007-4 - Lot 014611	0.680 µg/L	0.60	0.357 to 0.833	0.71	Acceptable

Analysis

EPA 524.2 - Analyst: O. Lab

Method Number 10088605

	Result Units	Assigned Value	Accept.	Z	Evaluation
Benzene 1, 3, 4 4375 / O-007-2 - Lot 014609	5.88 µg/L	6.31	3.79 to 8.83	-0.49	Acceptable
Carbon tetrachloride 1, 3, 4 4455 / O-007-1 - Lot 014638	6.66 µg/L	6.39	3.83 to 8.95	0.21	Acceptable
Chlorobenzene 1, 3, 4 4475 / O-007-1 - Lot 014638	3.38 µg/L	3.58	2.15 to 5.01	-0.54	Acceptable
1,2-Dichlorobenzene 1, 3, 4 4610 / O-007-2 - Lot 014609	12.5 µg/L	12.60	10.0 to 15.1	-0.07	Acceptable
1,4-Dichlorobenzene 1, 3, 4 4620 / O-007-2 - Lot 014609	7.36 µg/L	10.50	7.03 to 13.9	-1.84	Acceptable
1,2-Dichloroethane 1, 3, 4 4635 / O-007-1 - Lot 014638	8.00 µg/L	8.59	5.15 to 12.0	-0.64	Acceptable
1,1-Dichloroethylene 1, 3, 4 4640 / O-007-1 - Lot 014638	9.30 µg/L	9.30	5.58 to 13.0	0.00	Acceptable
cis-1,2-Dichloroethylene 1, 3, 4 4645 / O-007-1 - Lot 014638	42.8 µg/L	40.00	32.0 to 48.0	0.72	Acceptable
1,2-Dichloropropane 1, 3, 4 4655 / O-007-1 - Lot 014638	15.0 µg/L	14.50	11.6 to 17.4	0.36	Acceptable



Regulated VOCs (continued)

Analysis

EPA 524.2 - Analyst: O. Lab

(continued)

Method Number 10088605

	Result Units	Assigned Value	Accept.	Z	Evaluation
trans-1,2-Dichloroethylene 1, 3, 4 4700 / O-007-1 - Lot 014638	4.00 µg/L	3.88	2.33 to 5.43	0.27	Acceptable
Ethylbenzene 1, 3, 4 4765 / O-007-2 - Lot 014609	12.9 µg/L	13.20	10.5 to 15.8	-0.14	Acceptable
Methylene chloride (Dichloromethane) 1, 3, 4 4975 / O-007-1 - Lot 014638	10.2 µg/L	9.49	5.69 to 13.3	0.79	Acceptable
Styrene 1, 3, 4 5100 / O-007-1 - Lot 014638	8.08 µg/L	9.99	5.99 to 14.0	-1.45	Acceptable
Tetrachloroethylene (Perchloroethylene) 1, 3, 4 5115 / O-007-1 - Lot 014638	15.2 µg/L	14.10	11.3 to 16.9	0.64	Acceptable
Toluene 1, 3, 4 5140 / O-007-2 - Lot 014609	17.7 µg/L	18.10	14.5 to 21.7	-0.21	Acceptable
1,2,4-Trichlorobenzene 1, 3, 4 5155 / O-007-1 - Lot 014638	13.7 µg/L	14.70	9.66 to 19.8	-0.39	Acceptable
1,1,1-Trichloroethane 1, 3, 4 5160 / O-007-1 - Lot 014638	14.9 µg/L	14.40	11.5 to 17.3	0.31	Acceptable
1,1,2-Trichloroethane 1, 3, 4 5165 / O-007-1 - Lot 014638	10.0 µg/L	10.20	8.16 to 12.2	-0.17	Acceptable
Trichloroethene (Trichloroethylene) 1, 3, 4 5170 / O-007-1 - Lot 014638	15.3 µg/L	14.30	11.4 to 17.2	0.84	Acceptable
Vinyl chloride 1, 3, 4 5235 / O-007-1 - Lot 014638	18.4 µg/L	17.50	10.5 to 24.5	0.27	Acceptable
m+p-Xylene 4 5240 / O-007-2 - Lot 014609	8.52 µg/L	9.99	5.99 to 14.0	-1.06	Acceptable
o-Xylene 4 5250 / O-007-2 - Lot 014609	4.60 µg/L	5.83	3.50 to 8.16	-1.32	Acceptable
Xylene, total 1, 3, 4 5260 / O-007-2 - Lot 014609	13.1 µg/L	15.80	12.6 to 19.0	-1.48	Acceptable

Group Analysis Summary

Acceptable 23 / 23

Score 100.0% - (Acceptable)

Trihalomethanes

Analysis

EPA 524.2 - Analyst: O. Lab

Method Number 10088605

	Result Units	Assigned Value	Accept.	Z	Evaluation
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Trihalomethanes (continued)

Analysis

EPA 524.2 - Analyst: O. Lab

(continued)

Method Number 10088605

	Result Units	Assigned Value	Accept.	Z	Evaluation
Bromodichloromethane 1, 3, 4 4395 / O-002 - Lot 014606	28.0 µg/L	27.40	16.4 to 38.4	0.11	Acceptable
Bromoform 1, 3, 4 4400 / O-002 - Lot 014606	30.9 µg/L	32.60	19.6 to 45.6	-0.26	Acceptable
Bromoform 1, 3, 4 4400 / O-007-3A - Lot 014755	<0.500 µg/L	0.00	0.0 to 0.0		Acceptable
Chloroform 1, 3, 4 4505 / O-002 - Lot 014606	45.2 µg/L	38.40	30.7 to 46.1	1.77	Acceptable
Chloroform 1, 3, 4 4505 / O-007-3A - Lot 014755	<0.500 µg/L	0.00	0.0 to 0.0		Acceptable
Dibromochloromethane 1, 3, 4 4575 / O-002 - Lot 014606	27.2 µg/L	25.70	15.4 to 36.0	0.29	Acceptable
Total trihalomethanes 1, 3, 4 5205 / O-002 - Lot 014606	131 µg/L	124.00	74.4 to 174	0.28	Acceptable

Group Analysis Summary

Acceptable 7 / 7

Score 100.0% - (Acceptable)

Unregulated VOCs

Analysis

EPA 504.1 - Analyst: O. Lab

Method Number 10082607

	Result Units	Assigned Value	Accept.	Z	Evaluation
1,2,3-Trichloropropane 1, 3, 4 5180 / O-007-4 - Lot 014611	39.0 µg/L	40.20	32.2 to 48.2	-0.30	Acceptable

Analysis

EPA 524.2 - Analyst: O. Lab

Method Number 10088605

	Result Units	Assigned Value	Accept.	Z	Evaluation
Bromobenzene 1, 3, 4 4385 / O-007-3B - Lot 014612	34.0 µg/L	28.70	23.0 to 34.4	1.91	Acceptable
Bromochloromethane 1, 3, 4 4390 / O-007-3B - Lot 014612	8.52 µg/L	9.16	5.50 to 12.8	-0.72	Acceptable
n-Butylbenzene 1, 3, 4 4435 / O-007-3B - Lot 014612	22.4 µg/L	25.40	20.3 to 30.5	-1.07	Acceptable
sec-Butylbenzene 1, 3, 4 4440 / O-007-3B - Lot 014612	44.0 µg/L	39.00	31.1 to 46.8	0.83	Acceptable



Unregulated VOCs (continued)

Analysis

EPA 524.2 - Analyst: O. Lab

(continued)

Method Number 10088605

	Result Units	Assigned Value	Accept.	Z	Evaluation
tert-Butylbenzene 1, 3, 4 4445 / O-007-3B - Lot 014612	20.0 µg/L	17.80	14.2 to 21.4	0.84	Acceptable
Chloroethane 1, 3, 4 4485 / O-007-3A - Lot 014755	36.6 µg/L	40.40	24.2 to 56.6	-0.47	Acceptable
2-Chlorotoluene 1, 3, 4 4535 / O-007-3B - Lot 014612	9.92 µg/L	10.70	6.42 to 15.0	-0.61	Acceptable
4-Chlorotoluene 1, 3, 4 4540 / O-007-3B - Lot 014612	22.0 µg/L	20.50	16.4 to 24.6	1.08	Acceptable
Dibromomethane 1, 3, 4 4595 / O-007-3B - Lot 014612	42.8 µg/L	47.40	37.9 to 56.9	-0.66	Acceptable
1,3-Dichlorobenzene 1, 3, 4 4615 / O-007-2 - Lot 014609	10.5 µg/L	12.30	7.38 to 17.2	-1.45	Acceptable
1,3-Dichlorobenzene 1, 3, 4 4615 / O-007-3A - Lot 014755	43.6 µg/L	41.80	33.4 to 50.2	0.41	Acceptable
Dichlorodifluoromethane 1, 3, 4 4625 / O-007-3A - Lot 014755	<0.500 µg/L	0.00	0.0 to 0.0		Acceptable
1,1-Dichloroethane 1, 3, 4 4630 / O-007-3A - Lot 014755	38.8 µg/L	38.00	30.4 to 45.6	0.18	Acceptable
1,3-Dichloropropane 1, 3, 4 4660 / O-007-3B - Lot 014612	22.4 µg/L	22.20	17.8 to 26.6	0.10	Acceptable
2,2-Dichloropropane 1, 3, 4 4665 / O-007-3B - Lot 014612	23.6 µg/L	28.10	22.5 to 33.7	-1.07	Acceptable
1,1-Dichloropropene 1, 3, 4 4670 / O-007-3B - Lot 014612	19.0 µg/L	17.40	10.9 to 23.9	0.49	Acceptable
trans-1,3-Dichloropropene 1, 3, 4 4685 / O-007-3A - Lot 014755	50.8 µg/L	44.60	35.7 to 53.5	1.43	Acceptable
Hexachlorobutadiene 1, 3, 4 4835 / O-007-3B - Lot 014612	28.6 µg/L	26.40	21.1 to 31.7	0.69	Acceptable
Isopropylbenzene 1, 3, 4 4900 / O-007-3B - Lot 014612	13.2 µg/L	12.90	7.74 to 18.1	0.32	Acceptable
4-Isopropyltoluene 1, 3, 4 4901 / O-007-3B - Lot 014612	14.4 µg/L	14.40	8.64 to 20.2	0.00	Acceptable
Methyl bromide (Bromomethane) 1, 3, 4 4950 / O-007-3A - Lot 014755	24.2 µg/L	32.30	8.71 to 55.8	-0.69	Acceptable
Methyl chloride (Chloromethane) 1, 3, 4 4960 / O-007-3A - Lot 014755	23.0 µg/L	22.60	13.6 to 31.6	0.08	Acceptable



Unregulated VOCs (continued)

Analysis

EPA 524.2 - Analyst: O. Lab

(continued)

Method Number 10088605

	Result Units	Assigned Value	Accept.	Z	Evaluation
Methyl tert-butyl ether (MTBE) 1, 4 5000 / O-007-2 - Lot 014609	36.9 µg/L	32.40	19.4 to 45.4	0.87	Acceptable
Naphthalene 1, 4 5005 / O-007-2 - Lot 014609	41.4 µg/L	39.10	23.5 to 54.7	0.28	Acceptable
n-Propylbenzene (1-Phenylpropane) 1, 3, 4 5090 / O-007-3B - Lot 014612	46.2 µg/L	43.00	34.4 to 51.6	0.60	Acceptable
1,1,1,2-Tetrachloroethane 1, 3, 4 5105 / O-007-3B - Lot 014612	43.6 µg/L	41.80	33.4 to 50.2	0.40	Acceptable
1,1,2,2-Tetrachloroethane 1, 3, 4 5110 / O-007-3A - Lot 014755	11.6 µg/L	13.20	7.92 to 18.5	-1.21	Acceptable
1,2,3-Trichlorobenzene 1, 3, 4 5150 / O-007-3B - Lot 014612	23.4 µg/L	26.60	19.3 to 33.9	-0.88	Acceptable
Trichlorofluoromethane 1, 3, 4 5175 / O-007-3A - Lot 014755	33.2 µg/L	29.10	17.5 to 40.7	0.90	Acceptable
1,2,3-Trichloropropane 1, 3, 4 5180 / O-007-3B - Lot 014612	11.0 µg/L	11.00	6.60 to 15.4	0.00	Acceptable
1,2,4-Trimethylbenzene 1, 4 5210 / O-007-2 - Lot 014609	18.3 µg/L	22.50	18.0 to 27.0	-1.30	Acceptable
1,2,4-Trimethylbenzene 1, 3, 4 5210 / O-007-3B - Lot 014612	31.6 µg/L	32.10	25.7 to 38.5	-0.41	Acceptable
1,3,5-Trimethylbenzene 1, 4 5215 / O-007-2 - Lot 014609	38.0 µg/L	43.60	34.9 to 52.3	-0.95	Acceptable
1,3,5-Trimethylbenzene 1, 3, 4 5215 / O-007-3B - Lot 014612	29.8 µg/L	31.80	25.4 to 38.2	-0.92	Acceptable

Group Analysis Summary

Acceptable 34 / 34

Score 100.0% - (Acceptable)

End of Full Set



Sample Information

Carbamate Pesticides - WS

PEO-001 / Lot {EncryptedLotCode}

	Units	Assigned Value	Study Mean	Study Std. Dev.	Gravimetric Value
Aldicarb (Temik) 7010 Carbamates	µg/L	35.30	32.50	4.35	35.2 ± 0.341
Aldicarb sulfone 7015 Carbamates	µg/L	37.40	37.10	5.88	37.3 ± 0.362
Aldicarb sulfoxide 7020 Carbamates	µg/L	28.00	28.50	2.24	28.0 ± 0.272
Carbaryl (Sevin) 7195 Carbamates	µg/L	47.50	49.50	11.10	52.2 ± 0.506
Carbofuran (Furaden) 7205 Carbamates	µg/L	49.30	47.40	0.93	49.3 ± 0.478
3-Hydroxycarbofuran 7710 Carbamates	µg/L	24.00	24.30	2.27	24.0 ± 0.233
Methiocarb (Mesurol) 7800 Carbamates	µg/L	54.80	54.80	15.30	55.2 ± 0.535
Methomyl (Lannate) 7805 Carbamates	µg/L	61.30	62.20	6.96	62.3 ± 0.604
Oxamyl 7940 Carbamates	µg/L	51.00	53.50	4.49	51.9 ± 0.504
Propoxur (Baygon) 8080 Carbamates	µg/L	42.60	39.70	3.12	43.2 ± 0.419

Trihalomethanes - WS

PEO-002 / Lot {EncryptedLotCode}

	Units	Assigned Value	Study Mean	Study Std. Dev.	Gravimetric Value
Bromodichloromethane 4395 Trihalomethanes	µg/L	27.40	24.90	3.50	27.4 ± 0.266
Bromoform 4400 Trihalomethanes	µg/L	32.60	29.20	4.20	32.6 ± 0.316
Chloroform 4505 Trihalomethanes	µg/L	38.40	37.00	3.16	38.4 ± 0.372
Dibromochloromethane 4575 Trihalomethanes	µg/L	25.70	23.70	3.43	25.7 ± 0.249
Total trihalomethanes 5205 Trihalomethanes	µg/L	124.00	116.00	13.10	124 ± 1.2

PCB's - WS

PEO-003 / Lot {EncryptedLotCode}

	Units	Assigned Value	Study Mean	Study Std. Dev.	Gravimetric Value
Aroclor-1016 (PCB-1016) 8880 PCBs in Water	µg/L	0.00			0.00
Aroclor-1221 (PCB-1221) 8885 PCBs in Water	µg/L	0.00			0.00
Aroclor-1232 (PCB-1232) 8890 PCBs in Water	µg/L	0.00			0.00
Aroclor-1242 (PCB-1242) 8895 PCBs in Water	µg/L	0.00			0.00
Aroclor-1248 (PCB-1248) 8900 PCBs in Water	µg/L	0.00			0.00
Aroclor-1254 (PCB-1254) 8905 PCBs in Water	µg/L	1.21	1.53	0.70	1.21 ± 0.006
Aroclor-1260 (PCB-1260) 8910 PCBs in Water	µg/L	0.00			0.00

Organochlorine Pesticides 1 - WS

PEO-005-1 / Lot {EncryptedLotCode}

	Units	Assigned Value	Study Mean	Study Std. Dev.	Gravimetric Value
Aldrin 7025 Pesticides	µg/L	0.87	0.94	0.15	1.04 ± 0.01
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane) 7120 Pesticides	µg/L	2.70	2.58	0.57	2.70 ± 0.027

**Organochlorine Pesticides 1 - WS**

PEO-005-1 / Lot {EncryptedLotCode}

(continued)

	Units	Assigned Value	Study Mean	Study Std. Dev.	Gravimetric Value
Dieldrin 7470 Pesticides	µg/L	0.77	0.70	0.26	0.770 ±
Endrin 7540 Pesticides	µg/L	2.48	2.50	0.54	2.48 ± 0.024
Heptachlor 7685 Pesticides	µg/L	2.10	1.76	0.33	2.10 ± 0.02

Organochlorine Pesticides 2 - WS

PEO-005-2 / Lot {EncryptedLotCode}

	Units	Assigned Value	Study Mean	Study Std. Dev.	Gravimetric Value
Hexachlorobenzene 8275 Pesticides	µg/L	2.46	2.59	0.62	2.85 ± 0.027
Hexachlorocyclopentadiene 6285 Pesticides	µg/L	12.60	13.40	3.78	15.8 ± 0.153
Heptachlor epoxide 7690 Pesticides	µg/L	2.29	2.16	0.55	2.29 ± 0.022
Methoxychlor 7810 Pesticides	µg/L	62.10	61.30	7.94	62.1 ± 0.602
Propachlor (Ramrod) 8045 Pesticides	µg/L	3.33	3.35	0.72	3.38 ± 0.03
Trifluralin (Treflan) 8295 Pesticides	µg/L	2.08	1.98	0.37	2.34 ± 0.02

Organonitrogen Pesticides - WS

PEO-005-3 / Lot {EncryptedLotCode}

	Units	Assigned Value	Study Mean	Study Std. Dev.	Gravimetric Value
Acetochlor 4310 Pesticides	µg/L	20.60			20.6 ± 0.2
Alachlor 7005 Pesticides	µg/L	14.20	14.70	2.62	14.2 ± 0.137
Atrazine 7065 Pesticides	µg/L	27.40	28.20	2.87	27.4 ± 0.266
Bromacil 7130 Pesticides	µg/L	9.53	9.59	1.41	9.53 ± 0.092
Butachlor 7160 Pesticides	µg/L	18.60	18.20	2.88	20.2 ± 0.177
Metolachlor 7835 Pesticides	µg/L	30.50	33.20	5.90	34.1 ± 0.33
Metribuzin 7845 Pesticides	µg/L	20.40	22.90	9.74	25.0 ± 0.242
Molinate 7875 Pesticides	µg/L	20.00	18.30	3.42	20.0 ± 0.194
Simazine 8125 Pesticides	µg/L	8.99	9.54	0.97	10.3 ± 0.099

Herbicides - WS

PEO-005-4 / Lot {EncryptedLotCode}

	Units	Assigned Value	Study Mean	Study Std. Dev.	Gravimetric Value
Pentachlorophenol 6605 Herbicides	µg/L	47.80	56.30	8.89	47.8 ± 0.464
Acifluorfen 8505 Herbicides	µg/L	16.40	20.30	6.30	18.4 ± 0.179
Bentazon 8530 Herbicides	µg/L	86.30	96.60	25.10	95.5 ± 0.927
2,4-D Total 8545 Herbicides	µg/L	131.00	95.60	12.50	131 ± 1.27
Dacthal (DCPA) 8550 Herbicides	µg/L	38.40	97.30	104.00	46.9 ± 0.455
Dalapon 8555 Herbicides	µg/L	25.10	35.00	9.05	39.0 ± 0.378
Dicamba 8595 Herbicides	µg/L	61.00	70.20	16.60	74.1 ± 0.719
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP) 8620 Herbicides	µg/L	31.00	42.60	11.20	38.2 ± 0.371

**Herbicides - WS**

EO-005-4 / Lot {EncryptedLotCode}

(continued)

	Units	Assigned Value	Study Mean	Study Std. Dev.	Gravimetric Value
Picloram 8645 Herbicides	µg/L	44.80	46.70	10.20	54.6 ± 0.529
Silvex (2,4,5-TP) 8650 Herbicides	µg/L	54.50	54.10	11.40	54.5 ± 0.529

Chlordane (Total) - WS

PEO-005-5 / Lot {EncryptedLotCode}

	Units	Assigned Value	Study Mean	Study Std. Dev.	Gravimetric Value
Chlordane (total) 7250 Pesticides	µg/L	9.37	9.90	0.51	9.37 ± 0.091

Toxaphene (Total) - WS

PEO-005-6 / Lot {EncryptedLotCode}

	Units	Assigned Value	Study Mean	Study Std. Dev.	Gravimetric Value
Toxaphene (Chlorinated camphene) 8250 Pesticides	µg/L	9.82	9.12	2.20	9.82 ± 0.095

Adipate/Phthalate - WS

PEO-006-1 / Lot {EncryptedLotCode}

	Units	Assigned Value	Study Mean	Study Std. Dev.	Gravimetric Value
Benzo(a)pyrene 5580 Base/Neutrals	µg/L	1.64	1.81	0.57	1.94 ± 0.019
Di(2-ethylhexyl)adipate 6062 Base/Neutrals	µg/L	13.00	13.70	3.28	14.4 ± 0.14
Di(2-ethylhexyl)phthalate 6065 Base/Neutrals	µg/L	43.20	36.50	0.96	43.3 ± 0.42

NAs in Water - WS

PEO-006-2 / Lot {EncryptedLotCode}

	Units	Assigned Value	Study Mean	Study Std. Dev.	Gravimetric Value
Naphthalene 5005 Base/Neutrals	µg/L	43.70			43.7 ± 0.423
Acenaphthene 5500 Base/Neutrals	µg/L	7.40			7.40 ± 0.072
Acenaphthylene 5505 Base/Neutrals	µg/L	6.09	5.62	1.44	6.09 ± 0.059
Anthracene 5555 Base/Neutrals	µg/L	5.25	4.56	0.93	5.25 ± 0.051
Benzo(a)anthracene 5575 Base/Neutrals	µg/L	8.55	7.64	0.44	8.55 ± 0.083
Benzo(b)fluoranthene 5585 Base/Neutrals	µg/L	6.11	5.19	0.56	6.11 ± 0.059
Benzo(g,h,i)perylene 5590 Base/Neutrals	µg/L	7.53	6.60	0.78	7.53 ± 0.073
Benzo(k)fluoranthene 5600 Base/Neutrals	µg/L	8.07	6.85	1.90	8.07 ± 0.078
Butyl benzyl phthalate 5670 Base/Neutrals	µg/L	40.80	36.90	10.20	40.8 ± 0.396
Chrysene 5855 Base/Neutrals	µg/L	6.04	5.21	0.80	6.04 ± 0.059
Dibenz(a,h) anthracene 5895 Base/Neutrals	µg/L	5.37	4.98	0.59	5.37 ± 0.052
Di-n-butyl phthalate 5925 Base/Neutrals	µg/L	29.40	27.10	0.73	29.4 ± 0.285
Diethyl phthalate 6070 Base/Neutrals	µg/L	37.50	31.30	9.79	37.5 ± 0.364
Dimethyl phthalate 6135 Base/Neutrals	µg/L	28.40	21.60	9.13	28.4 ± 0.275
Di-n-octyl phthalate 6200 Base/Neutrals	µg/L	38.80			38.8 ± 0.377
Fluoranthene 6265 Base/Neutrals	µg/L	6.34			6.34 ± 0.061

**Regulated VOC's 2 - WS**

O-007-2 / Lot {EncryptedLotCode}

(continued)

	Units	Assigned Value	Study Mean	Study Std. Dev.	Gravimetric Value
m+p-Xylene 5240 Regulated VOCs	µg/L	9.99	9.86	1.39	9.99 ± 0.097
o-Xylene 5250 Regulated VOCs	µg/L	5.83	5.43	0.93	5.83 ± 0.051
Xylene, total 5260 Regulated VOCs	µg/L	15.80	14.90	1.82	15.8 ± 0.148

Unregulated VOC's 1

PEO-007-3A / Lot {EncryptedLotCode}

	Units	Assigned Value	Study Mean	Study Std. Dev.	Gravimetric Value
Bromoform 4400 Trihalomethanes	µg/L	0.00			0.00
Chloroethane 4485 Unregulated VOCs	µg/L	40.40	41.30	6.08	40.4 ± 0.392
Chloroform 4505 Trihalomethanes	µg/L	0.00			0.00
1,3-Dichlorobenzene 4615 Unregulated VOCs	µg/L	41.80	41.90	4.41	41.8 ± 0.406
Dichlorodifluoromethane 4625 Unregulated VOCs	µg/L	0.00			0.00
1,1-Dichloroethane 4630 Unregulated VOCs	µg/L	38.00	36.20	4.38	38.0 ± 0.223
trans-1,3-Dichloropropene 4685 Unregulated VOCs	µg/L	44.60	45.50	4.34	44.6 ± 0.433
Methyl bromide (Bromomethane) 4950 Unregulated VOCs	µg/L	32.30	32.30	11.80	32.1 ± 0.311
Methyl chloride (Chloromethane) 4960 Unregulated VOCs	µg/L	22.60	24.60	4.80	22.6 ± 0.219
1,1,2,2-Tetrachloroethane 5110 Unregulated VOCs	µg/L	13.20	13.30	1.32	13.2 ± 0.128
Trichlorofluoromethane 5175 Unregulated VOCs	µg/L	29.10	27.70	4.54	29.1 ± 0.282

Unregulated VOC's 2

PEO-007-3B / Lot {EncryptedLotCode}

	Units	Assigned Value	Study Mean	Study Std. Dev.	Gravimetric Value
Bromobenzene 4385 Unregulated VOCs	µg/L	28.70	28.00	2.78	28.7 ± 0.278
Bromochloromethane 4390 Unregulated VOCs	µg/L	9.16	9.53	0.89	9.16 ± 0.089
n-Butylbenzene 4435 Unregulated VOCs	µg/L	25.40	24.60	2.80	25.4 ± 0.246
sec-Butylbenzene 4440 Unregulated VOCs	µg/L	39.00	37.50	6.03	39.0 ± 0.382
tert-Butylbenzene 4445 Unregulated VOCs	µg/L	17.80	17.80	2.63	17.8 ± 0.186
2-Chlorotoluene 4535 Unregulated VOCs	µg/L	10.70	10.80	1.28	10.7 ± 0.103
4-Chlorotoluene 4540 Unregulated VOCs	µg/L	20.50	20.30	1.39	20.5 ± 0.199
Dibromomethane 4595 Unregulated VOCs	µg/L	47.40	47.10	7.00	47.4 ± 0.443
1,3-Dichloropropane 4660 Unregulated VOCs	µg/L	22.20	22.90	2.07	22.2 ± 0.216
2,2-Dichloropropane 4665 Unregulated VOCs	µg/L	28.10	28.10	4.20	28.1 ± 0.308
1,1-Dichloropropene 4670 Unregulated VOCs	µg/L	17.40	17.40	3.25	17.4 ± 0.187
Hexachlorobutadiene 4835 Unregulated VOCs	µg/L	26.40	26.40	3.19	26.4 ± 0.27
Isopropylbenzene 4900 Unregulated VOCs	µg/L	12.90	13.20	0.93	12.9 ± 0.125
4-Isopropyltoluene 4901 Unregulated VOCs	µg/L	14.40	14.20	1.74	14.4 ± 0.14
n-Propylbenzene (1-Phenylpropane) 5090 Unregulated VOCs	µg/L	43.00	43.70	5.30	43.0 ± 0.417

**Unregulated VOC's 2**

O-007-3B / Lot {EncryptedLotCode}

(continued)

	Units	Assigned Value	Study Mean	Study Std. Dev.	Gravimetric Value
1,1,1,2-Tetrachloroethane 5105 Unregulated VOCs	µg/L	41.80	42.50	4.47	41.8 ± 0.405
1,2,3-Trichlorobenzene 5150 Unregulated VOCs	µg/L	26.60	25.10	3.63	26.6 ± 0.258
1,2,3-Trichloropropane 5180 Unregulated VOCs	µg/L	11.00	11.00	2.24	11.0 ± 0.098
1,2,4-Trimethylbenzene 5210 Unregulated VOCs	µg/L	32.10	32.10	1.22	32.1 ± 0.311
1,3,5-Trimethylbenzene 5215 Unregulated VOCs	µg/L	31.80	31.40	2.17	31.8 ± 0.308

EDB/DBCP

PEO-007-4 / Lot {EncryptedLotCode}

	Units	Assigned Value	Study Mean	Study Std. Dev.	Gravimetric Value
1,2-Dibromo-3-chloropropane (DBCP) 4570 Regulated VOCs	µg/L	1.04	1.01	0.18	1.04 ± 0.01
1,2-Dibromoethane (EDB, Ethylene dibromide) 4585 Regulated VOCs	µg/L	0.60	0.59	0.09	0.595 ±
1,2,3-Trichloropropane 5180 Unregulated VOCs	µg/L	40.20	40.20	4.00	40.2 ± 0.352

Gasoline Additives

PEO-075 / Lot {EncryptedLotCode}

	Units	Assigned Value	Study Mean	Study Std. Dev.	Gravimetric Value
T-amylmethylether (TAME) 4370 Oxygenates - Gasoline Additives	µg/L	37.90			37.9 ± 0.367
tert-Butyl alcohol 4420 Oxygenates - Gasoline Additives	µg/L	32.30			32.3 ± 0.12
Carbon disulfide 4450 Oxygenates - Gasoline Additives	µg/L	21.80			21.8 ± 0.212
Ethyl-t-butylether (ETBE) 4770 Oxygenates - Gasoline Additives	µg/L	35.70			35.7 ± 0.346
Methyl tert-butyl ether (MTBE) 5000 Oxygenates - Gasoline Additives	µg/L	32.90			32.9 ± 0.319
n-Propylbenzene (1-Phenylpropane) 5090 Oxygenates - Gasoline Additives	µg/L	40.00			40.0
Trichlorofluoromethane 5175 Oxygenates - Gasoline Additives	µg/L	35.80			35.8 ± 0.347
1,2,3-Trichloropropane 5180 Oxygenates - Gasoline Additives	µg/L	0.65			0.650 ±
Trichlorotrifluoroethane (Freon 113) 5185 Oxygenates - Gasoline Additives	µg/L	43.30			43.3 ± 0.42
Di-isopropylether (DIPE) 9375 Oxygenates - Gasoline Additives	µg/L	25.70			25.7 ± 0.249

Chloral Hydrate

PEO-077 / Lot {EncryptedLotCode}

	Units	Assigned Value	Study Mean	Study Std. Dev.	Gravimetric Value
Chloral hydrate 4460 Organic Disinfection By-Products	µg/L	23.30			25.5 ± 0.247

Diquat, Paraquat, & Glyphosate

PEO-097-1 / Lot {EncryptedLotCode}

	Units	Assigned Value	Study Mean	Study Std. Dev.	Gravimetric Value
Diquat 9390	µg/L	15.30	11.00	6.59	19.1 ± 0.175
Glyphosate 9411	µg/L	459.00	450.00	72.60	450 ± 4.05
Paraquat 9528	µg/L	8.90			8.90 ± 0.097

Endothall

PEO-097-2 / Lot {EncryptedLotCode}



Endothall

EO-097-2 / Lot {EncryptedLotCode}

	Units	Assigned Value	Study Mean	Study Std. Dev.	Gravimetric Value
Endothall 7525	µg/L	111.00	106.00	62.30	120 ± 1.18

Organic Disinfection By-Products - WS

PEO-098 / Lot {EncryptedLotCode}

	Units	Assigned Value	Study Mean	Study Std. Dev.	Gravimetric Value
Monobromoacetic acid 9312 Haloacetic acids	µg/L	26.00	25.40	4.17	26.0 ± 0.132
Bromochloroacetic acid 9315 Organic Disinfection By-Products	µg/L	33.60	38.20	2.54	33.6 ± 0.326
Monochloroacetic acid 9336 Haloacetic acids	µg/L	31.70	30.90	5.06	31.7 ± 0.307
Dibromoacetic acid 9357 Haloacetic acids	µg/L	24.80	27.10	4.39	24.8 ± 0.24
Dichloroacetic acid 9360 Haloacetic acids	µg/L	32.00	35.50	5.89	32.0 ± 0.31
Total haloacetic acids 9414 Organic Disinfection By-Products	µg/L	151.00	163.00	27.70	151 ± 1.47
Trichloroacetic acid 9642 Haloacetic acids	µg/L	15.50	15.40	2.19	15.5 ± 0.151

Definitions:

Assigned Value: Value attributed to a particular quantity and accepted, sometimes by convention, as having an uncertainty appropriate for a give purpose. See ISO Guide 43 for additional information.

Accept. Window: The range of values that constitute acceptable performance for a laboratory participation in this PT study.

Z: A Z-Score tells how a single data point compares to normal data. A Z-Score says not only whether a point was above or below average, but how unusual the measurement is. Generally, a method result with a Z-Score less than |2| is considered to be in control, a Z-Score between |2| and |3| is considered 'Questionable', but still within control and a Z greater than |3| is considered not acceptable and the method is out of control.

Study Mean: Statistical study mean calculated using a robust statisitcal model (RTC employs the 'Biweight Program'). Robust statistical techniques to minimize the influence that extreme results can have on estimates of the mean and standard deviation NOTE - These techniques assign less weight to extreme results, rather than eliminate them from a data set.

Study Std. Dev.: Standard deviation calculated from study data using robust statisicals (Biweight).

Gravimetric Value: The prepared to value, determined by gravimetric means. The uncertainty associated to this value is standard uncertainty and based on RTC's gravimetric tolerances.

Program analyte accrediting footnotes

¹ NELAC

³ Other

⁵ NELAC Experimental

² EPA

⁴ A2LA

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WP-171



Final Report

WatR™ Pollution Proficiency Testing

WatR™ Pollution Study

Open Date: 04/13/09

Close Date: 05/28/09

Report Issued Date: 06/18/09

Study: **WP-171**

ERA Customer Number: **O127601**

Laboratory Name: **Orange County Water
District**

Inorganic Results

WP-171 Final Complete Report

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EPA ID: CA00043
ERA Customer Number: O127601
Report Issued: 06/18/09
Study Dates: 04/13/09 - 05/28/09

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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WP Minerals (cat# 581)

0027	Alkalinity as CaCO3	mg/L	103	102	90.6 - 112	Acceptable	SM2320B
0028	Chloride	mg/L	37.5	37.3	31.4 - 44.0	Acceptable	EPA 300.0
0020	Conductivity at 25°C	µmhos/cm	401	407	364 - 450	Acceptable	SM2510B
0029	Fluoride	mg/L	2.29	2.30	1.89 - 2.72	Acceptable	EPA 300.0
0026	Potassium	mg/L	32.1	34.8	28.8 - 41.4	Acceptable	EPA 200.7
0025	Sodium	mg/L	69.1	69.1	58.7 - 79.2	Acceptable	EPA 200.7
0030	Sulfate	mg/L	36.9	36.9	29.8 - 43.0	Acceptable	EPA 300.0
0021	Total Dissolved Solids at 180°C	mg/L	332	345	261 - 429	Acceptable	SM2540C
1950	Total Solids at 105°C	mg/L	348	365	322 - 403	Acceptable	SM2540B

WP Minerals (cat# 581)

0027	Alkalinity as CaCO3	mg/L		102	90.6 - 112	Not Reported	
0028	Chloride	mg/L		37.3	31.4 - 44.0	Not Reported	
0020	Conductivity at 25°C	µmhos/cm		407	364 - 450	Not Reported	
0029	Fluoride	mg/L	2.20	2.30	1.89 - 2.72	Acceptable	SM4500F- C
0026	Potassium	mg/L		34.8	28.8 - 41.4	Not Reported	
0025	Sodium	mg/L		69.1	58.7 - 79.2	Not Reported	
0030	Sulfate	mg/L		36.9	29.8 - 43.0	Not Reported	
0021	Total Dissolved Solids at 180°C	mg/L		345	261 - 429	Not Reported	
1950	Total Solids at 105°C	mg/L		365	322 - 403	Not Reported	

WP Hardness (cat# 580)

0072	Non-Filterable Residue (TSS)	mg/L	63.3	58.4	46.2 - 66.2	Acceptable	SM2540D
0023	Calcium	mg/L	57.3	57.5	51.4 - 65.2	Acceptable	EPA 200.7
0024	Magnesium	mg/L	7.19	6.83	5.78 - 7.81	Acceptable	EPA 200.7
1550	Calcium Hardness as CaCO3	mg/L	143	144	129 - 163	Acceptable	SM2340B
0022	Total Hardness as CaCO3	mg/L	173	172	152 - 195	Acceptable	SM2340B

WP pH (cat# 577)

0019	pH	S.U.	6.92	6.89	6.69 - 7.09	Acceptable	SM4500H+ B
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WP pH (cat# 577)

0019	pH	S.U.	6.91	6.89	6.69 - 7.09	Acceptable	SM4500H+ B
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WP Settleable Solids (cat# 883)

1965	Settleable Solids	mL/L	17.5	18.9	14.4 - 24.4	Acceptable	SM2540F
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WP Volatile Solids (cat# 884)

1970	Volatile Solids	mg/L	188	201	152 - 236	Acceptable	SM2540E
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WP Simple Nutrients (cat# 584)

0031	Ammonia as N	mg/L	14.9	14.9	11.1 - 18.5	Acceptable	SM4500NH3 H
1820	Nitrate + Nitrite as N	mg/L	23.2	22.7	18.5 - 26.4	Acceptable	EPA 300.0
0032	Nitrate as N	mg/L	23.2	22.7	17.7 - 27.4	Acceptable	EPA 300.0
0033	ortho-Phosphate as P	mg/L	4.39	4.28	3.53 - 5.07	Acceptable	EPA 300.0



WP-171 Final Complete Report

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ERA Customer Number: O127601
Report Issued: 06/18/09
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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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WP Simple Nutrients (cat# 584)

0031	Ammonia as N	mg/L		14.9	11.1 - 18.5	Not Reported	
1820	Nitrate + Nitrite as N	mg/L	22.9	22.7	18.5 - 26.4	Acceptable	SM4500NO3- F
0032	Nitrate as N	mg/L	22.9	22.7	17.7 - 27.4	Acceptable	SM4500NO3- F
0033	ortho-Phosphate as P	mg/L	4.19	4.28	3.53 - 5.07	Acceptable	EPA 365.1

WP Complex Nutrients (cat# 579)

0034	Total Kjeldahl Nitrogen	mg/L	15.1	15.1	10.0 - 19.5	Acceptable	EPA 351.2
0035	Total phosphorus as P	mg/L		3.97	3.24 - 4.75	Not Reported	

WP Nitrite (cat# 888)

1840	Nitrite as N	mg/L	0.62	0.593	0.448 - 0.730	Acceptable	EPA 300.0
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WP Nitrite (cat# 888)

1840	Nitrite as N	mg/L	0.613	0.593	0.448 - 0.730	Acceptable	SM4500NO3- F
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WP Demand (cat# 578)

0038	BOD	mg/L		89.8	45.4 - 134	Not Reported	
0102	CBOD	mg/L		77.3	34.7 - 120	Not Reported	
0036	COD	mg/L	150	146	111 - 167	Acceptable	SM5220D
0037	TOC	mg/L	58.6	57.6	48.1 - 66.3	Acceptable	SM5310C

WP Trace Metals (cat# 586)

0001	Aluminum	µg/L	2434	2470	2040 - 2870	Acceptable	EPA 200.8
0016	Antimony	µg/L	801	793	562 - 952	Acceptable	EPA 200.8
0002	Arsenic	µg/L	420	352	293 - 414	Not Acceptable	EPA 200.8
1015	Barium	µg/L	882	885	768 - 998	Acceptable	EPA 200.8
0003	Beryllium	µg/L	554	546	464 - 617	Acceptable	EPA 200.8
1025	Boron	µg/L		1620	1320 - 1890	Not Reported	
0004	Cadmium	µg/L	481	475	405 - 540	Acceptable	EPA 200.8
0006	Chromium	µg/L		387	336 - 438	Not Reported	
0005	Cobalt	µg/L	929	875	770 - 980	Acceptable	EPA 200.8
0007	Copper	µg/L	882	823	741 - 905	Acceptable	EPA 200.8
0008	Iron	µg/L		905	799 - 1020	Not Reported	
0012	Lead	µg/L	282	272	233 - 310	Acceptable	EPA 200.8
0010	Manganese	µg/L	2501	2440	2200 - 2710	Acceptable	EPA 200.8
0074	Molybdenum	µg/L	306	303	255 - 348	Acceptable	EPA 200.8
0011	Nickel	µg/L	197	191	166 - 217	Acceptable	EPA 200.8
0013	Selenium	µg/L	1596	1600	1270 - 1850	Acceptable	EPA 200.8
0017	Silver	µg/L	336	332	285 - 380	Acceptable	EPA 200.8
0075	Strontium	µg/L		155	134 - 177	Not Reported	
0018	Thallium	µg/L	684	677	554 - 806	Acceptable	EPA 200.8
0014	Vanadium	µg/L		856	750 - 957	Not Reported	
0015	Zinc	µg/L	1693	1650	1420 - 1890	Acceptable	EPA 200.8



WP-171 Final Complete Report

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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WP Trace Metals (cat# 586)

0001	Aluminum	µg/L		2470	2040 - 2870	Not Reported	
0016	Antimony	µg/L		793	562 - 952	Not Reported	
0002	Arsenic	µg/L		352	293 - 414	Not Reported	
1015	Barium	µg/L		885	768 - 998	Not Reported	
0003	Beryllium	µg/L		546	464 - 617	Not Reported	
1025	Boron	µg/L	1540	1620	1320 - 1890	Acceptable	EPA 200.7
0004	Cadmium	µg/L		475	405 - 540	Not Reported	
0006	Chromium	µg/L	385	387	336 - 438	Acceptable	EPA 200.7
0005	Cobalt	µg/L		875	770 - 980	Not Reported	
0007	Copper	µg/L		823	741 - 905	Not Reported	
0008	Iron	µg/L	893	905	799 - 1020	Acceptable	EPA 200.7
0012	Lead	µg/L		272	233 - 310	Not Reported	
0010	Manganese	µg/L		2440	2200 - 2710	Not Reported	
0074	Molybdenum	µg/L		303	255 - 348	Not Reported	
0011	Nickel	µg/L		191	166 - 217	Not Reported	
0013	Selenium	µg/L		1600	1270 - 1850	Not Reported	
0017	Silver	µg/L		332	285 - 380	Not Reported	
0075	Strontium	µg/L		155	134 - 177	Not Reported	
0018	Thallium	µg/L		677	554 - 806	Not Reported	
0014	Vanadium	µg/L	861	856	750 - 957	Acceptable	EPA 200.7
0015	Zinc	µg/L		1650	1420 - 1890	Not Reported	

WP Mercury (cat# 574)

0009	Mercury	µg/L	9.08	7.61	4.69 - 10.4	Acceptable	EPA 200.8
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WP Hexavalent Chromium (cat# 898)

1045	Hexavalent Chromium	µg/L	265	269	216 - 318	Acceptable	EPA 218.6
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WP Color (cat# 882)

1605	Color	PC units	55.0	60.0	50.0 - 70.0	Acceptable	SM2120B
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WP Turbidity (cat# 893)

2055	Turbidity	NTU	6.85	7.05	5.90 - 8.07	Acceptable	SM2130B
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WP Total Cyanide (cat# 588)

0071	Cyanide, total	mg/L	0.281	0.269	0.128 - 0.417	Acceptable	EPA 335.4
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WP Silica (cat# 890)

1990	Silica as SiO2	mg/L	99.8	93.7	70.3 - 117	Acceptable	SM4500Si D
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WP Sulfide (cat# 891)

2005	Sulfide	mg/L	6.44	6.72	3.09 - 9.64	Acceptable	SM4500S2- D
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WP Surfactants - MBAS (cat# 892)

2025	Surfactants (MBAS)	mg/L	0.742	0.738	0.455 - 1.07	Acceptable	SM5540C
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WP-171 Final Complete Report

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EPA ID: CA00043
ERA Customer Number: O127601
Report Issued: 06/18/09
Study Dates: 04/13/09 - 05/28/09

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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WP Bromide (cat# 887)

1540	Bromide	mg/L	2.61	2.58	2.19 - 2.97	Acceptable	EPA 300.0
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WP Total Residual Chlorine (cat# 587)

0098	Total Residual Chlorine	mg/L	2.52	2.43	1.74 - 2.99	Acceptable	SM4500Cl F
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WP Total Residual Chlorine (cat# 587)

0098	Total Residual Chlorine	mg/L	2.48	2.43	1.74 - 2.99	Acceptable	SM4500Cl D
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Study: **WP-171**

ERA Customer Number: **O127601**

Laboratory Name: **Orange County Water
District**

Microbiology Results

WP-171 Final Complete Report

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EPA ID: CA00043
ERA Customer Number: O127601
Report Issued: 06/18/09
Study Dates: 04/13/09 - 05/28/09

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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WP WasteWatR™ Coliform MicrobE™ (cat# 576)

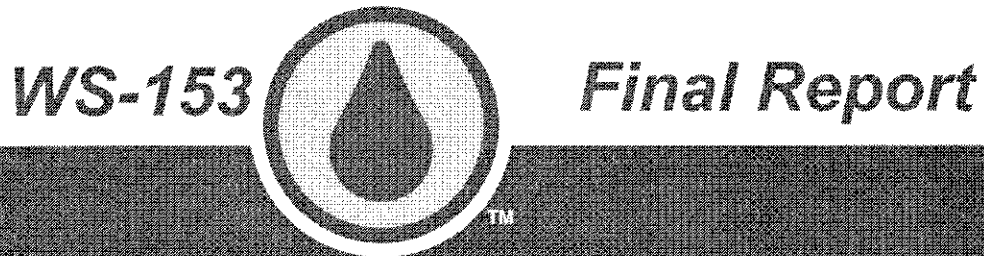
2500	Total Coliforms (MF)	CFU/100mL	340	306	157 - 595	Acceptable	SM9222B M endo
2530	Fecal Coliforms (MF)	CFU/100mL	220	146	28.0 - 760	Acceptable	SM9222D m FC
2525	E.coli (MF)	CFU/100mL		179	26.0 - 1230	Not Reported	
2500	Total Coliforms (MPN)	MPN/100mL	365	316	122 - 819	Acceptable	SM9223 COLertQT
2530	Fecal Coliforms (MPN)	MPN/100mL		294	70.6 - 1220	Not Reported	
2525	E.coli (MPN)	MPN/100mL	365	340	153 - 753	Acceptable	SM9223 COLertQT

WP WasteWatR™ Coliform MicrobE™ (cat# 576)

2500	Total Coliforms (MF)	CFU/100mL		306	157 - 595	Not Reported	
2530	Fecal Coliforms (MF)	CFU/100mL		146	28.0 - 760	Not Reported	
2525	E.coli (MF)	CFU/100mL		179	26.0 - 1230	Not Reported	
2500	Total Coliforms (MPN)	MPN/100mL	240	316	122 - 819	Acceptable	SM9221B LTB
2530	Fecal Coliforms (MPN)	MPN/100mL	240	294	70.6 - 1220	Acceptable	SM9221E EC
2525	E.coli (MPN)	MPN/100mL		340	153 - 753	Not Reported	



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WatR™ Supply Proficiency Testing

WatR™ Supply Study

Open Date: 04/06/09

Close Date: 05/21/09

Report Issued Date: 06/09/09

Study: **WS-153**

ERA Customer Number: **O127601**

Laboratory Name: **Orange County Water
District**

Inorganic Results



WS-153 Final Complete Report

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EPA ID: CA00043
ERA Customer Number: O127601
Report Issued: 06/09/09
Study Dates: 04/06/09 - 05/21/09

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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WS Hardness (cat# 555)

1035	Calcium	mg/L	47.6	47.5	42.3 - 53.0	Acceptable	EPA 200.7
1085	Magnesium	mg/L	13.6	12.5	11.3 - 14.0	Acceptable	EPA 200.7
0029	Sodium	mg/L	19.5	20.2	17.8 - 22.2	Acceptable	EPA 200.7
0025	Calcium Hardness as CaCO3	mg/L	119	119	106 - 133	Acceptable	SM2340B
1755	Total Hardness as CaCO3	mg/L	175	170	152 - 190	Acceptable	SM2340B

WS Inorganics (cat# 591)

0027	Alkalinity as CaCO3	mg/L	41.2	41.7	37.5 - 45.9	Acceptable	SM2320B
1575	Chloride	mg/L	79.4	79.3	71.4 - 87.2	Acceptable	EPA 300.0
1610	Conductivity at 25°C	µmhos/cm	459	462	416 - 508	Acceptable	SM2510B
0010	Fluoride	mg/L	7.38	7.44	6.70 - 8.18	Acceptable	EPA 300.0
1820	Nitrate + Nitrite as N	mg/L	3.79	3.75	3.31 - 4.12	Acceptable	EPA 300.0
0009	Nitrate as N	mg/L	3.79	3.75	3.38 - 4.12	Acceptable	EPA 300.0
1125	Potassium	mg/L	25.1	25.8	22.2 - 29.5	Acceptable	EPA 200.7
0145	Sulfate	mg/L	16.7	16.5	13.4 - 19.1	Acceptable	EPA 300.0
0024	Total Dissolved Solids at 180°C	mg/L	270	280	184 - 376	Acceptable	SM2540C

WS Inorganics (cat# 591)

0027	Alkalinity as CaCO3	mg/L		41.7	37.5 - 45.9	Not Reported	
1575	Chloride	mg/L		79.3	71.4 - 87.2	Not Reported	
1610	Conductivity at 25°C	µmhos/cm		462	416 - 508	Not Reported	
0010	Fluoride	mg/L	7.39	7.44	6.70 - 8.18	Acceptable	SM4500F- C
1820	Nitrate + Nitrite as N	mg/L	3.78	3.75	3.31 - 4.12	Acceptable	SM4500NO3- F
0009	Nitrate as N	mg/L	3.78	3.75	3.38 - 4.12	Acceptable	SM4500NO3- F
1125	Potassium	mg/L		25.8	22.2 - 29.5	Not Reported	
0145	Sulfate	mg/L		16.5	13.4 - 19.1	Not Reported	
0024	Total Dissolved Solids at 180°C	mg/L		280	184 - 376	Not Reported	

WS pH (cat# 552)

0026	pH	S.U.	5.34	5.36	5.16 - 5.56	Acceptable	SM4500H+ B
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WS pH (cat# 552)

0026	pH	S.U.	5.32	5.36	5.16 - 5.56	Acceptable	SM4500H+ B
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WS-153 Final Complete Report

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EPA ID: CA00043
ERA Customer Number: O127601
Report Issued: 06/09/09
Study Dates: 04/06/09 - 05/21/09

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WS Metals (cat# 590)							
1000	Aluminum	µg/L	829	826	706 - 927	Acceptable	EPA 200.8
0140	Antimony	µg/L	17.0	16.5	11.6 - 21.4	Acceptable	EPA 200.8
0001	Arsenic	µg/L	16.9	15.3	10.7 - 19.9	Acceptable	EPA 200.8
0002	Barium	µg/L	2665	2670	2270 - 3070	Acceptable	EPA 200.8
0141	Beryllium	µg/L	2.59	2.46	2.09 - 2.83	Acceptable	EPA 200.8
0226	Boron	µg/L		1270	1110 - 1410	Not Reported	
0003	Cadmium	µg/L	20.6	20.2	16.2 - 24.2	Acceptable	EPA 200.8
0004	Chromium	µg/L		80.3	68.2 - 92.3	Not Reported	
0091	Copper	µg/L	1442	1380	1240 - 1520	Acceptable	EPA 200.8
1070	Iron	µg/L		602	529 - 666	Not Reported	
0005	Lead	µg/L	63.4	61.7	43.2 - 80.2	Acceptable	EPA 200.8
0236	Manganese	µg/L	754	727	654 - 800	Acceptable	EPA 200.8
0237	Molybdenum	µg/L	87.8	86.4	75.0 - 95.7	Acceptable	EPA 200.8
0142	Nickel	µg/L	411	397	337 - 456	Acceptable	EPA 200.8
0007	Selenium	µg/L	44.2	47.6	38.1 - 57.1	Acceptable	EPA 200.8
1150	Silver	µg/L	89.9	88.8	77.5 - 99.3	Acceptable	EPA 200.8
0143	Thallium	µg/L	3.13	3.00	2.10 - 3.90	Acceptable	EPA 200.8
1185	Vanadium	µg/L		356	320 - 392	Not Reported	
0239	Zinc	µg/L	956	914	823 - 1000	Acceptable	EPA 200.8

WS Metals (cat# 590)

1000	Aluminum	µg/L		826	706 - 927	Not Reported	
0140	Antimony	µg/L		16.5	11.6 - 21.4	Not Reported	
0001	Arsenic	µg/L		15.3	10.7 - 19.9	Not Reported	
0002	Barium	µg/L		2670	2270 - 3070	Not Reported	
0141	Beryllium	µg/L		2.46	2.09 - 2.83	Not Reported	
0226	Boron	µg/L	1180	1270	1110 - 1410	Acceptable	EPA 200.7
0003	Cadmium	µg/L		20.2	16.2 - 24.2	Not Reported	
0004	Chromium	µg/L	79.2	80.3	68.2 - 92.3	Acceptable	EPA 200.7
0091	Copper	µg/L		1380	1240 - 1520	Not Reported	
1070	Iron	µg/L	596	602	529 - 666	Acceptable	EPA 200.7
0005	Lead	µg/L		61.7	43.2 - 80.2	Not Reported	
0236	Manganese	µg/L		727	654 - 800	Not Reported	
0237	Molybdenum	µg/L		86.4	75.0 - 95.7	Not Reported	
0142	Nickel	µg/L		397	337 - 456	Not Reported	
0007	Selenium	µg/L		47.6	38.1 - 57.1	Not Reported	
1150	Silver	µg/L		88.8	77.5 - 99.3	Not Reported	
0143	Thallium	µg/L		3.00	2.10 - 3.90	Not Reported	
1185	Vanadium	µg/L	361	356	320 - 392	Acceptable	EPA 200.7
0239	Zinc	µg/L		914	823 - 1000	Not Reported	



WS-153 Final Complete Report

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EPA ID: CA00043
ERA Customer Number: O127601
Report Issued: 06/09/09
Study Dates: 04/06/09 - 05/21/09

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WS Mercury (cat# 551)							
0006	Mercury	µg/L	8.1	7.41	5.19 - 9.63	Acceptable	EPA 200.8
WS Hexavalent Chromium (cat# 854)							
1045	Hexavalent Chromium	µg/L	33.1	34.4	30.9 - 37.8	Acceptable	EPA 218.6
WS Vanadium (cat# 856)							
1185	Vanadium	µg/L	12.5	13.3	11.3 - 15.2	Acceptable	EPA 200.7
WS Bromide, Bromate & Chlorate (cat# 560)							
0193	Bromate	µg/L	20.2	21.3	14.9 - 27.7	Acceptable	EPA 300.1
0260	Bromide	µg/L	104	108	78.5 - 136	Acceptable	EPA 300.1
0194	Chlorate	µg/L	92.9	100	81.0 - 118	Acceptable	EPA 300.1
WS Chlorite (cat# 554)							
0195	Chlorite	µg/L	597	556	389 - 723	Acceptable	EPA 300.1
WS Nitrite (cat# 594)							
0092	Nitrite as N	mg/L	1.13	1.06	0.901 - 1.22	Acceptable	EPA 300.0
WS Nitrite (cat# 594)							
0092	Nitrite as N	mg/L	1.09	1.06	0.901 - 1.22	Acceptable	SM4500NO2- F
WS o-Phosphate Nutrients (cat# 558)							
0261	ortho-Phosphate as P	mg/L	3.59	3.24	2.85 - 3.66	Acceptable	EPA 300.0
WS o-Phosphate Nutrients (cat# 558)							
0261	ortho-Phosphate as P	mg/L	3.22	3.24	2.85 - 3.66	Acceptable	EPA 365.1
WS Residual Chlorine (cat# 593)							
0022	Free Residual Chlorine	mg/L	0.590	0.636	0.488 - 0.784	Acceptable	SM4500Cl D
1940	Total Residual Chlorine	mg/L	0.590	0.636	0.526 - 0.736	Acceptable	SM4500Cl D
WS Residual Chlorine (cat# 593)							
0022	Free Residual Chlorine	mg/L	0.590	0.636	0.488 - 0.784	Acceptable	SM4500Cl F
1940	Total Residual Chlorine	mg/L	0.590	0.636	0.526 - 0.736	Acceptable	SM4500Cl F
WS Cyanide (cat# 556)							
0146	Cyanide	mg/L	0.287	0.295	0.221 - 0.369	Acceptable	EPA 335.4
WS Organic Carbon (cat# 557)							
1710	Dissolved Organic Carbon (DOC)	mg/L	4.64	4.39	3.67 - 5.11	Acceptable	SM5310C
0263	Total Organic Carbon (TOC)	mg/L	4.64	4.39	3.67 - 5.11	Acceptable	SM5310C
WS Perchlorate (cat# 903)							
1895	Perchlorate	µg/L	11.4	11.5	9.49 - 12.7	Acceptable	EPA 314.0
WS Silica (cat# 902)							
1990	Silica as SiO2	mg/L	46.1	42.8	36.4 - 49.2	Acceptable	SM4500Si E
WS Surfactants - MBAS (cat# 901)							
2025	Surfactants - MBAS	mg/L	0.464	0.472	0.370 - 0.564	Acceptable	SM5540C



WS-153 Final Complete Report

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ERA Customer Number: O127601
Report Issued: 06/09/09
Study Dates: 04/06/09 - 05/21/09

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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WS Corrosivity (cat# 900)

1620	Corrosivity	S.I.@ 20°C	1.55	1.68	1.28 - 2.08	Acceptable	SM2330B
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WS Turbidity (cat# 592)

0023	Turbidity	NTU	7.77	7.65	6.76 - 8.97	Acceptable	SM2130B
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WS UV 254 Absorbance (cat# 904)

2060	UV 254 Absorbance	cm-1	0.691	0.557	0.476 - 0.738	Acceptable	SM5910B
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Study: **WS-153**

ERA Customer Number: **O127601**

Laboratory Name: **Orange County Water
District**

Microbiology Results



WS-153 Final Complete Report

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EPA ID: CA00043
ERA Customer Number: O127601
Report Issued: 06/09/09
Study Dates: 04/06/09 - 05/21/09

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WS MicrobE™ (Coliforms) (cat# 080A)							
0254	Total Coliforms - Sample 1	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B
0254	Total Coliforms - Sample 2	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B
0254	Total Coliforms - Sample 3	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B
0254	Total Coliforms - Sample 4	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B
0254	Total Coliforms - Sample 5	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B
0254	Total Coliforms - Sample 6	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221B
0254	Total Coliforms - Sample 7	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221B
0254	Total Coliforms - Sample 8	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221B
0254	Total Coliforms - Sample 9	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221B
0254	Total Coliforms - Sample 10	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B
0255	Fecal Coliforms - Sample 1	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221E LTB EC
0255	Fecal Coliforms - Sample 2	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221E LTB EC
0255	Fecal Coliforms - Sample 3	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	Fecal Coliforms - Sample 4	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221E LTB EC
0255	Fecal Coliforms - Sample 5	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	Fecal Coliforms - Sample 6	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	Fecal Coliforms - Sample 7	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	Fecal Coliforms - Sample 8	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	Fecal Coliforms - Sample 9	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	Fecal Coliforms - Sample 10	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	E.coli - Sample 1	CFU/100mL		Presence	Presence	Not Reported	
0255	E.coli - Sample 2	CFU/100mL		Presence	Presence	Not Reported	
0255	E.coli - Sample 3	CFU/100mL		Absence	Absence	Not Reported	
0255	E.coli - Sample 4	CFU/100mL		Presence	Presence	Not Reported	
0255	E.coli - Sample 5	CFU/100mL		Absence	Absence	Not Reported	
0255	E.coli - Sample 6	CFU/100mL		Absence	Absence	Not Reported	
0255	E.coli - Sample 7	CFU/100mL		Absence	Absence	Not Reported	
0255	E.coli - Sample 8	CFU/100mL		Absence	Absence	Not Reported	
0255	E.coli - Sample 9	CFU/100mL		Absence	Absence	Not Reported	
0255	E.coli - Sample 10	CFU/100mL		Absence	Absence	Not Reported	

Total Coliforms Evaluation : Acceptable

Fecal Coliforms Evaluation : Acceptable

E.coli Evaluation : Not Reported

Fecal Coliform Organism - Escherichia coli, Samples 1, 2 and 4

Total Coliform Organism - Enterobacter cloacae, Samples 3, 5 and 10

Negative (1) Coliform Organism - Proteus mirabilis, Sample 7

Negative (2) Coliform Organism - Pseudomonas aeruginosa, Sample 8

Blank - No Organism, Samples 6 and 9



WS-153 Final Complete Report

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ERA Customer Number: O127601
Report Issued: 06/09/09
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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WS MicrobE™ (Coliforms) (cat# 080B)							
0254	Total Coliforms - Sample 1	CFU/100mL		Presence	Presence	Not Reported	
0254	Total Coliforms - Sample 2	CFU/100mL		Absence	Absence	Not Reported	
0254	Total Coliforms - Sample 3	CFU/100mL		Absence	Absence	Not Reported	
0254	Total Coliforms - Sample 4	CFU/100mL		Absence	Absence	Not Reported	
0254	Total Coliforms - Sample 5	CFU/100mL		Presence	Presence	Not Reported	
0254	Total Coliforms - Sample 6	CFU/100mL		Presence	Presence	Not Reported	
0254	Total Coliforms - Sample 7	CFU/100mL		Presence	Presence	Not Reported	
0254	Total Coliforms - Sample 8	CFU/100mL		Absence	Absence	Not Reported	
0254	Total Coliforms - Sample 9	CFU/100mL		Presence	Presence	Not Reported	
0254	Total Coliforms - Sample 10	CFU/100mL		Presence	Presence	Not Reported	
0255	Fecal Coliforms - Sample 1	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D m FC
0255	Fecal Coliforms - Sample 2	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D m FC
0255	Fecal Coliforms - Sample 3	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D m FC
0255	Fecal Coliforms - Sample 4	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D m FC
0255	Fecal Coliforms - Sample 5	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222D m FC
0255	Fecal Coliforms - Sample 6	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222D m FC
0255	Fecal Coliforms - Sample 7	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D m FC
0255	Fecal Coliforms - Sample 8	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D m FC
0255	Fecal Coliforms - Sample 9	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222D m FC
0255	Fecal Coliforms - Sample 10	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D m FC
0255	E.coli - Sample 1	CFU/100mL		Absence	Absence	Not Reported	
0255	E.coli - Sample 2	CFU/100mL		Absence	Absence	Not Reported	
0255	E.coli - Sample 3	CFU/100mL		Absence	Absence	Not Reported	
0255	E.coli - Sample 4	CFU/100mL		Absence	Absence	Not Reported	
0255	E.coli - Sample 5	CFU/100mL		Presence	Presence	Not Reported	
0255	E.coli - Sample 6	CFU/100mL		Presence	Presence	Not Reported	
0255	E.coli - Sample 7	CFU/100mL		Absence	Absence	Not Reported	
0255	E.coli - Sample 8	CFU/100mL		Absence	Absence	Not Reported	
0255	E.coli - Sample 9	CFU/100mL		Presence	Presence	Not Reported	
0255	E.coli - Sample 10	CFU/100mL		Absence	Absence	Not Reported	

Total Coliforms Evaluation : Not Reported

Fecal Coliforms Evaluation : Acceptable

E.coli Evaluation : Not Reported

Fecal Coliform Organism - Escherichia coli, Samples 5, 6 and 9
Total Coliform Organism - Enterobacter cloacae, Samples 1, 7 and 10
Negative (1) Coliform Organism - Proteus mirabilis, Sample 4
Negative (2) Coliform Organism - Pseudomonas aeruginosa, Sample 8
Blank - No Organism, Samples 2 and 3



WS-153 Final Complete Report

Jeremy Davis
Supervising Chemist
Orange County Water District
P.O. Box 8300
Fountain Valley, CA 92728
(714) 378-3244

EPA ID: CA00043
ERA Customer Number: O127601
Report Issued: 06/09/09
Study Dates: 04/06/09 - 05/21/09

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WS MicrobE™ (Coliforms) (cat# 080C)							
0254	Total Coliforms - Sample 1	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222B M Endo
0254	Total Coliforms - Sample 2	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222B M Endo
0254	Total Coliforms - Sample 3	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B M Endo
0254	Total Coliforms - Sample 4	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B M Endo
0254	Total Coliforms - Sample 5	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B M Endo
0254	Total Coliforms - Sample 6	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222B M Endo
0254	Total Coliforms - Sample 7	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B M Endo
0254	Total Coliforms - Sample 8	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B M Endo
0254	Total Coliforms - Sample 9	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B M Endo
0254	Total Coliforms - Sample 10	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222B M Endo
0255	Fecal Coliforms - Sample 1	CFU/100mL		Absence	Absence	Not Reported	
0255	Fecal Coliforms - Sample 2	CFU/100mL		Absence	Absence	Not Reported	
0255	Fecal Coliforms - Sample 3	CFU/100mL		Absence	Absence	Not Reported	
0255	Fecal Coliforms - Sample 4	CFU/100mL		Presence	Presence	Not Reported	
0255	Fecal Coliforms - Sample 5	CFU/100mL		Absence	Absence	Not Reported	
0255	Fecal Coliforms - Sample 6	CFU/100mL		Absence	Absence	Not Reported	
0255	Fecal Coliforms - Sample 7	CFU/100mL		Presence	Presence	Not Reported	
0255	Fecal Coliforms - Sample 8	CFU/100mL		Presence	Presence	Not Reported	
0255	Fecal Coliforms - Sample 9	CFU/100mL		Absence	Absence	Not Reported	
0255	Fecal Coliforms - Sample 10	CFU/100mL		Absence	Absence	Not Reported	
0255	E.coli - Sample 1	CFU/100mL		Absence	Absence	Not Reported	
0255	E.coli - Sample 2	CFU/100mL		Absence	Absence	Not Reported	
0255	E.coli - Sample 3	CFU/100mL		Absence	Absence	Not Reported	
0255	E.coli - Sample 4	CFU/100mL		Presence	Presence	Not Reported	
0255	E.coli - Sample 5	CFU/100mL		Absence	Absence	Not Reported	
0255	E.coli - Sample 6	CFU/100mL		Absence	Absence	Not Reported	
0255	E.coli - Sample 7	CFU/100mL		Presence	Presence	Not Reported	
0255	E.coli - Sample 8	CFU/100mL		Presence	Presence	Not Reported	
0255	E.coli - Sample 9	CFU/100mL		Absence	Absence	Not Reported	
0255	E.coli - Sample 10	CFU/100mL		Absence	Absence	Not Reported	

Total Coliforms Evaluation : Acceptable

Fecal Coliforms Evaluation : Not Reported

E.coli Evaluation : Not Reported

Fecal Coliform Organism - Escherichia coli, Samples 4, 7 and 8
Total Coliform Organism - Enterobacter cloacae, Samples 3, 5 and 9
Negative (1) Coliform Organism - Proteus mirabilis, Sample 1
Negative (2) Coliform Organism - Pseudomonas aeruginosa, Sample 10
Blank - No Organism, Samples 2 and 6



WS-153 Final Complete Report

Jeremy Davis
Supervising Chemist
Orange County Water District
P.O. Box 8300
Fountain Valley, CA 92728
(714) 378-3244

EPA ID: CA00043
ERA Customer Number: O127601
Report Issued: 06/09/09
Study Dates: 04/06/09 - 05/21/09

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WS MicrobE™ (Coliforms) (cat# 080D)							
0254	Total Coliforms - Sample 1	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 2	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 3	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 4	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 5	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 6	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 7	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 8	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 9	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 10	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	Fecal Coliforms - Sample 1	CFU/100mL		Absence	Absence	Not Reported	
0255	Fecal Coliforms - Sample 2	CFU/100mL		Absence	Absence	Not Reported	
0255	Fecal Coliforms - Sample 3	CFU/100mL		Absence	Absence	Not Reported	
0255	Fecal Coliforms - Sample 4	CFU/100mL		Absence	Absence	Not Reported	
0255	Fecal Coliforms - Sample 5	CFU/100mL		Absence	Absence	Not Reported	
0255	Fecal Coliforms - Sample 6	CFU/100mL		Absence	Absence	Not Reported	
0255	Fecal Coliforms - Sample 7	CFU/100mL		Absence	Absence	Not Reported	
0255	Fecal Coliforms - Sample 8	CFU/100mL		Presence	Presence	Not Reported	
0255	Fecal Coliforms - Sample 9	CFU/100mL		Presence	Presence	Not Reported	
0255	Fecal Coliforms - Sample 10	CFU/100mL		Presence	Presence	Not Reported	
0255	E.coli - Sample 1	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	E.coli - Sample 2	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	E.coli - Sample 3	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	E.coli - Sample 4	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	E.coli - Sample 5	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	E.coli - Sample 6	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	E.coli - Sample 7	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	E.coli - Sample 8	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	E.coli - Sample 9	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	E.coli - Sample 10	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT

Total Coliforms Evaluation : Acceptable

Fecal Coliforms Evaluation : Not Reported

E.coli Evaluation : Acceptable

Fecal Coliform Organism - Escherichia coli, Samples 8, 9 and 10

Total Coliform Organism - Enterobacter cloacae, Samples 3, 4 and 7

Negative (1) Coliform Organism - Proteus mirabilis, Sample 1

Negative (2) Coliform Organism - Pseudomonas aeruginosa, Sample 6

Blank - No Organism, Samples 2 and 5



WS-153 Final Complete Report

Jeremy Davis
Supervising Chemist
Orange County Water District
P.O. Box 8300
Fountain Valley, CA 92728
(714) 378-3244

EPA ID: CA00043
ERA Customer Number: O127601
Report Issued: 06/09/09
Study Dates: 04/06/09 - 05/21/09

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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WS Heterotrophic Plate Count (cat# 079)

2555	Heterotrophic Plate Count (MF, PP)	CFU/mL	28.0	31.0	22.0 - 46.0	Acceptable	SM9215B R2A
2555	Heterotrophic Plate Count (MPN)	MPN/mL		30.6	19.2 - 48.6	Not Reported	



Jeremy Davis
Orange County Water District
P.O. Box 8300
Fountain Valley, CA 92728



WatR™ Pollution Proficiency Testing

WatR™ Pollution Study

Open Date: 01/19/09

Close Date: 03/05/09

Report Issued Date: 03/24/09

Study: **WP-168**

ERA Customer Number: **O127601**

Laboratory Name: **Orange County Water
District**

Microbiology Results

WP-168 Final Complete Report

Jeremy Davis
Supervising Chemist
Orange County Water District
P.O. Box 8300
Fountain Valley, CA 92728
(714) 378-3244

EPA ID: CA00043
ERA Customer Number: O127601
Report Issued: 03/24/09
Study Dates: 01/19/09 - 03/05/09

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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WP WasteWatR™ Coliform MicrobE™ (cat# 576)

2500	Total Coliforms (MF)	CFU/100mL		496	219 - 1120	Not Reported	
2530	Fecal Coliforms (MF)	CFU/100mL		275	60.0 - 1270	Not Reported	
2525	E.coli (MF)	CFU/100mL		398	110 - 1430	Not Reported	
2500	Total Coliforms (MPN)	MPN/100mL	500	528	86.1 - 3240	Acceptable	SM9221B LTB
2530	Fecal Coliforms (MPN)	MPN/100mL	500	486	50.2 - 4710	Acceptable	SM9221E EC
2525	E.coli (MPN)	MPN/100mL		592	209 - 1680	Not Reported	

WP WasteWatR™ Coliform MicrobE™ (cat# 576)

2500	Total Coliforms (MF)	CFU/100mL		496	219 - 1120	Not Reported	
2530	Fecal Coliforms (MF)	CFU/100mL		275	60.0 - 1270	Not Reported	
2525	E.coli (MF)	CFU/100mL		398	110 - 1430	Not Reported	
2500	Total Coliforms (MPN)	MPN/100mL	613	528	86.1 - 3240	Acceptable	SM9223 COLertQT
2530	Fecal Coliforms (MPN)	MPN/100mL		486	50.2 - 4710	Not Reported	
2525	E.coli (MPN)	MPN/100mL	613	592	209 - 1680	Acceptable	SM9223 COLertQT



PERFORMANCE EVALUATION

First Choice for Quality |



Quarterly Study
WS08-2

RT1143
RTC Labcode

CA00043
US EPA Labcode

9-Apr-2008 through 23-May-2008

Orange Co Water District
Lee J. Yoo
10500 Ellis Ave, PO Box 8300
Fountain Valley CA 92728

Thank you for participating in study WS08-2. Additional information about this study may be found online at www.rt-corp.com. If you have any questions or comments about this study please contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Chris Rucinski", is positioned below the word "Sincerely,".

Christopher Rucinski
Quality Director

2931 Soldier Springs Road
Laramie, WY 82070
(307) 742-5452
www.rt-corp.com





WS08-2
Concluded 05/23/2008



Dataset

PA 525.2

Dataset Analyst
Lab, Organic

Accreditors

Evaluations of this dataset will be sent to the accreditor(s) listed below using your laboratory's labcode listed above each accrediting agency. If any of the information listed below is incorrect, please contact RTC immediately.

Accrediting Labcode 1114

Environment Lab Accred. Program Branch

California Dept. of Public Health

104 Fred Choske

850 Marina Bay Parkway

Bldg. P, 1st Floor, MS 7103

Richmond CA 94804

UNITED STATES

Analysis

EPA 525.2 - Analyst: O. Lab

Gas Chromatography - Mass Spectrometry

Method Number 10089608

Technology Code: GC-MS

	ResultUnits	Accept / Warn	Z	Evaluation
Acetochlor 4 4310 / O-005-3 - Lot 013174	<0.100µg/L	0.0 to 0.0 0.0 to 0.0		Acceptable

Base/Neutrals

Base/Neutrals

Analysis

EPA 525.2 - Analyst: O. Lab

Gas Chromatography - Mass Spectrometry

Method Number 10089608

Technology Code: GC-MS

	ResultUnits	Accept / Warn	Z	Evaluation
Acenaphthylene 1, 4, 5 5505 / O-006-2 - Lot 013175	2.82µg/L	1.67 to 5.01	-0.62	Acceptable
Anthracene 1, 4, 5 5555 / O-006-2 - Lot 013175	6.32µg/L	3.93 to 11.8	-0.79	Acceptable
Benzo(a)anthracene 1, 4, 5 5575 / O-006-2 - Lot 013175	9.04µg/L	4.86 to 14.6	-0.28	Acceptable
Benzo(a)pyrene 1, 3, 4 5580 / O-006-1 - Lot 013171	0.542µg/L	0.509 to 1.03	-1.74	Acceptable
Benzo(b)fluoranthene 1, 4, 5 5585 / O-006-2 - Lot 013175	5.01µg/L	2.33 to 6.98	0.31	Acceptable
Benzo(g,h,i)perylene 1, 4, 5 5590 / O-006-2 - Lot 013175	5.33µg/L	2.35 to 7.05	0.54	Acceptable
Benzo(k)fluoranthene 1, 4, 5 5600 / O-006-2 - Lot 013175	2.78µg/L	1.00 to 3.00	1.56	Acceptable
Butyl benzyl phthalate 1, 4 5670 / O-006-2 - Lot 013175	29.6µg/L	10.6 to 42.2	0.40	Acceptable
Chrysene 1, 4, 5 5855 / O-006-2 - Lot 013175	9.28µg/L	4.86 to 14.6	-0.18	Acceptable
Dibenz(a,h) anthracene 1, 4, 5 5895 / O-006-2 - Lot 013175	5.68µg/L	2.71 to 8.14	0.18	Acceptable



Base/Neutrals (continued)

Base/Neutrals

Analysis

EPA 525.2 - Analyst: O. Lab
Gas Chromatography - Mass Spectrometry

(continued)

Method Number 10089608
Technology Code: GC-MS

	ResultUnits	Accept / Warn	Z	Evaluation
Di-n-butyl phthalate 1, 4, 5 5925 / O-006-2 - Lot 013175	44.5µg/L	16.5 to 66.1	0.26	Acceptable
Di(2-ethylhexyl)adipate 1, 3, 4 6062 / O-006-1 - Lot 013171	26.4µg/L	9.64 to 36.5	0.50	Acceptable
Di(2-ethylhexyl)phthalate 1, 3, 4 6065 / O-006-1 - Lot 013171	27.2µg/L	11.0 to 40.9	0.17	Acceptable
Diethyl phthalate 1, 4, 5 6070 / O-006-2 - Lot 013175	32.4µg/L	9.92 to 39.7	1.02	Acceptable
Dimethyl phthalate 1, 4, 5 6135 / O-006-2 - Lot 013175	25.4µg/L	9.80 to 39.2	0.12	Acceptable
Di-n-octyl phthalate 1, 4, 5 6200 / O-006-2 - Lot 013175	20.3µg/L	8.36 to 33.4	-0.10	Acceptable
Fluorene 1, 4, 5 6270 / O-006-2 - Lot 013175	6.36µg/L	2.84 to 8.52	0.48	Acceptable
Indeno(1,2,3-cd) pyrene 1, 4, 5 6315 / O-006-2 - Lot 013175	9.11µg/L	4.41 to 13.2	0.14	Acceptable
Phenanthrene 1, 4, 5 6615 / O-006-2 - Lot 013175	2.22µg/L	1.04 to 3.13	0.25	Acceptable
Pyrene 1, 4, 5 6665 / O-006-2 - Lot 013175	5.56µg/L	2.77 to 8.31	0.01	Acceptable

Group Analysis Summary

Acceptable 20 / 20
Score 100.0% - (Acceptable)

Herbicides

Herbicides

Analysis

EPA 525.2 - Analyst: O. Lab
Gas Chromatography - Mass Spectrometry

Method Number 10089608
Technology Code: GC-MS

	ResultUnits	Accept / Warn	Z	Evaluation
Pentachlorophenol 1, 3, 4 6605 / O-005-4 - Lot 013201	9.40µg/L	4.11 to 12.3	0.58	Acceptable
Dacthal (DCPA) 1, 4, 5 8550 / O-005-4 - Lot 013201	78.8µg/L	0.00 to 111	0.87	Acceptable

Pesticides

Pesticides

Analysis

EPA 525.2 - Analyst: O. Lab
Gas Chromatography - Mass Spectrometry

Method Number 10089608
Technology Code: GC-MS

	ResultUnits	Accept / Warn	Z	Evaluation
Hexachlorobenzene 1, 3, 4 6275 / O-005-2 - Lot 013173	1.25µg/L	0.728 to 1.79	-0.04	Acceptable

**Pesticides (continued)**

Pesticides

Analysis

EPA 525.2 - Analyst: O. Lab

Gas Chromatography - Mass Spectrometry

(continued)

Method Number 10089608

Technology Code: GC-MS

	Result/Units	Accept / Warn	Z	Evaluation
Hexachlorocyclopentadiene 1, 3, 4 8285 / O-005-2 - Lot 013173	4.02µg/L	0.623 to 5.84	0.60	Acceptable
Alachlor 1, 3, 4 7005 / O-005-3 - Lot 013174	3.88µg/L	2.26 to 5.94	-0.24	Acceptable
Aldrin 1, 3, 4 7025 / O-005-1 - Lot 013172	1.06µg/L	0.756 to 1.84	-0.88	Acceptable
Atrazine 1, 3, 4 7085 / O-005-3 - Lot 013174	14.0µg/L	8.69 to 22.9	-0.51	Acceptable
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane) 1, 3, 4 7120 / O-005-1 - Lot 013172	2.95µg/L	1.59 to 4.19	0.09	Acceptable
Bromacil 1, 4, 5 7130 / O-005-3 - Lot 013174	2.84µg/L	1.72 to 4.52	-0.40	Acceptable
Butachlor 1, 4 7180 / O-005-3 - Lot 013174	55.0µg/L	26.2 to 63.0	1.13	Acceptable
Dieldrin 1, 3, 4 7470 / O-005-1 - Lot 013172	1.28µg/L	0.818 to 1.74	0.01	Acceptable
Endrin 1, 3, 4 7540 / O-005-1 - Lot 013172	1.58µg/L	1.12 to 2.08	-0.08	Acceptable
Heptachlor 1, 3, 4 7685 / O-005-1 - Lot 013172	2.70µg/L	1.51 to 3.97	-0.06	Acceptable
Heptachlor epoxide 1, 3, 4 7690 / O-005-2 - Lot 013173	4.71µg/L	2.55 to 6.73	0.07	Acceptable
Methoxychlor 1, 3, 4 7810 / O-005-2 - Lot 013173	82.1µg/L	44.9 to 118	0.03	Acceptable
Metolachlor 1, 4 7835 / O-005-3 - Lot 013174	71.2µg/L	34.9 to 85.4	0.87	Acceptable
Metribuzin 1, 4 7845 / O-005-3 - Lot 013174	20.8µg/L	4.03 to 26.1	1.04	Acceptable
Molinate 1, 4, 5 7875 / O-005-3 - Lot 013174	24.3µg/L	13.0 to 34.4	0.11	Acceptable
Propachlor (Ramrod) 1, 3, 4 8045 / O-005-2 - Lot 013173	3.96µg/L	1.80 to 4.40	1.35	Acceptable
Simazine 1, 3, 4 8125 / O-005-3 - Lot 013174	10.6µg/L	2.35 to 15.1	0.58	Acceptable
Trifluralin (Treflan) 1, 3, 4 8295 / O-005-2 - Lot 013173	3.50µg/L	1.60 to 3.97	1.20	Acceptable

Group Analysis Summary

Acceptable 19 / 19

Score 100.0% - (Acceptable)

End of EPA 525.2



Dataset

Full Set

Dataset Analyst
Lab, Organic

Accreditors

Evaluations of this dataset will be sent to the accreditor(s) listed below using your laboratory's labcode listed above each accrediting agency. If any of the information listed below is incorrect, please contact RTC immediately.

Accrediting Labcode 1114

Environment Lab Accred. Program Branch

California Dept. of Public Health

104 Fred Choske

850 Marina Bay Parkway

Bldg. P, 1st Floor, MS 7103

Richmond CA 94804

UNITED STATES

Base/Neutrals

Base/Neutrals

Analysis

EPA 550.1 - Analyst: O. Lab

High Performance Liquid Chromatography - Ultraviolet/visible Molecular Fluorescence

Method Number 10094005

Technology Code:

HPLC-FLUOR

	Result/Units	Accept / Warn	Z	Evaluation
Naphthalene 1, 4, 5 5005 / O-006-2 - Lot 013175	27.5µg/L	19.6 to 45.8	-0.80	Acceptable
Anthracene 1, 4, 5 5555 / O-006-2 - Lot 013175	7.00µg/L	3.93 to 11.8	-0.44	Acceptable
Benzo(a)anthracene 1, 4, 5 5575 / O-006-2 - Lot 013175	8.90µg/L	4.86 to 14.6	-0.34	Acceptable
Benzo(a)pyrene 1, 3, 4 5580 / O-006-1 - Lot 013171	0.690µg/L	0.509 to 1.03	-0.61	Acceptable
Benzo(b)fluoranthene 1, 4, 5 5585 / O-006-2 - Lot 013175	4.74µg/L	2.33 to 6.98	0.08	Acceptable
Benzo(g,h,i)perylene 1, 4, 5 5590 / O-006-2 - Lot 013175	3.77µg/L	2.35 to 7.05	-0.79	Acceptable
Benzo(k)fluoranthene 1, 4, 5 5600 / O-006-2 - Lot 013175	1.97µg/L	1.00 to 3.00	-0.06	Acceptable
Chrysene 1, 4, 5 5855 / O-006-2 - Lot 013175	9.00µg/L	4.86 to 14.6	-0.30	Acceptable
Fluoranthene 1, 4, 5 6285 / O-006-2 - Lot 013175	2.94µg/L	1.41 to 4.24	0.16	Acceptable
Fluorene 1, 4, 5 6270 / O-006-2 - Lot 013175	5.12µg/L	2.84 to 8.52	-0.39	Acceptable
Indeno(1,2,3-cd) pyrene 1, 4, 5 6315 / O-006-2 - Lot 013175	7.25µg/L	4.41 to 13.2	-0.71	Acceptable
Phenanthrene 1, 4, 5 6615 / O-006-2 - Lot 013175	2.28µg/L	1.04 to 3.13	0.36	Acceptable
Pyrene 1, 4, 5 6665 / O-006-2 - Lot 013175	5.62µg/L	2.77 to 8.31	0.06	Acceptable

Group Analysis Summary

Acceptable 13 / 13

Score 100.0% - (Acceptable)

Base/Neutrals (continued)

Base/Neutrals

Carbamates

Analysis

EPA 531.1 - Analyst: O. Lab

High Performance Liquid Chromatography - Ultraviolet/visible Molecular Fluorescence

Method Number 10090809

Technology Code:

HPLC-FLUOR

	ResultUnits	Accept / Warn	Z	Evaluation
Aldicarb (Temik) 1, 3, 4 7010 / O-001 - Lot 013168	19.7µg/L	17.0 to 28.4	-1.05	Acceptable
Aldicarb sulfone 1, 3, 4 7015 / O-001 - Lot 013168	23.7µg/L	19.4 to 29.0	-0.20	Acceptable
Aldicarb sulfoxide 1, 3, 4 7020 / O-001 - Lot 013168	<1.00µg/L	0 to 24.0		Acceptable
Carbaryl (Sevin) 1, 4 7195 / O-001 - Lot 013168	19.5µg/L	15.3 to 23.2	0.14	Acceptable
Carbofuran (Furaden) 1, 3, 4 7205 / O-001 - Lot 013168	46.3µg/L	25.1 to 66.1	0.07	Acceptable
3-Hydroxycarbofuran 1, 4 7710 / O-001 - Lot 013168	19.8µg/L	14.7 to 22.5	0.63	Acceptable
Methiocarb (Mesuroil) 1, 4, 5 7800 / O-001 - Lot 013168	113µg/L	54.1 to 166	0.11	Acceptable
Methomyl (Lannate) 1, 3, 4 7805 / O-001 - Lot 013168	86.0µg/L	41.9 to 113	0.50	Acceptable
Oxamyl 1, 3, 4 7940 / O-001 - Lot 013168	38.2µg/L	25.6 to 48.8	0.17	Acceptable
Propoxur (Baygon) 1, 4, 5 8080 / O-001 - Lot 013168	89.0µg/L	49.3 to 118	0.33	Acceptable

Group Analysis Summary

Acceptable 10 / 10

Score 100.0% - (Acceptable)

Haloacetic acids

Analysis

EPA 552.2 - Analyst: O. Lab

Gas Chromatography - Electron Capture Detection

Method Number 10095600

Technology Code: GC-ECD

	ResultUnits	Accept / Warn	Z	Evaluation
Monobromoacetic acid 1, 3, 4 9312 / O-098 - Lot 013199	24.4µg/L	14.8 to 34.6	-0.06	Acceptable
Monochloroacetic acid 1, 3, 4 9336 / O-098 - Lot 013199	30.5µg/L	17.8 to 41.6	0.13	Acceptable
Dibromoacetic acid 1, 3, 4 9357 / O-098 - Lot 013199	13.7µg/L	12.4 to 29.0	-1.69	Acceptable
Dichloroacetic acid 1, 3, 4 9360 / O-098 - Lot 013199	15.7µg/L	14.9 to 34.7	-1.83	Acceptable
Trichloroacetic acid 1, 3, 4 9642 / O-098 - Lot 013199	33.8µg/L	25.3 to 58.9	-0.99	Acceptable



Haloacetic acids (continued)

Group Analysis Summary

Acceptable 5 / 5
Score 100.0% - (Acceptable)

Herbicides

Herbicides

Analysis

EPA 515.4 1 (2000) - Analyst: O. Lab
Gas Chromatography - Electron Capture Detection

Method Number 10088503
Technology Code: GC-ECD

	ResultUnits	Accept / Warn	Z	Evaluation
Pentachlorophenol 1, 3, 4 6805 / O-005-4 - Lot 013201	10.3µg/L	4.11 to 12.3	1.02	Acceptable
Acifluorfen 1, 3, 4 8505 / O-005-4 - Lot 013201	50.5µg/L	23.3 to 62.3	0.79	Acceptable
Bentazon 1, 4, 5 8530 / O-005-4 - Lot 013201	77.9µg/L	33.6 to 118	0.09	Acceptable
2,4-D Total 1, 3, 4 8545 / O-005-4 - Lot 013201	81.3µg/L	39.5 to 138	-0.31	Acceptable
Dacthal (DCPA) 1, 4, 5 8550 / O-005-4 - Lot 013201	24.7µg/L	0.00 to 111	-1.02	Acceptable
Dalapon 1, 3, 4 8555 / O-005-4 - Lot 013201	135µg/L	0.00 to 167	1.29	Acceptable
Dicamba 1, 3, 4 8595 / O-005-4 - Lot 013201	8.16µg/L	2.82 to 12.5	0.20	Acceptable
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP) 1, 3, 4 8620 / O-005-4 - Lot 013201	13.7µg/L	7.59 to 31.4	-0.97	Acceptable
Picloram 1, 3, 4 8645 / O-005-4 - Lot 013201	25.7µg/L	14.9 to 57.7	-0.99	Acceptable
Silvex (2,4,5-TP) 1, 3, 4 8650 / O-005-4 - Lot 013201	116µg/L	25.6 to 179 51.1 to 153	0.54	Acceptable

Group Analysis Summary

Acceptable 10 / 10
Score 100.0% - (Acceptable)

Analysis

EPA 547 - Analyst: O. Lab
High Performance Liquid Chromatography - Ultraviolet/visible Molecular Fluorescence

Method Number 10091802
Technology Code: HPLC-FLUOR

	ResultUnits	Accept / Warn	Z	Evaluation
Glyphosate 1, 3, 4 9411 / O-097 - Lot 013202	600µg/L	557 to 783	-1.23	Acceptable

Analysis

EPA 548.1 - Analyst: O. Lab
Gas Chromatography - Mass Spectrometry

Method Number 10092601
Technology Code: GC-MS

	ResultUnits	Accept / Warn	Z	Evaluation
Endothall 1, 3, 4 7525 / O-097 - Lot 013202	150µg/L	52.0 to 194	0.76	Acceptable



Herbicides (continued)

Herbicides

Analysis

EPA 549.2 - Analyst: O. Lab

Method Number 10093206

	ResultUnits	Accept / Warn	Z	Evaluation
Diquat 1, 3, 4 9390 / O-097 - Lot 013202	8.93µg/L	3.57 to 24.2	-0.96	Acceptable
Paraquat 1, 4, 5 9528 / O-097 - Lot 013202	9.81µg/L	8.40 to 25.2	-1.66	Acceptable

Organic Disinfection By-Products

Analysis

EPA 551.1 - Analyst: O. Lab

Method Number 10094607

	ResultUnits	Accept / Warn	Z	Evaluation
Chloral hydrate 1, 3, 4 4460 / O-077 - Lot 012656	22.1µg/L	4.62 to 33.6	0.41	Acceptable

Analysis

EPA 552.2 - Analyst: O. Lab

Gas Chromatography - Electron Capture Detection

Method Number 10095600

Technology Code: GC-ECD

	ResultUnits	Accept / Warn	Z	Evaluation
Bromochloroacetic acid 1, 3, 4 9315 / O-098 - Lot 013199	13.1µg/L	10.5 to 24.5	-1.26	Acceptable
Total haloacetic acids 9414 / O-098 - Lot 013199	131µg/L	88.2 to 206	-0.54	Acceptable

Oxygenates - Gasoline Additives

Analysis

EPA 524.2 - Analyst: O. Lab

Gas Chromatography - Mass Spectrometry

Method Number 10088605

Technology Code: GC-MS

	ResultUnits	Accept / Warn	Z	Evaluation
T-amylmethylether (TAME) 1, 4, 5 4370 / O-075 - Lot 013184	13.9µg/L	8.70 to 20.3		Acceptable
tert-Butyl alcohol 1, 4, 5 4420 / O-075 - Lot 013184	46.0µg/L	28.1 to 65.5	-0.09	Acceptable
Carbon disulfide 4 4450 / O-075 - Lot 013184	19.4µg/L	11.8 to 27.6	-0.08	Acceptable
Ethyl-t-butylether (ETBE) 1, 4, 5 4770 / O-075 - Lot 013184	27.7µg/L	16.2 to 37.8	0.13	Acceptable
Methyl tert-butyl ether (MTBE) 4 5000 / O-075 - Lot 013184	12.1µg/L	7.74 to 18.1	-0.31	Acceptable
n-Propylbenzene 4 5090 / O-075 - Lot 013184	46.8µg/L	28.0 to 65.2	0.02	Acceptable
Trichlorofluoromethane 4 5175 / O-075 - Lot 013184	31.5µg/L	21.6 to 50.4		Acceptable

**Oxygenates - Gasoline Additives (continued)**

Analysis

EPA 524.2 - Analyst: O. Lab

Gas Chromatography - Mass Spectrometry

(continued)

Method Number 10088605

Technology Code: GC-MS

	ResultUnits	Accept / Warn	Z	Evaluation
1,2,3-Trichloropropane 1, 4, 5 5180 / O-075 - Lot 013184	1.00µg/L	0.720 to 1.68		Acceptable
Trichlorotrifluoroethane (Freon 113) 1, 4, 5 5185 / O-075 - Lot 013184	36.4µg/L	20.0 to 46.6	0.47	Acceptable
Di-isopropylether (DIPE) 1, 4, 5 9375 / O-075 - Lot 013184	38.6µg/L	7.16 to 64.4	0.20	Acceptable
1-Phenylpropane 4 9567 / O-075 - Lot 013184	46.8µg/L	28.0 to 65.2	0.02	Acceptable

Group Analysis Summary

Acceptable 11 / 11

Score 100.0% - (Acceptable)

PCBs in Water

Analysis

EPA 508 - Analyst: O. Lab

Gas Chromatography - Electron Capture Detection

Method Number 10085004

Technology Code: GC-ECD

	ResultUnits	Accept / Warn	Z	Evaluation
PCB Aroclor Identification 1 8872 / O-003 - Lot 010210	1248	248 to 248 248 to 248		Acceptable
Aroclor-1016 (PCB-1016) 1, 4 8880 / O-003 - Lot 010210	<0.150µg/L	0.0 to 0.0 0.0 to 0.0		Acceptable
Aroclor-1221 (PCB-1221) 1, 4 8885 / O-003 - Lot 010210	<0.150µg/L	0.0 to 0.0 0.0 to 0.0		Acceptable
Aroclor-1232 (PCB-1232) 1, 4 8890 / O-003 - Lot 010210	<0.150µg/L	0.0 to 0.0 0.0 to 0.0		Acceptable
Aroclor-1242 (PCB-1242) 1, 4 8895 / O-003 - Lot 010210	<0.150µg/L	0.0 to 0.0 0.0 to 0.0		Acceptable
Aroclor-1248 (PCB-1248) 1, 4 8900 / O-003 - Lot 010210	0.500µg/L	0.256 to 5.12	-1.61	Acceptable
Aroclor-1254 (PCB-1254) 1, 4 8905 / O-003 - Lot 010210	<0.150µg/L	0.0 to 0.0 0.0 to 0.0		Acceptable
Aroclor-1260 (PCB-1260) 1, 4 8910 / O-003 - Lot 010210	<0.150µg/L	0.0 to 0.0 0.0 to 0.0		Acceptable

Pesticides

Pesticides

Analysis

EPA 507 - Analyst: O. Lab

Gas Chromatography - Nitrogen/phosphorus Detection

Method Number 10084409

Technology Code: GC-NPD

	ResultUnits	Accept / Warn	Z	Evaluation
Alachlor 1, 3, 4 7005 / O-005-3 - Lot 013174	3.27µg/L	2.26 to 5.94	-0.90	Acceptable

Pesticides (continued)

Pesticides

Analysis

EPA 507 - Analyst: O. Lab
Gas Chromatography - Nitrogen/phosphorus Detection

(continued)

Method Number 10084409
Technology Code: GC-NPD

	ResultUnits	Accept / Warn	Z	Evaluation
Atrazine 1, 3, 4 7065 / O-005-3 - Lot 013174	12.6µg/L	8.69 to 22.9	-0.90	Acceptable
Bromacil 1, 4, 5 7130 / O-005-3 - Lot 013174	3.00µg/L	1.72 to 4.52	-0.17	Acceptable
Butachlor 1, 4 7160 / O-005-3 - Lot 013174	37.1µg/L	26.2 to 63.0	-0.81	Acceptable
Metolachlor 1, 4 7835 / O-005-3 - Lot 013174	70.0µg/L	34.9 to 85.4	0.78	Acceptable
Metribuzin 1, 4 7845 / O-005-3 - Lot 013174	18.8µg/L	4.03 to 26.1	0.68	Acceptable
Molinate 1, 4, 5 7875 / O-005-3 - Lot 013174	19.0µg/L	13.0 to 34.4	-0.88	Acceptable
Simazine 1, 3, 4 8125 / O-005-3 - Lot 013174	9.80µg/L	2.35 to 15.1	0.33	Acceptable

Analysis

EPA 508 - Analyst: O. Lab
Gas Chromatography - Electron Capture Detection

Method Number 10085004
Technology Code: GC-ECD

	ResultUnits	Accept / Warn	Z	Evaluation
Hexachlorobenzene 1, 3, 4 6275 / O-005-2 - Lot 013173	1.07µg/L	0.728 to 1.79	-0.71	Acceptable
Hexachlorocyclopentadiene 1, 3, 4 6285 / O-005-2 - Lot 013173	3.61µg/L	0.623 to 5.84	0.29	Acceptable
Aldrin 1, 3, 4 7025 / O-005-1 - Lot 013172	1.08µg/L	0.756 to 1.84	-0.81	Acceptable
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane) 1, 3, 4 7120 / O-005-1 - Lot 013172	2.85µg/L	1.59 to 4.19	-0.06	Acceptable
Chlordane (total) 1, 3, 4 7250 / O-005-5 - Lot 010215	9.34µg/L	5.01 to 13.2	0.11	Acceptable
Dieldrin 1, 3, 4 7470 / O-005-1 - Lot 013172	1.22µg/L	0.818 to 1.74	-0.26	Acceptable
Endrin 1, 3, 4 7540 / O-005-1 - Lot 013172	1.68µg/L	1.12 to 2.08	0.33	Acceptable
Heptachlor 1, 3, 4 7685 / O-005-1 - Lot 013172	2.62µg/L	1.51 to 3.97	-0.19	Acceptable
Heptachlor epoxide 1, 3, 4 7690 / O-005-2 - Lot 013173	4.00µg/L	2.55 to 6.73	-0.61	Acceptable
Methoxychlor 1, 3, 4 7810 / O-005-2 - Lot 013173	77.9µg/L	44.9 to 118	-0.20	Acceptable
Propachlor (Ramrod) 1, 3, 4 8045 / O-005-2 - Lot 013173	3.20µg/L	1.80 to 4.40	0.13	Acceptable
Toxaphene (Chlorinated camphene) 1, 3, 4 8250 / O-005-6 - Lot 010489	4.67µg/L	2.70 to 7.12	-0.22	Acceptable



Pesticides (continued)

Pesticides

Analysis

EPA 508 - Analyst: O. Lab
Gas Chromatography - Electron Capture Detection

(continued)

Method Number 10085004
Technology Code: GC-ECD

	ResultUnits	Accept / Warn	Z	Evaluation
Trifluralin (Treflan) 1, 3, 4 8295 / O-005-2 - Lot 013173	3.38µg/L	1.60 to 3.97	1.00	Acceptable

Group Analysis Summary

Acceptable 13 / 13
Score 100.0% - (Acceptable)

Regulated VOCs

Analysis

EPA 504.1 - Analyst: O. Lab
Gas Chromatography - Electron Capture Detection

Method Number 10082607
Technology Code: GC-ECD

	ResultUnits	Accept / Warn	Z	Evaluation
1,2-Dibromo-3-chloropropane (DBCP) 1, 3, 4 4570 / O-007-4 - Lot 013176	0.597µg/L	0.306 to 0.714	0.85	Acceptable
1,2-Dibromoethane (EDB, Ethylene dibromide) 1, 3, 4 4585 / O-007-4 - Lot 013176	0.615µg/L	0.366 to 0.854	0.04	Acceptable

Analysis

EPA 524.2 - Analyst: O. Lab
Gas Chromatography - Mass Spectrometry

Method Number 10088605
Technology Code: GC-MS

	ResultUnits	Accept / Warn	Z	Evaluation
Benzene 1, 3, 4 4375 / O-007-2 - Lot 013180	8.72µg/L	5.81 to 13.6	-0.80	Acceptable
Carbon tetrachloride 1, 3, 4 4455 / O-007-1 - Lot 013178	3.60µg/L	2.15 to 5.03	0.01	Acceptable
Chlorobenzene 1, 3, 4 4475 / O-007-1 - Lot 013178	22.1µg/L	14.5 to 27.1	0.42	Acceptable
1,2-Dichlorobenzene 1, 3, 4 4610 / O-007-2 - Lot 013180	10.1µg/L	5.99 to 14.0	0.07	Acceptable
1,4-Dichlorobenzene 1, 3, 4 4620 / O-007-2 - Lot 013180	13.8µg/L	10.7 to 18.4	-0.40	Acceptable
1,2-Dichloroethane 1, 3, 4 4635 / O-007-1 - Lot 013178	15.4µg/L	12.9 to 19.3	-0.32	Acceptable
1,1-Dichloroethylene 1, 3, 4 4640 / O-007-1 - Lot 013178	7.84µg/L	4.91 to 11.5	-0.40	Acceptable
cis-1,2-Dichloroethylene 1, 3, 4 4645 / O-007-1 - Lot 013178	30.2µg/L	25.4 to 37.6	-0.58	Acceptable
1,2-Dichloropropane 1, 3, 4 4655 / O-007-1 - Lot 013178	7.68µg/L	4.60 to 10.7	0.01	Acceptable
trans-1,2-Dichloroethylene 1, 3, 4 4700 / O-007-1 - Lot 013178	17.2µg/L	14.0 to 23.1	-0.60	Acceptable
Ethylbenzene 1, 3, 4 4765 / O-007-2 - Lot 013180	2.72µg/L	1.68 to 3.92	-0.32	Acceptable



Regulated VOCs (continued)

Analysis

EPA 524.2 - Analyst: O. Lab

Gas Chromatography - Mass Spectrometry

(continued)

Method Number 10088605

Technology Code: GC-MS

	ResultUnits	Accept / Warn	Z	Evaluation
Methylene chloride (Dichloromethane) 1, 3, 4 4975 / O-007-1 - Lot 013178	17.9µg/L	12.0 to 22.2	0.32	Acceptable
Styrene 1, 3, 4 5100 / O-007-1 - Lot 013178	5.12µg/L	3.90 to 9.10	-1.01	Acceptable
Tetrachloroethylene (Perchloroethylene) 1, 3, 4 5115 / O-007-1 - Lot 013178	14.9µg/L	9.43 to 18.2	0.51	Acceptable
Toluene 1, 3, 4 5140 / O-007-2 - Lot 013180	11.5µg/L	9.25 to 15.2	-0.50	Acceptable
1,2,4-Trichlorobenzene 1, 3, 4 5155 / O-007-1 - Lot 013178	5.92µg/L	4.02 to 9.41	-0.74	Acceptable
1,1,1-Trichloroethane 1, 3, 4 5160 / O-007-1 - Lot 013178	7.28µg/L	4.34 to 10.1	0.08	Acceptable
1,1,2-Trichloroethane 1, 3, 4 5165 / O-007-1 - Lot 013178	8.00µg/L	4.82 to 11.2	-0.03	Acceptable
Trichloroethene (Trichloroethylene) 1, 3, 4 5170 / O-007-1 - Lot 013178	6.12µg/L	3.48 to 8.12	0.57	Acceptable
Vinyl chloride 1, 3, 4 5235 / O-007-1 - Lot 013178	4.36µg/L	2.41 to 6.10	0.56	Acceptable
Xylene, total 1, 3, 4 5260 / O-007-2 - Lot 013180	31.9µg/L	27.2 to 40.8	-0.60	Acceptable

Group Analysis Summary

Acceptable 21 / 21

Score 100.0% - (Acceptable)

Trihalomethanes

Analysis

EPA 524.2 - Analyst: O. Lab

Gas Chromatography - Mass Spectrometry

Method Number 10088605

Technology Code: GC-MS

	ResultUnits	Accept / Warn	Z	Evaluation
Bromodichloromethane 1, 3, 4 4395 / O-002 - Lot 013169	33.4µg/L	20.9 to 48.7	-0.20	Acceptable
Bromoform 1, 3, 4 4400 / O-002 - Lot 013169	35.2µg/L	23.0 to 53.6	-0.40	Acceptable
Bromoform 1, 3, 4 4400 / O-007-3A - Lot 013182	<0.500µg/L	0.0 to 0.0 0.0 to 0.0		Acceptable
Chloroform 1, 3, 4 4505 / O-002 - Lot 013169	23.2µg/L	14.4 to 33.6	-0.17	Acceptable
Chloroform 1, 3, 4 4505 / O-007-3A - Lot 013182	<0.500µg/L	0.0 to 0.0 0.0 to 0.0		Acceptable
Dibromochloromethane 1, 3, 4 4575 / O-002 - Lot 013169	40.0µg/L	25.3 to 58.9	-0.25	Acceptable



Trihalomethanes (continued)

Analysis
EPA 524.2 - Analyst: O. Lab
Gas Chromatography - Mass Spectrometry

(continued)
Method Number 10088605
Technology Code: GC-MS

	ResultUnits	Accept / Warn	Z	Evaluation
Total trihalomethanes 1, 3, 4 5205 / O-002 - Lot 013169	132µg/L	83.4 to 195	-0.25	Acceptable

Group Analysis Summary
Acceptable 7 / 7
Score 100.0% - (Acceptable)

Unregulated VOCs

Analysis
EPA 504.1 - Analyst: O. Lab
Gas Chromatography - Electron Capture Detection

Method Number 10082607
Technology Code: GC-ECD

	ResultUnits	Accept / Warn	Z	Evaluation
1,2,3-Trichloropropane 1, 3, 4 5180 / O-007-4 - Lot 013176	8.08µg/L	4.12 to 9.60	1.02	Acceptable

Analysis
EPA 524.2 - Analyst: O. Lab
Gas Chromatography - Mass Spectrometry

Method Number 10088605
Technology Code: GC-MS

	ResultUnits	Accept / Warn	Z	Evaluation
Bromobenzene 1, 3, 4 4385 / O-007-3B - Lot 013183	20.3µg/L	16.2 to 24.4	0.00	Acceptable
Bromochloromethane 1, 3, 4 4390 / O-007-3B - Lot 013183	44.4µg/L	36.6 to 55.0	-0.27	Acceptable
n-Butylbenzene 1, 3, 4 4435 / O-007-3B - Lot 013183	27.4µg/L	23.3 to 34.9	-0.46	Acceptable
sec-Butylbenzene 1, 3, 4 4440 / O-007-3B - Lot 013183	22.6µg/L	18.7 to 28.1	-0.32	Acceptable
tert-Butylbenzene 1, 3, 4 4445 / O-007-3B - Lot 013183	38.0µg/L	30.7 to 46.1	-0.08	Acceptable
Chloroethane 1, 3, 4 4485 / O-007-3A - Lot 013182	16.0µg/L	8.22 to 19.2	0.84	Acceptable
2-Chlorotoluene 1, 3, 4 4535 / O-007-3B - Lot 013183	40.4µg/L	33.0 to 49.6	-0.15	Acceptable
4-Chlorotoluene 1, 3, 4 4540 / O-007-3B - Lot 013183	28.0µg/L	22.6 to 34.0	-0.13	Acceptable
Dibromomethane 1, 3, 4 4595 / O-007-3B - Lot 013183	21.6µg/L	16.6 to 25.0	0.42	Acceptable
1,3-Dichlorobenzene 1, 3, 4 4615 / O-007-2 - Lot 013180	11.7µg/L	7.68 to 17.9	-0.62	Acceptable
1,3-Dichlorobenzene 1, 3, 4 4615 / O-007-3A - Lot 013182	13.0µg/L	7.98 to 18.6	-0.21	Acceptable
Dichlorodifluoromethane 1, 3, 4 4625 / O-007-3A - Lot 013182	<0.500µg/L	0.0 to 0.0 0.0 to 0.0		Acceptable

Unregulated VOCs (continued)

Analysis

EPA 524.2 - Analyst: O. Lab

Gas Chromatography - Mass Spectrometry

(continued)

Method Number 10088605

Technology Code: GC-MS

	ResultUnits	Accept / Warn	Z	Evaluation
1,1-Dichloroethane 1, 3, 4 4630 / O-007-3A - Lot 013182	10.6µg/L	7.26 to 16.9	-0.96	Acceptable
1,3-Dichloropropane 1, 3, 4 4660 / O-007-3B - Lot 013183	37.8µg/L	28.9 to 43.3	0.35	Acceptable
2,2-Dichloropropane 1, 3, 4 4665 / O-007-3B - Lot 013183	11.7µg/L	8.88 to 20.7	-1.27	Acceptable
1,1-Dichloropropene 1, 3, 4 4670 / O-007-3B - Lot 013183	15.2µg/L	13.0 to 19.4	-0.67	Acceptable
cis-1,3-Dichloropropene 1, 3, 4 4680 / O-007-3A - Lot 013182	38.4µg/L	26.3 to 53.4	-0.22	Acceptable
trans-1,3-Dichloropropene 1, 3, 4 4685 / O-007-3A - Lot 013182	5.48µg/L	3.79 to 8.65	-1.25	Acceptable
Hexachlorobutadiene 1, 3, 4 4835 / O-007-3B - Lot 013183	9.68µg/L	5.17 to 12.1	1.14	Acceptable
Isopropylbenzene 1, 3, 4 4900 / O-007-3B - Lot 013183	21.6µg/L	17.4 to 26.2	-0.07	Acceptable
4-Isopropyltoluene 1, 3, 4 4901 / O-007-3B - Lot 013183	31.9µg/L	25.8 to 38.8	-0.11	Acceptable
Methyl bromide (Bromomethane) 1, 3, 4 4950 / O-007-3A - Lot 013182	12.9µg/L	5.65 to 21.6	-0.18	Acceptable
Methyl chloride (Chloromethane) 1, 3, 4 4960 / O-007-3A - Lot 013182	49.4µg/L	25.9 to 60.3	0.58	Acceptable
Methyl tert-butyl ether (MTBE) 1, 4 5000 / O-007-2 - Lot 013180	36.3µg/L	28.1 to 65.7	-1.28	Acceptable
Naphthalene 1, 4 5005 / O-007-2 - Lot 013180	7.08µg/L	3.92 to 11.8	-0.71	Acceptable
n-Propylbenzene 1, 3, 4 5090 / O-007-3B - Lot 013183	9.08µg/L	5.63 to 13.1	-0.26	Acceptable
1,1,1,2-Tetrachloroethane 1, 3, 4 5105 / O-007-3B - Lot 013183	24.0µg/L	18.8 to 28.2	0.16	Acceptable
1,1,2,2-Tetrachloroethane 1, 3, 4 5110 / O-007-3A - Lot 013182	39.5µg/L	28.9 to 47.1	0.33	Acceptable
1,2,3-Trichlorobenzene 1, 3, 4 5150 / O-007-3B - Lot 013183	31.9µg/L	23.9 to 35.9	0.50	Acceptable
Trichlorofluoromethane 1, 3, 4 5175 / O-007-3A - Lot 013182	33.1µg/L	21.1 to 49.1	-0.31	Acceptable
1,2,3-Trichloropropane 1, 3, 4 5180 / O-007-3B - Lot 013183	48.4µg/L	33.6 to 50.4	1.14	Acceptable
1,2,4-Trimethylbenzene 1, 4 5210 / O-007-2 - Lot 013180	22.0µg/L	15.7 to 26.7	0.29	Acceptable
1,2,4-Trimethylbenzene 1, 3, 4 5210 / O-007-3B - Lot 013183	24.9µg/L	21.2 to 31.8	-0.52	Acceptable



Unregulated VOCs (continued)

Analysis

EPA 524.2 - Analyst: O. Lab

Gas Chromatography - Mass Spectrometry

(continued)

Method Number 10088605

Technology Code: GC-MS

	ResultUnits	Accept / Warn	Z	Evaluation
1,3,5-Trimethylbenzene 1, 4 5215 / O-007-2 - Lot 013180	36.4µg/L	22.3 to 44.9	0.50	Acceptable
1,3,5-Trimethylbenzene 1, 3, 4 5215 / O-007-3B - Lot 013183	42.4µg/L	38.6 to 58.0	-1.72	Acceptable
m+p-Xylene 4 5240 / O-007-2 - Lot 013180	12.8µg/L	10.9 to 16.3	-0.62	Acceptable
o-Xylene 4 5250 / O-007-2 - Lot 013180	19.1µg/L	15.7 to 23.9	-0.33	Acceptable

Group Analysis Summary

Acceptable 37 / 37

Score 100.0% - (Acceptable)

End of Full Set



Sample Information

Carbamate Pesticides - WS

PEO-001

Study Lot 013168

Mfg Lot 013168

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Aldicarb (Temik) 7010 Carbamates	µg/L	22.69	2.86	21.90	5.52	21.10	5.14	22.8 ± 0.221
Aldicarb sulfone 7015 Carbamates	µg/L	24.19	2.41	22.10	2.44	20.20	0.39	24.0 ± 0.383
Aldicarb sulfoxide 7020 Carbamates	µg/L	19.00	2.52	10.00	11.00	10.00	13.00	20.0 ± 0.357
Carbaryl (Sevin) 7195 Carbamates	µg/L	19.22	1.97	20.00	5.23	19.60	0.74	21.0 ± 0.218
Carbofuran (Furaden) 7205 Carbamates	µg/L	45.60	10.26	42.00	7.43	42.10	13.05	45.6 ± 0.443
3-Hydroxycarbofuran 7710 Carbamates	µg/L	18.58	1.94	18.90	2.27	18.90	2.65	20.1 ± 0.195
Methiocarb (Mesuroi) 7800 Carbamates	µg/L	109.86	27.88	110.00	23.20	110.00	27.88	139 ± 1.35
Methomyl (Lannate) 7805 Carbamates	µg/L	77.24	17.68	76.90	15.40	77.20	17.68	87.3 ± 0.847
Oxamyl 7940 Carbamates	µg/L	37.23	5.80	37.50	5.21	37.20	5.80	43.6 ± 0.422
Propoxur (Baygon) 8080 Carbamates	µg/L	83.42	17.07	83.20	15.20	83.40	17.07	89.8 ± 0.871

Trihalomethanes - WS

PEO-002

Study Lot 013169

Mfg Lot 013169

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Bromodichloromethane 4395 Trihalomethanes	µg/L	34.80	6.96	33.20	3.74	33.80	2.93	34.8 ± 0.338
Bromoform 4400 Trihalomethanes	µg/L	38.30	7.66	37.80	4.87	37.60	5.74	38.3 ± 0.372
Chloroform 4505 Trihalomethanes	µg/L	24.00	4.80	23.60	2.45	23.60	2.42	24.0 ± 0.223
Dibromochloromethane 4575 Trihalomethanes	µg/L	42.10	8.42	41.80	4.29	41.80	4.79	42.1 ± 0.409
Total trihalomethanes 5205 Trihalomethanes	µg/L	139.00	27.80	133.00	11.90	135.00	10.89	139 ± 1.35

PCB's - WS

PEO-003

Study Lot 010210

Mfg Lot 010210

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
PCB Aroclor Identification 8872 PCBs in Water		248.00	0.00					248
Aroclor-1016 (PCB-1016) 8880 PCBs in Water	µg/L	0.00	0.00					0.00
Aroclor-1221 (PCB-1221) 8885 PCBs in Water	µg/L	0.00	0.00					0.00
Aroclor-1232 (PCB-1232) 8890 PCBs in Water	µg/L	0.00	0.00					0.00
Aroclor-1242 (PCB-1242) 8895 PCBs in Water	µg/L	0.00	0.00					0.00
Aroclor-1248 (PCB-1248) 8900 PCBs in Water	µg/L	2.56	1.28	2.34	1.17	2.42	1.30	2.56
Aroclor-1254 (PCB-1254) 8905 PCBs in Water	µg/L	0.00	0.00					0.00
Aroclor-1260 (PCB-1260) 8910 PCBs in Water	µg/L	0.00	0.00					0.00

Organochlorine Pesticides 1 - WS

PEO-005-1

Study Lot 013172

Mfg Lot 013172

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Aldrin 7025 Pesticides	µg/L	1.30	0.27	1.20	0.46	1.14	0.10	1.30 ± 0.011



WS08-2

Concluded 05/23/2008

Organochlorine Pesticides 1 - WS

PEO-005-1

Study Lot 013172

Mfg Lot 013172

(continued)

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane) 7120 Pesticides	µg/L	2.89	0.65	3.26	0.43	3.25	0.52	2.89 ± 0.028
Dieldrin 7470 Pesticides	µg/L	1.28	0.23	1.44	0.40	1.25	0.09	1.31 ± 0.013
Endrin 7540 Pesticides	µg/L	1.60	0.24	1.84	0.49	1.59	0.16	1.60 ± 0.015
Heptachlor 7685 Pesticides	µg/L	2.74	0.62	2.71	0.91	2.80	0.92	2.74 ± 0.031

Organochlorine Pesticides 2 - WS

PEO-005-2

Study Lot 013173

Mfg Lot 013173

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Hexachlorobenzene 6275 Pesticides	µg/L	1.26	0.27	1.24	0.26	1.13	0.12	1.26 ± 0.012
Hexachlorocyclopentadiene 6285 Pesticides	µg/L	3.23	1.30	4.16	1.57	4.12	1.50	3.97 ± 0.039
Heptachlor epoxide 7690 Pesticides	µg/L	4.64	1.04	4.74	0.97	4.72	1.07	4.64 ± 0.045
Methoxychlor 7810 Pesticides	µg/L	81.60	18.36	82.60	19.60	81.60	21.52	81.6 ± 0.792
Propachlor (Ramrod) 8045 Pesticides	µg/L	3.12	0.62	3.23	0.93	3.25	1.14	3.17 ± 0.031
Trifluralin (Treflan) 8295 Pesticides	µg/L	2.79	0.59	3.43	0.45	3.44	0.51	3.13 ± 0.03

Organonitrogen Pesticides - WS

PEO-005-3

Study Lot 013174

Mfg Lot 013174

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Acetochlor 4310	µg/L	0.00	0.00					0.00
Alachlor 7005 Pesticides	µg/L	4.10	0.92	4.46	1.29	4.10	0.90	4.10 ± 0.036
Atrazine 7065 Pesticides	µg/L	15.80	3.56	14.10	3.58	14.40	3.69	15.8 ± 0.153
Bromacil 7130 Pesticides	µg/L	3.12	0.70	2.81	0.60	2.83	0.79	3.12 ± 0.03
Butachlor 7160 Pesticides	µg/L	44.59	9.19	45.90	6.94	45.80	8.14	49.8 ± 0.483
Metolachlor 7835 Pesticides	µg/L	60.16	12.63	66.70	6.25	67.20	6.92	69.1 ± 0.671
Metribuzin 7845 Pesticides	µg/L	15.05	5.51	16.60	3.96	16.70	5.27	18.3 ± 0.178
Molinate 7875 Pesticides	µg/L	23.70	5.33					23.7 ± 0.23
Simazine 8125 Pesticides	µg/L	8.75	3.20	8.10	2.69	8.48	2.62	9.99 ± 0.097

Herbicides - WS

PEO-005-4

Study Lot 013201

Mfg Lot 013201

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Pentachlorophenol 6605 Herbicides	µg/L	8.21	2.05	19.80	25.80	10.10	1.08	8.21 ± 0.08
Acifluorfen 8505 Herbicides	µg/L	42.78	9.74					48.1 ± 0.467
Bentazon 8530 Herbicides	µg/L	76.05	21.22					84.2 ± 0.817
2,4-D Total 8545 Herbicides	µg/L	88.83	24.68	86.30	33.90	86.30	37.23	98.7 ± 0.957
Dacthal (DCPA) 8550 Herbicides	µg/L	53.90	28.71	45.30	33.10	45.40	39.15	64.5 ± 0.625
Dalapon 8555 Herbicides	µg/L	77.03	44.83	109.00	41.10	127.00	11.27	123 ± 1.19
Dicamba 8595 Herbicides	µg/L	7.67	2.43	8.63	2.46	7.79	1.51	8.38 ± 0.072



WS08-2

Concluded 05/23/2008

Herbicides - WS

PEO-005-4

Study Lot 013201

Mfg Lot 013201

(continued)

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP) 8620 Herbicides	µg/L	19.50	5.96	19.10	5.82	17.80	4.50	19.5 ± 0.126
Picloram 8645 Herbicides	µg/L	36.30	10.70	34.10	13.60	34.10	16.12	36.3 ± 0.211
Silvex (2,4,5-TP) 8650 Herbicides	µg/L	102.25	25.56	102.00	47.80	102.00	56.35	122 ± 1.18

Chlordane (Total) - WS

PEO-005-5

Study Lot 010215

Mfg Lot 010215

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Chlordane (total) 7250 Pesticides	µg/L	9.11	2.05	9.07	1.83	9.67	1.20	9.11

Toxaphene (Total) - WS

PEO-005-6

Study Lot 010499

Mfg Lot 010499

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Toxaphene (Chlorinated camphene) 8250 Pesticides	µg/L	4.91	1.10	4.78	1.25	4.70	1.40	4.91

Adipate/Phthalate - WS

PEO-006-1

Study Lot 013171

Mfg Lot 013171

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Benzo(a)pyrene 5580 Base/Neutrals	µg/L	0.77	0.13	0.66	0.24	0.67	0.36	0.700 ±
Di(2-ethylhexyl)adipate 6062 Base/Neutrals	µg/L	23.07	6.71	20.80	3.93	20.90	4.74	25.1 ± 0.243
Di(2-ethylhexyl)phthalate 6065 Base/Neutrals	µg/L	25.95	7.45	21.40	7.46	21.90	8.32	26.3 ± 0.255

PNAs in Water - WS

PEO-006-2

Study Lot 013175

Mfg Lot 013175

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Naphthalene 5005 Base/Neutrals	µg/L	32.70	6.54					32.7 ± 0.317
Acenaphthylene 5505 Base/Neutrals	µg/L	3.34	0.84	3.24	0.49	3.24	0.58	3.34 ± 0.032
Anthracene 5555 Base/Neutrals	µg/L	7.87	1.97	6.47	1.19	6.50	1.36	7.87 ± 0.076
Benzo(a)anthracene 5575 Base/Neutrals	µg/L	9.72	2.43	8.20	1.23	8.26	1.42	9.72 ± 0.094
Benzo(b)fluoranthene 5585 Base/Neutrals	µg/L	4.65	1.16	4.49	0.67	4.51	0.76	4.65 ± 0.045
Benzo(g,h,i)perylene 5590 Base/Neutrals	µg/L	4.70	1.18	3.95	0.96	3.94	1.11	4.70 ± 0.046
Benzo(k)fluoranthene 5600 Base/Neutrals	µg/L	2.00	0.50	2.16	0.37	2.14	0.45	2.00 ± 0.019
Butyl benzyl phthalate 5670 Base/Neutrals	µg/L	26.40	7.92	25.10	5.34	25.50	5.76	26.4 ± 0.256
Chrysene 5855 Base/Neutrals	µg/L	9.73	2.43	9.00	1.50	9.08	1.70	9.73 ± 0.094
Dibenz(a,h)anthracene 5895 Base/Neutrals	µg/L	5.43	1.36	4.73	1.17	4.79	1.34	5.43 ± 0.053
Di-n-butyl phthalate 5925 Base/Neutrals	µg/L	41.30	12.39	41.70	4.73	41.70	5.52	41.3 ± 0.4
Diethyl phthalate 6070 Base/Neutrals	µg/L	24.80	7.44	23.30	5.63	21.50	2.44	24.8 ± 0.24
Dimethyl phthalate 6135 Base/Neutrals	µg/L	24.50	7.35	18.50	4.82	18.40	7.02	24.5 ± 0.238
Di-n-octyl phthalate 6200 Base/Neutrals	µg/L	20.90	6.27					20.9 ± 0.203
Fluoranthene 6265 Base/Neutrals	µg/L	2.83	0.71					2.83 ± 0.027



WS08-2

Concluded 05/23/2008

PNAs in Water - WS

EO-006-2

Study Lot 013175

Mfg Lot 013175

(continued)

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Fluorene 6270 Base/Neutrals	µg/L	5.68	1.42	5.55	0.84	5.56	0.98	5.68 ± 0.055
Indeno(1,2,3-cd) pyrene 6315 Base/Neutrals	µg/L	8.81	2.20	7.83	2.82	7.98	2.87	8.81 ± 0.086
Phenanthrene 6615 Base/Neutrals	µg/L	2.09	0.52	2.39	0.18	2.39	0.20	2.09 ± 0.02
Pyrene 6665 Base/Neutrals	µg/L	5.54	1.39	5.55	0.71	5.58	0.79	5.54 ± 0.054

Regulated VOC's 1

PEO-007-1

Study Lot 013178

Mfg Lot 013178

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Carbon tetrachloride 4455 Regulated VOCs	µg/L	3.59	0.72	3.40	0.80	3.50	0.57	3.59 ± 0.034
Chlorobenzene 4475 Regulated VOCs	µg/L	20.78	3.16	20.60	3.04	20.80	3.16	22.1 ± 0.214
1,2-Dichloroethane 4635 Regulated VOCs	µg/L	16.10	2.20	15.40	1.98	15.50	2.20	16.1 ± 0.156
1,1-Dichloroethylene 4640 Regulated VOCs	µg/L	8.18	0.85	8.07	2.53	7.74	0.85	8.18 ± 0.079
cis-1,2-Dichloroethylene 4645 Regulated VOCs	µg/L	31.90	2.85	31.10	3.83	31.90	2.85	33.4 ± 0.324
1,2-Dichloropropane 4655 Regulated VOCs	µg/L	7.67	0.81	7.43	0.78	7.49	0.81	7.67 ± 0.074
trans-1,2-Dichloroethylene 4700 Regulated VOCs	µg/L	18.57	2.29	18.10	3.19	18.60	2.29	18.6 ± 0.197
Methylene chloride (Dichloromethane) 4975 Regulated VOCs	µg/L	17.08	2.54	16.80	2.55	17.10	2.54	18.4 ± 0.179
Styrene 5100 Regulated VOCs	µg/L	6.50	1.37	6.25	2.68	5.66	1.37	6.50 ± 0.063
Tetrachloroethylene (Perchloroethylene) 5115 Regulated VOCs	µg/L	13.80	2.18	13.40	2.79	13.80	2.18	15.1 ± 0.147
1,2,4-Trichlorobenzene 5155 Regulated VOCs	µg/L	6.72	1.08	6.09	1.41	6.00	1.08	6.72 ± 0.065
1,1,1-Trichloroethane 5160 Regulated VOCs	µg/L	7.23	0.64	6.67	1.39	7.11	0.64	7.23 ± 0.07
1,1,2-Trichloroethane 5165 Regulated VOCs	µg/L	8.03	1.04	7.45	1.06	7.56	1.04	8.03 ± 0.078
Trichloroethene (Trichloroethylene) 5170 Regulated VOCs	µg/L	5.80	0.56	5.50	1.02	5.62	0.56	5.80 ± 0.056
Vinyl chloride 5235 Regulated VOCs	µg/L	4.02	0.61	3.99	1.88	3.54	0.61	4.02 ± 0.039

Regulated VOC's 2 - WS

PEO-007-2

Study Lot 013180

Mfg Lot 013180

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Benzene 4375 Regulated VOCs	µg/L	9.69	1.21	9.81	1.32	9.65	1.21	9.69 ± 0.094
1,2-Dichlorobenzene 4610 Regulated VOCs	µg/L	9.99	1.47	10.60	1.45	10.60	1.47	9.99 ± 0.107
1,3-Dichlorobenzene 4615 Unregulated VOCs	µg/L	12.80	1.76	12.30	1.70	12.20	1.76	12.8 ± 0.124
1,4-Dichlorobenzene 4620 Regulated VOCs	µg/L	14.57	1.93	15.00	2.53	14.60	1.93	15.4 ± 0.149
Ethylbenzene 4765 Regulated VOCs	µg/L	2.80	0.25	2.72	0.38	2.63	0.25	2.80 ± 0.027
Methyl tert-butyl ether (MTBE) 5000 Unregulated VOCs	µg/L	46.90	8.29	40.90	8.06	41.40	8.29	46.9 ± 0.455
Naphthalene 5005 Unregulated VOCs	µg/L	7.85	1.08	7.12	1.42	6.94	1.08	7.85 ± 0.076
Toluene 5140 Regulated VOCs	µg/L	12.24	1.49	12.30	1.64	12.20	1.49	12.7 ± 0.123
1,2,4-Trimethylbenzene 5210 Unregulated VOCs	µg/L	21.20	2.73	22.40	4.74	21.20	2.73	22.4 ± 0.217
1,3,5-Trimethylbenzene 5215 Unregulated VOCs	µg/L	33.58	5.66	36.20	9.57	33.60	5.66	36.3 ± 0.352



WS08-2

Concluded 05/23/2008

Regulated VOC's 2 - WS

PEO-007-2

Study Lot 013180

Mfg Lot 013180

(continued)

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
m+p-Xylene 5240 Unregulated VOCs	µg/L	13.60	1.28	13.10	1.31	13.20	1.28	13.6 ± 0.132
o-Xylene 5250 Unregulated VOCs	µg/L	19.78	2.06	19.50	3.56	19.80	2.06	20.3 ± 0.197
Xylene, total 5260 Regulated VOCs	µg/L	34.00	3.52	32.00	3.62	32.40	3.52	34.0 ± 0.329

Unregulated VOC's 1

PEO-007-3A

Study Lot 013182

Mfg Lot 013182

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Bromoform 4400 Trihalomethanes	µg/L	0.00	0.00					0.00
Chloroethane 4485 Unregulated VOCs	µg/L	13.70	2.74	13.90	3.17	13.10	2.04	13.7 ± 0.133
Chloroform 4505 Trihalomethanes	µg/L	0.00	0.00					0.00
1,3-Dichlorobenzene 4615 Unregulated VOCs	µg/L	13.30	1.41	12.60	3.39	13.00	1.41	13.3 ± 0.129
Dichlorodifluoromethane 4625 Unregulated VOCs	µg/L	0.00	0.00					0.00
1,1-Dichloroethane 4630 Unregulated VOCs	µg/L	12.10	1.56	13.40	6.80	11.60	1.56	12.1 ± 0.118
cis-1,3-Dichloropropene 4680 Unregulated VOCs	µg/L	39.85	6.76	38.60	9.15	39.90	6.76	45.4 ± 0.441
trans-1,3-Dichloropropene 4685 Unregulated VOCs	µg/L	6.32	0.67	6.58	3.46	5.74	0.67	6.32 ± 0.061
Methyl bromide (Bromomethane) 4950 Unregulated VOCs	µg/L	13.61	3.98	15.70	8.23	13.60	3.98	12.4 ± 0.12
Methyl chloride (Chloromethane) 4960 Unregulated VOCs	µg/L	43.10	10.89	42.90	15.60	43.50	10.89	43.1 ± 0.418
1,1,2,2-Tetrachloroethane 5110 Unregulated VOCs	µg/L	37.99	4.54	37.10	5.72	38.00	4.54	38.4 ± 0.372
Trichlorofluoromethane 5175 Unregulated VOCs	µg/L	35.10	6.37	35.00	6.23	34.70	6.37	35.1 ± 0.34

Unregulated VOC's 2

PEO-007-3B

Study Lot 013183

Mfg Lot 013183

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Bromobenzene 4385 Unregulated VOCs	µg/L	20.30	2.11	18.90	1.93	18.80	2.11	20.3 ± 0.197
Bromochloromethane 4390 Unregulated VOCs	µg/L	45.80	5.27	41.90	7.72	43.60	5.27	45.8 ± 0.444
n-Butylbenzene 4435 Unregulated VOCs	µg/L	29.10	3.72	28.00	3.71	28.00	3.72	29.1 ± 0.282
sec-Butylbenzene 4440 Unregulated VOCs	µg/L	23.40	2.48	22.80	3.13	22.60	2.48	23.4 ± 0.227
tert-Butylbenzene 4445 Unregulated VOCs	µg/L	38.40	4.71	36.00	4.72	36.30	4.71	38.4 ± 0.373
2-Chlorotoluene 4535 Unregulated VOCs	µg/L	41.30	6.12	38.60	5.94	38.90	6.12	41.3 ± 0.4
4-Chlorotoluene 4540 Unregulated VOCs	µg/L	28.30	2.37	27.90	6.06	28.40	2.37	28.3 ± 0.275
Dibromomethane 4595 Unregulated VOCs	µg/L	20.80	1.88	20.70	1.73	20.70	1.88	20.8 ± 0.201
1,3-Dichloropropane 4660 Unregulated VOCs	µg/L	36.10	4.79	35.90	4.88	35.30	4.79	36.1 ± 0.35
2,2-Dichloropropane 4665 Unregulated VOCs	µg/L	14.80	2.45	14.10	2.32	14.00	2.45	14.8 ± 0.143
1,1-Dichloropropene 4670 Unregulated VOCs	µg/L	16.20	1.50	15.10	2.86	14.60	1.50	16.2 ± 0.157
Hexachlorobutadiene 4835 Unregulated VOCs	µg/L	8.61	0.94	8.43	0.86	8.44	0.94	8.61 ± 0.084
Isopropylbenzene 4900 Unregulated VOCs	µg/L	21.80	2.77	22.00	3.28	22.50	2.77	21.8 ± 0.212
4-Isopropyltoluene 4901 Unregulated VOCs	µg/L	32.30	3.65	31.20	3.71	31.20	3.65	32.3 ± 0.313



WS08-2

Concluded 05/23/2008

Unregulated VOC's 2

O-007-3B

Study Lot 013183

Mfg Lot 013183

(continued)

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
n-Propylbenzene 5090 Unregulated VOCs	µg/L	9.39	1.21	11.30	6.99	9.04	1.21	9.39 ± 0.091
1,1,1,2-Tetrachloroethane 5105 Unregulated VOCs	µg/L	23.50	3.22	21.90	5.59	22.80	3.22	23.5 ± 0.228
1,2,3-Trichlorobenzene 5150 Unregulated VOCs	µg/L	29.90	3.99	29.00	3.47	29.10	3.99	29.9 ± 0.29
1,2,3-Trichloropropane 5180 Unregulated VOCs	µg/L	42.00	5.62	43.10	7.36	43.00	5.62	42.0 ± 0.407
1,2,4-Trimethylbenzene 5210 Unregulated VOCs	µg/L	26.50	3.10	25.70	3.32	25.90	3.10	26.5 ± 0.257
1,3,5-Trimethylbenzene 5215 Unregulated VOCs	µg/L	48.30	3.42	44.80	4.59	43.90	3.42	48.3 ± 0.468

EDB/DBCP

PEO-007-4

Study Lot 013176

Mfg Lot 013176

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
1,2-Dibromo-3-chloropropane (DBCP) 4570 Regulated VOCs	µg/L	0.51	0.10	0.55	0.08	0.55	0.09	0.510 ±
1,2-Dibromoethane (EDB, Ethylene dibromide) 4585 Regulated VOCs	µg/L	0.61	0.12	0.62	0.08	0.62	0.09	0.610 ±
1,2,3-Trichloropropane 5180 Unregulated VOCs	µg/L	6.86	1.20	7.35	0.99	7.33	1.20	6.86 ± 0.067

Gasoline Additives

PEO-075

Study Lot 013184

Mfg Lot 013184

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
T-amylmethylether (TAME) 4370 Oxygenates - Gasoline Additives	µg/L	14.50						14.5 ± 0.141
tert-Butyl alcohol 4420 Oxygenates - Gasoline Additives	µg/L	46.80	9.36					46.8 ± 0.425
Carbon disulfide 4450 Oxygenates - Gasoline Additives	µg/L	19.70	3.94					19.7 ± 0.191
Ethyl-t-butylether (ETBE) 4770 Oxygenates - Gasoline Additives	µg/L	27.00	5.40					27.0 ± 0.262
Methyl tert-butyl ether (MTBE) 5000 Oxygenates - Gasoline Additives	µg/L	12.90	2.58					12.9 ± 0.125
n-Propylbenzene 5090 Oxygenates - Gasoline Additives	µg/L	46.60	9.32					46.6
Trichlorofluoromethane 5175 Oxygenates - Gasoline Additives	µg/L	36.00						36.0 ± 0.349
1,2,3-Trichloropropane 5180 Oxygenates - Gasoline Additives	µg/L	1.20						1.20 ± 0.008
Trichlorotrifluoroethane (Freon 113) 5185 Oxygenates - Gasoline Additives	µg/L	33.30	6.66					33.3 ± 0.323
Di-isopropylether (DIPE) 9375 Oxygenates - Gasoline Additives	µg/L	35.80	14.32					35.8 ± 0.347
1-Phenylpropane 9567 Oxygenates - Gasoline Additives	µg/L	46.60	9.32					46.6 ± 0.452

Chloral Hydrate

PEO-077

Study Lot 012656

Mfg Lot 012656

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Chloral hydrate 4460 Organic Disinfection By-Products	µg/L	19.12	7.25					21.0 ± 0.204

Diquat/Endothall/Glyphosate/Paraquat - WS

PEO-097

Study Lot 013202

Mfg Lot 013202

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Endothall 7525 Herbicides	µg/L	123.09	35.53	145.00	21.00	148.00	17.03	134 ± 1.3
Diquat 9390 Herbicides	µg/L	13.87	5.15	9.85	5.00	9.23	4.32	17.1 ± 0.166



WS08-2

Concluded 05/23/2008

Diquat/Endothall/Glyphosate/Paraquat - WS

Study Lot 013202

EO-097

Mfg Lot 013202

(continued)

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Glyphosate 9411 Herbicides	µg/L	669.63	56.45	676.00	72.60	675.00	87.05	677 ± 5.79
Paraquat 9528 Herbicides	µg/L	16.80	4.20					16.8 ± 0.162

Organic Disinfection By-Products - WS

Study Lot 013199

PEO-098

Mfg Lot 013199

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Monobromoacetic acid 9312 Haloacetic acids	µg/L	24.70	4.94	23.80	6.20	25.10	3.46	24.7 ± 0.153
Bromochloroacetic acid 9315 Organic Disinfection By-Products	µg/L	17.50	3.50	19.10	3.85	18.50	1.87	17.5 ± 0.169
Monochloroacetic acid 9336 Haloacetic acids	µg/L	29.70	5.94	30.10	7.96	30.50	9.00	29.7 ± 0.3
Dibromoacetic acid 9357 Haloacetic acids	µg/L	20.70	4.14	21.10	3.72	21.30	3.68	20.7 ± 0.201
Dichloroacetic acid 9360 Haloacetic acids	µg/L	24.80	4.96	24.70	6.69	22.20	2.66	24.8 ± 0.191
Total haloacetic acids 9414 Organic Disinfection By-Products	µg/L	147.00	29.40	153.00	13.70	154.00	15.14	147 ± 1.42
Trichloroacetic acid 9642 Haloacetic acids	µg/L	42.10	8.42	40.70	5.13	40.50	5.82	42.1 ± 0.408

Program analyte accrediting footnotes

¹ NELAC³ Other⁵ NELAC Experimental² EPA⁴ A2LA

Jeremy Davis
Orange County Water District
P.O. Box 8300
Fountain Valley, CA 92728

WP-159



Final Report

WatR™ Pollution Proficiency Testing

WatR™ Pollution Study

Open Date: 04/14/08

Close Date: 05/29/08

Report Issued Date: 06/16/08

Study: **WP-159**

ERA Customer Number: **O127601**

Laboratory Name: **Orange County Water
District**

Inorganic Results



WP-159 Final Complete Report

Jeremy Davis
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P.O. Box 8300
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(714) 378-3244

EPA ID: CA00043
ERA Customer Number: O127601
Report Issued: 06/16/08
Study Dates: 04/14/08 - 05/29/08

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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WP pH

0019	pH	S.U.	8.58	8.57	8.37 - 8.77	Acceptable	SM4500H+ B
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WP pH

0019	pH	S.U.	8.55	8.57	8.37 - 8.77	Acceptable	SM4500H+ B
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WP Hardness

0072	Non-Filterable Residue (TSS)	mg/L	47.2	49.8	38.6 - 57.0	Acceptable	SM2540D
0023	Calcium	mg/L	63.6	67.7	60.6 - 76.7	Acceptable	EPA 200.7
0024	Magnesium	mg/L	5.46	5.86	4.94 - 6.70	Acceptable	EPA 200.7
1550	Calcium Hardness as CaCO3	mg/L	159	169	151 - 191	Acceptable	SM2340B
0022	Total Hardness as CaCO3	mg/L	181	193	172 - 219	Acceptable	SM2340B

WP Demand

0038	BOD	mg/L		58.0	29.1 - 86.9	Not Reported	
0102	CBOD	mg/L		50.0	22.4 - 77.5	Not Reported	
0036	COD	mg/L	90.0	93.7	69.0 - 110	Acceptable	SM5220D
0037	TOC	mg/L	39.3	37.0	30.8 - 42.8	Acceptable	SM5310C

WP Simple Nutrients

0031	Ammonia as N	mg/L	14.10	14.0	10.4 - 17.4	Acceptable	SM4500NH3-H
1820	Nitrate + Nitrite as N	mg/L	21.7	22.1	18.0 - 25.7	Acceptable	SM4500NO3- F
0032	Nitrate as N	mg/L	21.3	22.1	17.2 - 26.6	Acceptable	EPA 300.0
0033	ortho-Phosphate as P	mg/L	3.05	3.12	2.55 - 3.72	Acceptable	EPA 300.0

WP Simple Nutrients

0031	Ammonia as N	mg/L		14.0	10.4 - 17.4	Not Reported	
1820	Nitrate + Nitrite as N	mg/L		22.1	18.0 - 25.7	Not Reported	
0032	Nitrate as N	mg/L	21.7	22.1	17.2 - 26.6	Acceptable	SM4500NO3- F
0033	ortho-Phosphate as P	mg/L	3.02	3.12	2.55 - 3.72	Acceptable	EPA 365.1

WP Complex Nutrients

0034	Total Kjeldahl Nitrogen	mg/L	16.55	16.9	11.2 - 21.8	Acceptable	EPA 351.2
0035	Total phosphorus as P	mg/L		4.00	3.27 - 4.79	Not Reported	

WP Total Cyanide

0071	Cyanide, total	mg/L	0.350	0.378	0.206 - 0.555	Acceptable	EPA 335.4
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WP Total Residual Chlorine

0098	Total Residual Chlorine	mg/L	0.559	0.532	0.388 - 0.675	Acceptable	SM4500Cl F
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WP Total Residual Chlorine

0098	Total Residual Chlorine	mg/L	0.551	0.532	0.388 - 0.675	Acceptable	SM4500Cl D
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WP-159 Final Complete Report

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EPA ID: CA00043
ERA Customer Number: O127601
Report Issued: 06/16/08
Study Dates: 04/14/08 - 05/29/08

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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WP Trace Metals

0001	Aluminum	µg/L	408	390	294 - 488	Acceptable	EPA 200.8
0016	Antimony	µg/L	406	426	296 - 514	Acceptable	EPA 200.8
0002	Arsenic	µg/L	323	303	252 - 356	Acceptable	EPA 200.8
1015	Barium	µg/L	629	637	553 - 718	Acceptable	EPA 200.8
0003	Beryllium	µg/L	70.0	73.1	60.9 - 82.7	Acceptable	EPA 200.8
1025	Boron	µg/L		991	818 - 1160	Not Reported	
0004	Cadmium	µg/L	416	418	356 - 475	Acceptable	EPA 200.8
0006	Chromium	µg/L		978	854 - 1100	Not Reported	
0005	Cobalt	µg/L	767	827	727 - 926	Acceptable	EPA 200.8
0007	Copper	µg/L	677	649	584 - 714	Acceptable	EPA 200.8
0008	Iron	µg/L		1860	1650 - 2100	Not Reported	
0012	Lead	µg/L	1730	1920	1690 - 2140	Acceptable	EPA 200.8
0010	Manganese	µg/L	283	261	233 - 290	Acceptable	EPA 200.8
0074	Molybdenum	µg/L	324	326	274 - 374	Acceptable	EPA 200.8
0011	Nickel	µg/L	426	412	368 - 463	Acceptable	EPA 200.8
0013	Selenium	µg/L	644	685	543 - 793	Acceptable	EPA 200.8
0017	Silver	µg/L	290	291	249 - 333	Acceptable	EPA 200.8
0075	Strontium	µg/L		126	108 - 144	Not Reported	
0018	Thallium	µg/L	590	618	503 - 738	Acceptable	EPA 200.8
0014	Vanadium	µg/L		662	580 - 740	Not Reported	
0015	Zinc	µg/L	1470	1470	1260 - 1680	Acceptable	EPA 200.8



WP-159 Final Complete Report

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ERA Customer Number: O127601
Report Issued: 06/16/08
Study Dates: 04/14/08 - 05/29/08

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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WP Trace Metals

0001	Aluminum	µg/L		390	294 - 488	Not Reported	
0016	Antimony	µg/L		426	296 - 514	Not Reported	
0002	Arsenic	µg/L		303	252 - 356	Not Reported	
1015	Barium	µg/L		637	553 - 718	Not Reported	
0003	Beryllium	µg/L		73.1	60.9 - 82.7	Not Reported	
1025	Boron	µg/L	936	991	818 - 1160	Acceptable	EPA 200.7
0004	Cadmium	µg/L		418	356 - 475	Not Reported	
0006	Chromium	µg/L	979	978	854 - 1100	Acceptable	EPA 200.7
0005	Cobalt	µg/L		827	727 - 926	Not Reported	
0007	Copper	µg/L		649	584 - 714	Not Reported	
0008	Iron	µg/L	1956	1860	1650 - 2100	Acceptable	EPA 200.7
0012	Lead	µg/L		1920	1690 - 2140	Not Reported	
0010	Manganese	µg/L		261	233 - 290	Not Reported	
0074	Molybdenum	µg/L		326	274 - 374	Not Reported	
0011	Nickel	µg/L		412	368 - 463	Not Reported	
0013	Selenium	µg/L		685	543 - 793	Not Reported	
0017	Silver	µg/L		291	249 - 333	Not Reported	
0075	Strontium	µg/L		126	108 - 144	Not Reported	
0018	Thallium	µg/L		618	503 - 738	Not Reported	
0014	Vanadium	µg/L	628	662	580 - 740	Acceptable	EPA 200.7
0015	Zinc	µg/L		1470	1260 - 1680	Not Reported	

WP Mercury

0009	Mercury	µg/L	17.2	14.1	8.68 - 19.1	Acceptable	EPA 200.8
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WP Minerals

0027	Alkalinity as CaCO3	mg/L	52.6	54.9	47.7 - 62.2	Acceptable	SM2320B
0028	Chloride	mg/L	83.1	81.8	70.1 - 93.7	Acceptable	EPA 300.0
0020	Conductivity at 25°C	µmhos/cm	511	502	452 - 552	Acceptable	SM2510B
0029	Fluoride	mg/L	3.54	3.30	2.77 - 3.84	Acceptable	EPA 300.0
0026	Potassium	mg/L	35.6	39.6	32.8 - 47.0	Acceptable	EPA 200.7
0025	Sodium	mg/L	75.8	76.3	64.8 - 87.5	Acceptable	EPA 200.7
0030	Sulfate	mg/L	40.3	40.3	32.7 - 46.8	Acceptable	EPA 300.0
0021	Total Dissolved Solids at 180°C	mg/L	320	328	247 - 409	Acceptable	SM2540C
1950	Total Solids at 105°C	mg/L	334	338	296 - 375	Acceptable	SM2540B



WP-159 Final Complete Report

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EPA ID: CA00043
ERA Customer Number: O127601
Report Issued: 06/16/08
Study Dates: 04/14/08 - 05/29/08

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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WP Minerals

0027	Alkalinity as CaCO ₃	mg/L		54.9	47.7 - 62.2	Not Reported	
0028	Chloride	mg/L		81.8	70.1 - 93.7	Not Reported	
0020	Conductivity at 25°C	µmhos/cm		502	452 - 552	Not Reported	
0029	Fluoride	mg/L	3.26	3.30	2.77 - 3.84	Acceptable	SM4500F- C
0026	Potassium	mg/L		39.6	32.8 - 47.0	Not Reported	
0025	Sodium	mg/L		76.3	64.8 - 87.5	Not Reported	
0030	Sulfate	mg/L		40.3	32.7 - 46.8	Not Reported	
0021	Total Dissolved Solids at 180°C	mg/L		328	247 - 409	Not Reported	
1950	Total Solids at 105°C	mg/L		338	296 - 375	Not Reported	

WP Hexavalent Chromium

1045	Hexavalent Chromium	µg/L	629	627	511 - 737	Acceptable	EPA 218.6
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WP Nitrite

1840	Nitrite as N	mg/L	1.96	1.82	1.52 - 2.12	Acceptable	EPA 300.0
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WP Nitrite

1840	Nitrite as N	mg/L	1.74	1.82	1.52 - 2.12	Acceptable	SM4500NO3-F
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WP Turbidity

2055	Turbidity	NTU	12.0	11.0	9.33 - 12.4	Acceptable	SM2130B
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WP Settleable Solids

1965	Settleable Solids	mL/L	27.0	23.9	18.6 - 30.8	Acceptable	SM2540F
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WP Sulfide

2005	Sulfide	mg/L	6.40	5.13	2.13 - 7.53	Acceptable	SM4500S2- D
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WP Volatile Solids

1970	Volatile Solids	mg/L	249	289	234 - 325	Acceptable	SM2540E
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WP Surfactants - MBAS

2025	Surfactants (MBAS)	mg/L	0.696	0.766	0.473 - 1.11	Acceptable	SM5540C
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WP Bromide

1540	Bromide	mg/L	3.73	3.57	3.03 - 4.10	Acceptable	EPA 300.0
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WP Silica

1990	Silica as SiO ₂	mg/L	78.7	79.8	59.8 - 99.7	Acceptable	SM4500Si D
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WP Color

1605	Color	PC units	37.0	35.0	25.0 - 45.0	Acceptable	SM2120B
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Study: **WP-159**

ERA Customer Number: **O127601**

Laboratory Name: **Orange County Water
District**

Microbiology Results



WP-159 Final Complete Report

Jeremy Davis
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EPA ID: CA00043
ERA Customer Number: O127601
Report Issued: 06/16/08
Study Dates: 04/14/08 - 05/29/08

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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WP WP Coliform MicrobE™

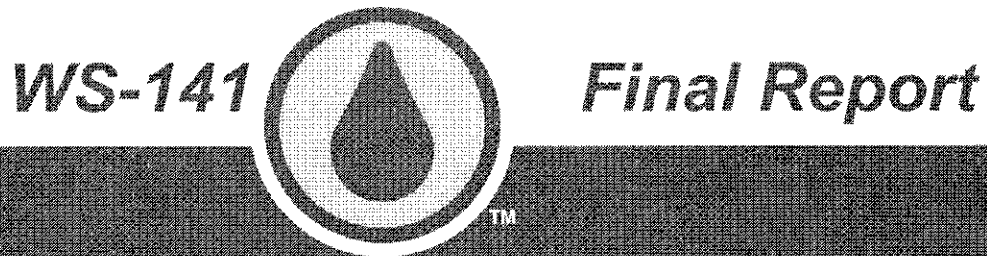
2500	Total Coliforms (MF)	CFU/100mL	170	146	67.0 - 318	Acceptable	SM9222B M endo
2530	Fecal Coliforms - E.coli (MF)	CFU/100mL	125	92.0	28.0 - 310	Acceptable	SM9222D m FC
2500	Total Coliforms (MPN)	MPN/100mL	80.0	171	56.2 - 521	Acceptable	SM9221B LTb
2530	Fecal Coliforms - E.coli (MPN)	MPN/100mL	80.0	163	48.7 - 545	Acceptable	SM9221E EC

WP WP Coliform MicrobE™

2500	Total Coliforms (MF)	CFU/100mL		146	67.0 - 318	Not Reported	
2530	Fecal Coliforms - E.coli (MF)	CFU/100mL		92.0	28.0 - 310	Not Reported	
2500	Total Coliforms (MPN)	MPN/100mL	199	171	56.2 - 521	Acceptable	SM9223 COLertQT
2530	Fecal Coliforms - E.coli (MPN)	MPN/100mL	199	163	48.7 - 545	Acceptable	SM9223 COLertQT



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WatR™ Supply Proficiency Testing

WatR™ Supply Study

Open Date: 04/07/08

Close Date: 05/22/08

Report Issued Date: 06/09/08

Study: **WS-141**

ERA Customer Number: **O127601**

Laboratory Name: **Orange County Water
District**

Inorganic Results



WS-141 Final Complete Report

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Fountain Valley, CA 92728
(714) 378-3244

EPA ID: CA00043
ERA Customer Number: O127601
Report Issued: 06/09/08
Study Dates: 04/07/08 - 05/22/08

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WS Metals							
1000	Aluminum	µg/L		1480	1270 - 1640	Not Reported	
0140	Antimony	µg/L		28.6	20.0 - 37.2	Not Reported	
0001	Arsenic	µg/L		30.0	21.0 - 39.0	Not Reported	
0002	Barium	µg/L		2030	1720 - 2330	Not Reported	
0141	Beryllium	µg/L		6.38	5.42 - 7.34	Not Reported	
0226	Boron	µg/L	1010	913	807 - 1010	Acceptable	EPA 200.7
0003	Cadmium	µg/L		9.68	7.74 - 11.6	Not Reported	
0004	Chromium	µg/L	123	119	101 - 137	Acceptable	EPA 200.7
0091	Copper	µg/L		84.3	75.9 - 92.7	Not Reported	
1070	Iron	µg/L	1270	1220	1090 - 1340	Acceptable	EPA 200.7
0005	Lead	µg/L		93.8	65.7 - 122	Not Reported	
0236	Manganese	µg/L		842	758 - 926	Not Reported	
0237	Molybdenum	µg/L		116	101 - 128	Not Reported	
0142	Nickel	µg/L		217	184 - 250	Not Reported	
0007	Selenium	µg/L		56.8	45.4 - 68.2	Not Reported	
1150	Silver	µg/L		128	112 - 142	Not Reported	
0143	Thallium	µg/L		7.13	4.99 - 9.27	Not Reported	
1185	Vanadium	µg/L	943	930	837 - 1020	Acceptable	EPA 200.7
0239	Zinc	µg/L		676	608 - 744	Not Reported	

WS Metals							
1000	Aluminum	µg/L	1490	1480	1270 - 1640	Acceptable	EPA 200.8
0140	Antimony	µg/L	29.1	28.6	20.0 - 37.2	Acceptable	EPA 200.8
0001	Arsenic	µg/L	31.7	30.0	21.0 - 39.0	Acceptable	EPA 200.8
0002	Barium	µg/L	1940	2030	1720 - 2330	Acceptable	EPA 200.8
0141	Beryllium	µg/L	6.30	6.38	5.42 - 7.34	Acceptable	EPA 200.8
0226	Boron	µg/L		913	807 - 1010	Not Reported	
0003	Cadmium	µg/L	10.3	9.68	7.74 - 11.6	Acceptable	EPA 200.8
0004	Chromium	µg/L		119	101 - 137	Not Reported	
0091	Copper	µg/L	95.0	84.3	75.9 - 92.7	Not Acceptable	EPA 200.8
1070	Iron	µg/L		1220	1090 - 1340	Not Reported	
0005	Lead	µg/L	89.6	93.8	65.7 - 122	Acceptable	EPA 200.8
0236	Manganese	µg/L	819	842	758 - 926	Acceptable	EPA 200.8
0237	Molybdenum	µg/L	110	116	101 - 128	Acceptable	EPA 200.8
0142	Nickel	µg/L	217	217	184 - 250	Acceptable	EPA 200.8
0007	Selenium	µg/L	54.5	56.8	45.4 - 68.2	Acceptable	EPA 200.8
1150	Silver	µg/L	129	128	112 - 142	Acceptable	EPA 200.8
0143	Thallium	µg/L	7.34	7.13	4.99 - 9.27	Acceptable	EPA 200.8
1185	Vanadium	µg/L		930	837 - 1020	Not Reported	
0239	Zinc	µg/L	662	676	608 - 744	Acceptable	EPA 200.8



WS-141 Final Complete Report

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EPA ID: CA00043
ERA Customer Number: O127601
Report Issued: 06/09/08
Study Dates: 04/07/08 - 05/22/08

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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WS Mercury

0006	Mercury	µg/L	4.10	3.45	2.42 - 4.48	Acceptable	EPA 200.8
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WS pH

0026	pH	S.U.	6.13	6.12	5.92 - 6.32	Acceptable	SM4500H+ B
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WS pH

0026	pH	S.U.	6.10	6.12	5.92 - 6.32	Acceptable	SM4500H+ B
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WS Inorganics

0027	Alkalinity as CaCO ₃	mg/L	70.5	71.2	64.1 - 78.3	Acceptable	SM2320B
1575	Chloride	mg/L	7.24	6.71	5.12 - 8.46	Acceptable	EPA 300.0
1610	Conductivity at 25°C	µmhos/cm	532	521	469 - 573	Acceptable	SM2510B
0010	Fluoride	mg/L	7.00	7.10	6.39 - 7.81	Acceptable	SM4500F- C
1820	Nitrate + Nitrite as N	mg/L	6.72	6.82	6.12 - 7.50	Acceptable	SM4500NO ₃ - F
0009	Nitrate as N	mg/L	6.72	6.82	6.14 - 7.50	Acceptable	SM4500NO ₃ - F
1125	Potassium	mg/L	30.1	33.6	29.0 - 37.9	Acceptable	EPA 200.7
0145	Sulfate	mg/L		114	100 - 127	Not Reported	
0024	Total Dissolved Solids at 180°C	mg/L	392	391	251 - 530	Acceptable	SM2540C

WS Inorganics

0027	Alkalinity as CaCO ₃	mg/L		71.2	64.1 - 78.3	Not Reported	
1575	Chloride	mg/L		6.71	5.12 - 8.46	Not Reported	
1610	Conductivity at 25°C	µmhos/cm		521	469 - 573	Not Reported	
0010	Fluoride	mg/L	7.13	7.10	6.39 - 7.81	Acceptable	EPA 300.0
1820	Nitrate + Nitrite as N	mg/L		6.82	6.12 - 7.50	Not Reported	
0009	Nitrate as N	mg/L	6.67	6.82	6.14 - 7.50	Acceptable	EPA 300.0
1125	Potassium	mg/L		33.6	29.0 - 37.9	Not Reported	
0145	Sulfate	mg/L	114	114	100 - 127	Acceptable	EPA 300.0
0024	Total Dissolved Solids at 180°C	mg/L		391	251 - 530	Not Reported	

WS Turbidity

0023	Turbidity	NTU	2.77	2.53	2.18 - 3.12	Acceptable	SM2130B
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WS Residual Chlorine

0022	Free Residual Chlorine	mg/L	1.17	1.16	0.931 - 1.39	Acceptable	SM4500Cl F
1940	Total Residual Chlorine	mg/L	1.22	1.16	0.974 - 1.34	Acceptable	SM4500Cl F

WS Residual Chlorine

0022	Free Residual Chlorine	mg/L	1.10	1.16	0.931 - 1.39	Acceptable	SM4500Cl D
1940	Total Residual Chlorine	mg/L	1.10	1.16	0.974 - 1.34	Acceptable	SM4500Cl D

WS Nitrite

0092	Nitrite as N	mg/L	0.515	0.542	0.461 - 0.623	Acceptable	SM4500NO ₃ -F
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WS Nitrite

0092	Nitrite as N	mg/L	0.567	0.542	0.461 - 0.623	Acceptable	EPA 300.0
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WS-141 Final Complete Report

Jeremy Davis
Supervising Chemist
Orange County Water District
P.O. Box 8300
Fountain Valley, CA 92728
(714) 378-3244

EPA ID: CA00043
ERA Customer Number: O127601
Report Issued: 06/09/08
Study Dates: 04/07/08 - 05/22/08

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WS o-Phosphate Nutrients							
0261	ortho-Phosphate as P	mg/L	4.90	5.01	4.44 - 5.62	Acceptable	EPA 365.1
WS o-Phosphate Nutrients							
0261	ortho-Phosphate as P	mg/L	5.04	5.01	4.44 - 5.62	Acceptable	EPA 300.0
WS Cyanide							
0146	Cyanide	mg/L	0.354	0.361	0.271 - 0.451	Acceptable	EPA 335.4
WS Organic Carbon							
1710	Dissolved Organic Carbon (DOC)	mg/L	2.72	2.68	2.20 - 3.20	Acceptable	SM5310C
0263	Total Organic Carbon (TOC)	mg/L	2.72	2.68	2.20 - 3.20	Acceptable	SM5310C
WS Chlorite							
0195	Chlorite	µg/L	803	738	517 - 959	Acceptable	EPA 300.1
WS Bromide, Bromate & Chlorate							
0193	Bromate	µg/L	18.9	19.8	13.9 - 25.7	Acceptable	EPA 300.1
0260	Bromide	µg/L	253	253	193 - 314	Acceptable	EPA 300.1
0194	Chlorate	µg/L	97.3	99.7	80.7 - 118	Acceptable	EPA 300.1
WS Bromide, Bromate & Chlorate							
0193	Bromate	µg/L		19.8	13.9 - 25.7	Not Reported	
0260	Bromide	µg/L	195	253	193 - 314	Acceptable	EPA 300.0
0194	Chlorate	µg/L		99.7	80.7 - 118	Not Reported	
WS Hardness							
1035	Calcium	mg/L	64.7	66.4	59.2 - 73.5	Acceptable	EPA 200.7
1085	Magnesium	mg/L	16.0	16.5	14.8 - 18.4	Acceptable	EPA 200.7
0029	Sodium	mg/L	15.8	16.8	14.8 - 18.5	Acceptable	EPA 200.7
0025	Calcium Hardness as CaCO ₃	mg/L	162.0	166	148 - 184	Acceptable	SM2340B
1755	Total Hardness as CaCO ₃	mg/L	227.9	234	209 - 259	Acceptable	SM2340B
WS Corrosivity							
1620	Corrosivity	S.I. @ 20°C	1.63	1.76	1.36 - 2.16	Acceptable	SM2330B
WS Surfactants - MBAS							
2025	Surfactants - MBAS	mg/L	0.312	0.360	0.280 - 0.441	Acceptable	SM5540C
WS Silica							
1990	Silica as SiO ₂	mg/L	26.4	28.5	24.2 - 32.8	Acceptable	SM4500Si D
WS Perchlorate							
1895	Perchlorate	µg/L	10.2	10.1	8.34 - 11.1	Acceptable	EPA 314.0
WS UV 254 Absorbance							
2060	UV 254 Absorbance	cm-1	0.423	0.338	0.284 - 0.450	Acceptable	SM5910B
WS Hexavalent Chromium							
1045	Hexavalent Chromium	µg/L	13.1	13.3	11.9 - 14.7	Acceptable	EPA 218.6



WS-141 Final Complete Report

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Study Dates: 04/07/08 - 05/22/08

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WS Vanadium							
1185	Vanadium	µg/L	13.3	13.8	11.7 - 15.7	Acceptable	EPA 200.7



Study: **WS-141**

ERA Customer Number: **O127601**

Laboratory Name: **Orange County Water
District**

Microbiology Results



WS-141 Final Complete Report

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ERA Customer Number: O127601
Report Issued: 06/09/08
Study Dates: 04/07/08 - 05/22/08

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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WS Heterotrophic Plate Count

2555	Heterotrophic Plate Count	CFU/mL	341	232	178 - 303	Not Acceptable	SM9215B R2A
2555	Heterotrophic Plate Count (MPN)	MPN/mL		233	148 - 368	Not Reported	



WS-141 Final Complete Report

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WS MicrobE™ (Coliforms)							
0254	Total Coliforms - Sample 1	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222B M Endo
0254	Total Coliforms - Sample 2	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222B M Endo
0254	Total Coliforms - Sample 3	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B M Endo
0254	Total Coliforms - Sample 4	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222B M Endo
0254	Total Coliforms - Sample 5	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B M Endo
0254	Total Coliforms - Sample 6	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222B M Endo
0254	Total Coliforms - Sample 7	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B M Endo
0254	Total Coliforms - Sample 8	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B M Endo
0254	Total Coliforms - Sample 9	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B M Endo
0254	Total Coliforms - Sample 10	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B M Endo
0255	Fecal/E.coli Coliforms - Sample 1	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D m FC
0255	Fecal/E.coli Coliforms - Sample 2	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D m FC
0255	Fecal/E.coli Coliforms - Sample 3	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D m FC
0255	Fecal/E.coli Coliforms - Sample 4	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D m FC
0255	Fecal/E.coli Coliforms - Sample 5	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222D m FC
0255	Fecal/E.coli Coliforms - Sample 6	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D m FC
0255	Fecal/E.coli Coliforms - Sample 7	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D m FC
0255	Fecal/E.coli Coliforms - Sample 8	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222D m FC
0255	Fecal/E.coli Coliforms - Sample 9	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222D m FC
0255	Fecal/E.coli Coliforms - Sample 10	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D m FC

Total Coliforms Evaluation : Acceptable

Fecal/E.coli Coliforms Evaluation : Acceptable

Definitions:

Assigned Value: 'Presence' indicates organisms of the coliform group are present in the sample.
'Absence' indicates organisms of the coliform group are not present in the sample as defined by standard water testing methods.

Fecal Coliform Organism - Escherichia coli, Samples 5, 8 and 9
Total Coliform Organism - Enterobacter cloacae, Samples 3, 7 and 10
Negative (1) Coliform Organism - Proteus mirabilis, Sample 6
Negative (2) Coliform Organism - Pseudomonas aeruginosa, Sample 1
Blank - No Organism, Samples 2 and 4



WS-141 Final Complete Report

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Study Dates: 04/07/08 - 05/22/08

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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WS MicrobE™ (Coliforms)

0254	Total Coliforms - Sample 1	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221B
0254	Total Coliforms - Sample 2	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221B
0254	Total Coliforms - Sample 3	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B
0254	Total Coliforms - Sample 4	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221B
0254	Total Coliforms - Sample 5	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B
0254	Total Coliforms - Sample 6	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221B
0254	Total Coliforms - Sample 7	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B
0254	Total Coliforms - Sample 8	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B
0254	Total Coliforms - Sample 9	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B
0254	Total Coliforms - Sample 10	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B
0255	Fecal/E.coli Coliforms - Sample 1	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	Fecal/E.coli Coliforms - Sample 2	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	Fecal/E.coli Coliforms - Sample 3	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	Fecal/E.coli Coliforms - Sample 4	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	Fecal/E.coli Coliforms - Sample 5	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221E LTB EC
0255	Fecal/E.coli Coliforms - Sample 6	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	Fecal/E.coli Coliforms - Sample 7	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	Fecal/E.coli Coliforms - Sample 8	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221E LTB EC
0255	Fecal/E.coli Coliforms - Sample 9	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221E LTB EC
0255	Fecal/E.coli Coliforms - Sample 10	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC

Total Coliforms Evaluation : Acceptable

Fecal/E.coli Coliforms Evaluation : Acceptable

Definitions:

Assigned Value: 'Presence' indicates organisms of the coliform group are present in the sample.

'Absence' indicates organisms of the coliform group are not present in the sample as defined by standard water testing methods.

Fecal Coliform Organism - Escherichia coli, Samples 5, 8 and 9

Total Coliform Organism - Enterobacter cloacae, Samples 3, 7 and 10

Negative (1) Coliform Organism - Proteus mirabilis, Sample 6

Negative (2) Coliform Organism - Pseudomonas aeruginosa, Sample 1

Blank - No Organism, Samples 2 and 4



All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01



WS-141 Final Complete Report

Jeremy Davis
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Orange County Water District
P.O. Box 8300
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ERA Customer Number: O127601
Report Issued: 06/09/08
Study Dates: 04/07/08 - 05/22/08

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WS MicrobE™ (Coliforms)							
0254	Total Coliforms - Sample 1	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 2	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 3	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 4	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 5	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 6	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 7	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 8	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 9	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 10	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	Fecal/E.coli Coliforms - Sample 1	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	Fecal/E.coli Coliforms - Sample 2	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	Fecal/E.coli Coliforms - Sample 3	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	Fecal/E.coli Coliforms - Sample 4	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	Fecal/E.coli Coliforms - Sample 5	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	Fecal/E.coli Coliforms - Sample 6	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	Fecal/E.coli Coliforms - Sample 7	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	Fecal/E.coli Coliforms - Sample 8	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	Fecal/E.coli Coliforms - Sample 9	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	Fecal/E.coli Coliforms - Sample 10	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT

Total Coliforms Evaluation : Acceptable

Fecal/E.coli Coliforms Evaluation : Acceptable

Definitions:

Assigned Value: 'Presence' indicates organisms of the coliform group are present in the sample.
'Absence' indicates organisms of the coliform group are not present in the sample as defined by standard water testing methods.

Fecal Coliform Organism - Escherichia coli, Samples 5, 8 and 9
Total Coliform Organism - Enterobacter cloacae, Samples 3, 7 and 10
Negative (1) Coliform Organism - Proteus mirabilis, Sample 6
Negative (2) Coliform Organism - Pseudomonas aeruginosa, Sample 1
Blank - No Organism, Samples 2 and 4



PERFORMANCE EVALUATION

First Choice for Quality |



Quarterly Study

VS07-2

RT1143

RTC Labcode

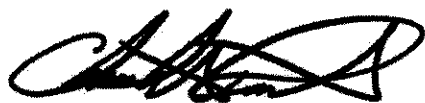
11-Apr-2007 through 25-May-2007

CA00043
US EPA Labcode

Orange Co Water District
Lee J. Yoo
10500 Ellis Ave, PO Box 8300
Fountain Valley CA 92728

Thank you for participating in study VS07-2. Additional information about this study may be found online at www.rt-corp.com. If you have any questions or comments about this study please contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Christopher Rucinski".

Christopher Rucinski
Quality Director

2931 Soldier Springs Road
Laramie, WY 82070
(307) 742-5452
www.rt-corp.com





WS07-2
Concluded 05/25/2007



Dataset

EPA 525.2 - Organic Lab

Accreditors

Evaluations of this dataset will be sent to the accreditor(s) listed below using your laboratory's labcode listed above each accrediting agency. If any of the information listed below is incorrect, please contact RTC immediately.

Accrediting Labcode 1114

California Dept. of Health Services
Environmental Lab Accred. Program Branch
104 Fred Choske
850 Marina Bay Parkway
Bldg. P, 1st Floor, MS 7103
Richmond CA 94804
UNITED STATES

Analysis

EPA 525.2

Gas Chromatography - Mass Spectrometry

Method Number 10089608
Technology Code GC-MS

	Result Units	Accept / Warn	Z	Evaluation
Acetochlor 4 4,310 / O-005-3 - Lot 012151	<0.100 µg/L	0.0 to 0.0		Acceptable

Base/Neutrals

Base/Neutrals

Analysis

EPA 525.2

Gas Chromatography - Mass Spectrometry

Method Number 10089608
Technology Code GC-MS

	Result Units	Accept / Warn	Z	Evaluation
Acenaphthylene 1, 4, 5 5,505 / O-006-2 - Lot 012155	1.96 µg/L	1.28 to 3.86	-0.95	Acceptable
Anthracene 1, 4, 5 5,555 / O-006-2 - Lot 012155	4.30 µg/L	2.55 to 7.65	-0.63	Acceptable
Benzo(a)anthracene 1, 4, 5 5,575 / O-006-2 - Lot 012155	7.86 µg/L	4.68 to 14.0	-0.64	Acceptable
Benzo(a)pyrene 1, 3, 4 5,580 / O-006-1 - Lot 012154	0.420 µg/L	0.338 to 0.784	-1.26	Acceptable
Benzo(b)fluoranthene 1, 4, 5 5,585 / O-006-2 - Lot 012155	2.58 µg/L	1.48 to 4.43	-0.50	Acceptable
Benzo(g,h,i)perylene 1, 4, 5 5,590 / O-006-2 - Lot 012155	6.06 µg/L	3.38 to 10.1	-0.41	Acceptable
Benzo(k)fluoranthene 1, 4, 5 5,600 / O-006-2 - Lot 012155	2.90 µg/L	1.39 to 4.18	0.16	Acceptable
Butyl benzyl phthalate 1, 4 5,670 / O-006-2 - Lot 012155	14.7 µg/L	4.96 to 19.8	0.62	Acceptable
Chrysene 1, 4, 5 5,855 / O-006-2 - Lot 012155	1.50 µg/L	0.830 to 2.49	-0.39	Acceptable
Dibenz(a,h)anthracene 1, 4, 5 5,895 / O-006-2 - Lot 012155	4.50 µg/L	2.88 to 8.63	-0.87	Acceptable
Di-n-butyl phthalate 1, 4, 5 5,925 / O-006-2 - Lot 012155	52.6 µg/L	18.2 to 72.8	0.52	Acceptable
Di(2-ethylhexyl)adipate 1, 3, 4 6,062 / O-006-1 - Lot 012154	32.5 µg/L	17.0 to 58.6	-0.51	Acceptable
Di(2-ethylhexyl)phthalate 1, 3, 4 6,065 / O-006-1 - Lot 012154	46.7 µg/L	20.4 to 73.4	-0.02	Acceptable

Base/Neutrals (continued)

Base/Neutrals

Analysis

EPA 525.2

Gas Chromatography - Mass Spectrometry

(continued)

Method Number 10089608

Technology Code GC-MS

	Result Units	Accept / Warn	Z	Evaluation
Diethyl phthalate 1, 4, 5 6,070 / O-006-2 - Lot 012155	56.7 µg/L	18.1 to 72.5	0.84	Acceptable
Dimethyl phthalate 1, 4, 5 6,135 / O-006-2 - Lot 012155	22.4 µg/L	8.84 to 35.4	0.05	Acceptable
Di-n-octyl phthalate 1, 4, 5 6,200 / O-006-2 - Lot 012155	25.9 µg/L	12.6 to 50.6	-0.60	Acceptable
Fluorene 1, 4, 5 6,270 / O-006-2 - Lot 012155	6.45 µg/L	3.21 to 9.64	0.01	Acceptable
Indeno(1,2,3-cd) pyrene 1, 4, 5 6,315 / O-006-2 - Lot 012155	1.78 µg/L	1.04 to 3.12	-0.58	Acceptable
Phenanthrene 1, 4, 5 6,615 / O-006-2 - Lot 012155	7.40 µg/L	3.60 to 10.8	0.11	Acceptable
Pyrene 1, 4, 5 6,665 / O-006-2 - Lot 012155	2.85 µg/L	1.45 to 4.35	-0.07	Acceptable

Group Analysis Summary

Acceptable 20 / 20

Score 100.0% - (Acceptable)

Pesticides

Pesticides

Analysis

EPA 525.2

Gas Chromatography - Mass Spectrometry

Method Number 10089608

Technology Code GC-MS

	Result Units	Accept / Warn	Z	Evaluation
Hexachlorobenzene 1, 3, 4 6,275 / O-005-2 - Lot 012150	3.32 µg/L	1.55 to 4.26	0.61	Acceptable
Hexachlorocyclopentadiene 1, 3, 4 6,285 / O-005-2 - Lot 012150	21.8 µg/L	5.08 to 37.5	0.06	Acceptable
Alachlor 1, 3, 4 7,005 / O-005-3 - Lot 012151	13.5 µg/L	6.93 to 18.3	0.32	Acceptable
Aldrin 1, 3, 4 7,025 / O-005-1 - Lot 012148	0.828 µg/L	0.803 to 1.96	-1.91	Acceptable
Atrazine 1, 3, 4 7,065 / O-005-3 - Lot 012151	17.1 µg/L	7.94 to 21.0 7.96 to 21.0	0.80	Acceptable
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane) 1, 3, 4 7,120 / O-005-1 - Lot 012148	2.92 µg/L	1.60 to 4.20	0.03	Acceptable
Bromacil 1, 4, 5 7,130 / O-005-3 - Lot 012151	8.20 µg/L	5.10 to 13.4	-0.51	Acceptable
Butachlor 1, 4 7,160 / O-005-3 - Lot 012151	43.6 µg/L	22.4 to 53.8	0.70	Acceptable
Dieldrin 1, 3, 4 7,470 / O-005-1 - Lot 012148	0.920 µg/L	0.470 to 1.03	1.20	Acceptable
Endrin 1, 3, 4 7,540 / O-005-1 - Lot 012148	0.487 µg/L	0.315 to 0.825	-0.65	Acceptable
Heptachlor 1, 3, 4 7,685 / O-005-1 - Lot 012148	0.750 µg/L	0.506 to 1.33	-0.82	Acceptable



Pesticides (continued)

Pesticides

Analysis

EPA 525.2

Gas Chromatography - Mass Spectrometry

(continued)

Method Number 10089608

Technology Code GC-MS

	Result Units	Accept / Warn	Z	Evaluation
Heptachlor epoxide 1, 3, 4 7,690 / O-005-2 - Lot 012150	3.15 µg/L	1.90 to 5.02	-0.40	Acceptable
Methoxychlor 1, 3, 4 7,810 / O-005-2 - Lot 012150	59.2 µg/L	33.3 to 87.9	-0.10	Acceptable
Metolachlor 1, 4 7,835 / O-005-3 - Lot 012151	60.0 µg/L	33.0 to 80.7	0.26	Acceptable
Metribuzin 1, 4 7,845 / O-005-3 - Lot 012151	23.3 µg/L	6.21 to 40.6	-0.01	Acceptable
Molinate 1, 4, 5 7,875 / O-005-3 - Lot 012151	34.8 µg/L	19.4 to 51.2	-0.06	Acceptable
Propachlor (Ramrod) 1, 3, 4 8,045 / O-005-2 - Lot 012150	1.51 µg/L	0.693 to 1.83	0.88	Acceptable
Simazine 1, 3, 4 8,125 / O-005-3 - Lot 012151	3.80 µg/L	1.23 to 8.11	-0.51	Acceptable
Trifluralin (Treflan) 1, 3, 4 8,295 / O-005-2 - Lot 012150	1.84 µg/L	1.04 to 2.64	0.00	Acceptable

Group Analysis Summary

Acceptable 19 / 19

Score 100.0% - (Acceptable)

End of EPA 525.2 - Organic Lab



Dataset

Full Set - Organic Lab

Accreditors

Evaluations of this dataset will be sent to the accreditor(s) listed below using your laboratory's labcode listed above each accrediting agency. If any of the information listed below is incorrect, please contact RTC immediately.

Accrediting Labcode 1114

California Dept. of Health Services
Environmental Lab Accred. Program Branch
104 Fred Choske
850 Marina Bay Parkway
Bldg. P, 1st Floor, MS 7103
Richmond CA 94804
UNITED STATES

Base/Neutrals

Base/Neutrals

Analysis

EPA 550.1

High Performance Liquid Chromatography - Ultraviolet/visible Molecular Fluorescence

Method Number 10094005
Technology Code HPLC-FLUOR

	Result Units	Accept / Warn	Z	Evaluation
Naphthalene 1, 4, 5 5,005 / O-006-2 - Lot 012155	10.1 µg/L	6.48 to 15.1	-0.32	Acceptable
Acenaphthene 1, 4, 5 5,500 / O-006-2 - Lot 012155	6.64 µg/L	3.05 to 9.15	0.35	Acceptable
Anthracene 1, 4, 5 5,555 / O-006-2 - Lot 012155	3.77 µg/L	2.55 to 7.65	-1.04	Acceptable
Benzo(a)anthracene 1, 4, 5 5,575 / O-006-2 - Lot 012155	7.11 µg/L	4.68 to 14.0	-0.96	Acceptable
Benzo(a)pyrene 1, 3, 4 5,580 / O-006-1 - Lot 012154	0.340 µg/L	0.338 to 0.784	-1.98	Acceptable
Benzo(b)fluoranthene 1, 4, 5 5,585 / O-006-2 - Lot 012155	2.23 µg/L	1.48 to 4.43	-0.98	Acceptable
Benzo(g,h,i)perylene 1, 4, 5 5,590 / O-006-2 - Lot 012155	5.55 µg/L	3.38 to 10.1	-0.71	Acceptable
Benzo(k)fluoranthene 1, 4, 5 5,600 / O-006-2 - Lot 012155	2.56 µg/L	1.39 to 4.18	-0.33	Acceptable
Chrysene 1, 4, 5 5,855 / O-006-2 - Lot 012155	1.41 µg/L	0.830 to 2.49	-0.60	Acceptable
Dibenz(a,h) anthracene 1, 4, 5 5,895 / O-006-2 - Lot 012155	4.35 µg/L	2.88 to 8.63	-0.97	Acceptable
Fluoranthene 1, 4, 5 6,265 / O-006-2 - Lot 012155	5.50 µg/L	3.35 to 10.0	-0.72	Acceptable
Fluorene 1, 4, 5 6,270 / O-006-2 - Lot 012155	5.51 µg/L	3.21 to 9.64	-0.57	Acceptable
Indeno(1,2,3-cd) pyrene 1, 4, 5 6,315 / O-006-2 - Lot 012155	1.68 µg/L	1.04 to 3.12	-0.77	Acceptable
Phenanthrene 1, 4, 5 6,615 / O-006-2 - Lot 012155	6.80 µg/L	3.60 to 10.8	-0.22	Acceptable
Pyrene 1, 4, 5 6,665 / O-006-2 - Lot 012155	2.39 µg/L	1.45 to 4.35	-0.70	Acceptable

Group Analysis Summary

Acceptable 15 / 15
Score 100.0% - (Acceptable)

Base/Neutrals (continued)

Base/Neutrals

Analysis

EPA 550.1

High Performance Liquid Chromatography - Ultraviolet/visible Molecular Absorption

Method Number 10094005

Technology Code HPLC-UV

	Result Units	Accept / Warn	Z	Evaluation
Acenaphthylene 1, 4, 5 5,505 / O-006-2 - Lot 012155	1.80 µg/L	1.28 to 3.86	-1.20	Acceptable

Carbamates

Analysis

EPA 531.1

High Performance Liquid Chromatography - Ultraviolet/visible Molecular Fluorescence

Method Number 10090809

Technology Code HPLC-FLUOR

	Result Units	Accept / Warn	Z	Evaluation
Aldicarb (Temik) 1, 3, 4 7,010 / O-001 - Lot 012147	18.9 µg/L	15.7 to 26.4	-0.81	Acceptable
Aldicarb sulfone 1, 3, 4 7,015 / O-001 - Lot 012147	45.4 µg/L	34.2 to 55.0	0.15	Acceptable
Aldicarb sulfoxide 1, 3, 4 7,020 / O-001 - Lot 012147	<1.00 µg/L	0.00 to 1.00		Acceptable
Carbaryl (Sevin) 1, 4 7,195 / O-001 - Lot 012147	62.4 µg/L	43.7 to 66.4	1.30	Acceptable
Carbofuran (Furaden) 1, 3, 4 7,205 / O-001 - Lot 012147	59.4 µg/L	32.0 to 84.2	0.10	Acceptable
3-Hydroxycarbofuran 1, 4 7,710 / O-001 - Lot 012147	71.1 µg/L	58.2 to 80.0	1.24	Acceptable
Methiocarb (Mesuroi) 1, 4, 5 7,800 / O-001 - Lot 012147	126 µg/L	97.4 to 151	0.15	Acceptable
Methomyl (Lannate) 1, 3, 4 7,805 / O-001 - Lot 012147	69.1 µg/L	52.0 to 76.4	0.80	Acceptable
Oxamyl 1, 3, 4 7,940 / O-001 - Lot 012147	49.7 µg/L	36.4 to 58.1	0.45	Acceptable
Propoxur (Baygon) 1, 4, 5 8,080 / O-001 - Lot 012147	51.6 µg/L	41.2 to 60.4	0.17	Acceptable

Group Analysis Summary

Acceptable 10 / 10

Score 100.0% - (Acceptable)

Haloacetic acids

Analysis

EPA 552.2

Gas Chromatography - Electron Capture Detection

Method Number 10095600

Technology Code GC-ECD

	Result Units	Accept / Warn	Z	Evaluation
Monobromoacetic acid 1, 3, 4 9,312 / O-098 - Lot 012149	53.4 µg/L	28.0 to 65.4	0.72	Acceptable
Monochloroacetic acid 1, 3, 4 9,336 / O-098 - Lot 012149	21.0 µg/L	12.2 to 28.6	0.15	Acceptable
Dibromoacetic acid 1, 3, 4 9,357 / O-098 - Lot 012149	13.2 µg/L	9.18 to 21.4	-0.69	Acceptable
Dichloroacetic acid 1, 3, 4 9,360 / O-098 - Lot 012149	34.6 µg/L	21.2 to 49.6	-0.11	Acceptable



Haloacetic acids (continued)

Analysis
EPA 552.2
Gas Chromatography - Electron Capture Detection

(continued)
Method Number 10095600
Technology Code GC-ECD

	Result Units	Accept / Warn	Z	Evaluation
Trichloroacetic acid 1, 3, 4 9,642 / O-098 - Lot 012149	31.3 µg/L	16.9 to 39.5	0.55	Acceptable

Group Analysis Summary
Acceptable 5 / 5
Score 100.0% - (Acceptable)

Herbicides

Herbicides

Analysis
EPA 515.4
Gas Chromatography - Electron Capture Detection

Method Number 10088503
Technology Code GC-ECD

	Result Units	Accept / Warn	Z	Evaluation
Pentachlorophenol 1, 3, 4 6,805 / O-005-4 - Lot 012159	35.0 µg/L	20.0 to 60.0	-0.50	Acceptable
Acifluorfen 1, 3, 4 8,505 / O-005-4 - Lot 012159	42.8 µg/L	20.3 to 57.8	0.40	Acceptable
Bentazon 1, 4, 5 8,530 / O-005-4 - Lot 012159	31.7 µg/L	10.2 to 43.6	0.57	Acceptable
2,4-D 1, 3, 4 8,545 / O-005-4 - Lot 012159	81.0 µg/L	50.5 to 152	-0.79	Acceptable
Dacthal (DCPA) 1, 4, 5 8,550 / O-005-4 - Lot 012159	19.2 µg/L	0.00 to 137	-1.35	Acceptable
Dalapon 1, 3, 4 8,555 / O-005-4 - Lot 012159	15.7 µg/L	0.00 to 30.3	0.35	Acceptable
Dicamba 1, 3, 4 8,595 / O-005-4 - Lot 012159	32.4 µg/L	9.70 to 49.7	0.27	Acceptable
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP) 1, 3, 4 8,620 / O-005-4 - Lot 012159	23.4 µg/L	4.05 to 31.2	0.85	Acceptable
Picloram 1, 3, 4 8,645 / O-005-4 - Lot 012159	38.1 µg/L	10.3 to 62.1	0.15	Acceptable
Silvex (2,4,5-TP) 1, 3, 4 8,850 / O-005-4 - Lot 012159	28.9 µg/L	15.1 to 45.4	-0.18	Acceptable

Group Analysis Summary
Acceptable 10 / 10
Score 100.0% - (Acceptable)

Analysis
EPA 548.1
Gas Chromatography - Mass Spectrometry

Method Number 10092601
Technology Code GC-MS

	Result Units	Accept / Warn	Z	Evaluation
Endothall 1, 3, 4 7,525 / O-097 - Lot 012166	254 µg/L	87.4 to 357	0.47	Acceptable

Analysis
EPA 547
High Performance Liquid Chromatography - Ultraviolet/visible Molecular Fluorescence

Method Number 10091802
Technology Code HPLC-FLUOR

	Result Units	Accept / Warn	Z	Evaluation
Glyphosate 1, 3, 4 9,411 / O-097 - Lot 012166	452 µg/L	338 to 489	1.02	Acceptable



Herbicides (continued)

Herbicides

Analysis

EPA 549.2

High Performance Liquid Chromatography - Ultraviolet/visible Molecular Absorption

Method Number 10093206

Technology Code HPLC-UV

	Result Units	Accept / Warn	Z	Evaluation
Diquat 1, 3, 4 9,390 / O-097 - Lot 012166	14.9 µg/L	2.78 to 43.9	-0.82	Acceptable
Paraquat 1, 4, 5 9,528 / O-097 - Lot 012166	44.6 µg/L	41.0 to 123	-1.83	Acceptable

Organic Disinfection By-Products

Analysis

EPA 552.2

Gas Chromatography - Electron Capture Detection

Method Number 10095600

Technology Code GC-ECD

	Result Units	Accept / Warn	Z	Evaluation
Bromochloroacetic acid 1, 3, 4 9,315 / O-098 - Lot 012149	24.1 µg/L	15.2 to 35.6	-0.26	Acceptable
Total haloacetic acids 9,414 / O-098 - Lot 012149	178 µg/L	93.0 to 217	0.74	Acceptable

Analysis

EPA 551.1

Gas Chromatography - Electron Capture Detection

Method Number 10094607

Technology Code GC-ECD

	Result Units	Accept / Warn	Z	Evaluation
Chloral hydrate 1, 3, 4 4,460 / O-077 - Lot 012161	11.7 µg/L	1.19 to 13.3	1.47	Acceptable

Oxygenates - Gasoline Additives

Analysis

EPA 524.2

Gas Chromatography - Mass Spectrometry

Method Number 10088605

Technology Code GC-MS

	Result Units	Accept / Warn	Z	Evaluation
T-amylmethylether (TAME) 1, 4, 5 4,370 / O-075 - Lot 012170	24.2 µg/L	14.0 to 32.8		Acceptable
tert-Butyl alcohol 1, 4, 5 4,420 / O-075 - Lot 012170	23.9 µg/L	12.1 to 28.1	0.95	Acceptable
Carbon disulfide 4 4,450 / O-075 - Lot 012170	5.75 µg/L	4.08 to 9.52	-0.77	Acceptable
Ethyl-t-butylether (ETBE) 1, 4, 5 4,770 / O-075 - Lot 012170	14.5 µg/L	8.04 to 18.8	0.41	Acceptable
Methyl tert-butyl ether (MTBE) 4 5,000 / O-075 - Lot 012170	25.7 µg/L	18.2 to 42.6	-0.77	Acceptable
n-Propylbenzene 4 5,090 / O-075 - Lot 012170	24.2 µg/L	14.3 to 33.5	0.06	Acceptable
Trichlorofluoromethane 4 5,175 / O-075 - Lot 012170	16.5 µg/L	12.2 to 28.6		Acceptable
1,2,3-Trichloropropane 1, 4, 5 5,180 / O-075 - Lot 012170	1.22 µg/L	0.636 to 1.48		Acceptable
Trichlorotrifluoroethane (Freon 113) 1, 4, 5 5,185 / O-075 - Lot 012170	47.6 µg/L	28.2 to 65.8	0.06	Acceptable



Oxygenates - Gasoline Additives (continued)

Analysis
EPA 524.2
Gas Chromatography - Mass Spectrometry

(continued)
Method Number 10088605
Technology Code GC-MS

	Result Units	Accept / Warn	Z	Evaluation
Di-isopropylether (DIPE) 1, 4, 5 9,375 / O-075 - Lot 012170	27.2 µg/L	6.08 to 54.7	-0.26	Acceptable
1-Phenylpropane 4 9,567 / O-075 - Lot 012170	24.2 µg/L	14.3 to 33.5	0.06	Acceptable

Group Analysis Summary
Acceptable 11 / 11
Score 100.0% - (Acceptable)

PCBs in Water

Analysis
EPA 508
Gas Chromatography - Electron Capture Detection

Method Number 10085004
Technology Code GC-ECD

	Result Units	Accept / Warn	Z	Evaluation
PCB Aroclor Identification 1 8,872 / O-003 - Lot 002195	1242	1240 to 1240 1240 to 1240		Acceptable
Aroclor-1016 (PCB-1016) 1, 4 8,880 / O-003 - Lot 002195	<0.150 µg/L	0.0 to 0.0		Acceptable
Aroclor-1221 (PCB-1221) 1, 4 8,885 / O-003 - Lot 002195	<0.150 µg/L	0.0 to 0.0		Acceptable
Aroclor-1232 (PCB-1232) 1, 4 8,890 / O-003 - Lot 002195	<0.150 µg/L	0.0 to 0.0		Acceptable
Aroclor-1242 (PCB-1242) 1, 4 8,895 / O-003 - Lot 002195	1.64 µg/L	0.153 to 3.06	0.14	Acceptable
Aroclor-1248 (PCB-1248) 1, 4 8,900 / O-003 - Lot 002195	<0.150 µg/L	0.0 to 0.0		Acceptable
Aroclor-1254 (PCB-1254) 1, 4 8,905 / O-003 - Lot 002195	<0.150 µg/L	0.0 to 0.0		Acceptable
Aroclor-1260 (PCB-1260) 1, 4 8,910 / O-003 - Lot 002195	<0.150 µg/L	0.0 to 0.0		Acceptable

Pesticides

Pesticides

Analysis
EPA 507
Gas Chromatography - Nitrogen/phosphorus Detection

Method Number 10084409
Technology Code GC-NPD

	Result Units	Accept / Warn	Z	Evaluation
Alachlor 1, 3, 4 7,005 / O-005-3 - Lot 012151	12.0 µg/L	6.93 to 18.3	-0.21	Acceptable
Atrazine 1, 3, 4 7,065 / O-005-3 - Lot 012151	14.8 µg/L	7.94 to 21.0 7.96 to 21.0	0.09	Acceptable
Bromacil 1, 4, 5 7,130 / O-005-3 - Lot 012151	7.96 µg/L	5.10 to 13.4	-0.63	Acceptable
Butachlor 1, 4 7,180 / O-005-3 - Lot 012151	42.9 µg/L	22.4 to 53.8	0.61	Acceptable
Metolachlor 1, 4 7,835 / O-005-3 - Lot 012151	69.6 µg/L	33.0 to 80.7	1.07	Acceptable



Pesticides (continued)

Pesticides

Analysis

EPA 507

Gas Chromatography - Nitrogen/phosphorus Detection

(continued)

Method Number 10084409

Technology Code GC-NPD

	Result Units	Accept / Warn	Z	Evaluation
Metribuzin 1, 4 7,845 / O-005-3 - Lot 012151	28.0 µg/L	6.21 to 40.6	0.54	Acceptable
Molinate 1, 4, 5 7,875 / O-005-3 - Lot 012151	31.5 µg/L	19.4 to 51.2	-0.48	Acceptable
Simazine 1, 3, 4 8,125 / O-005-3 - Lot 012151	4.16 µg/L	1.23 to 8.11	-0.30	Acceptable

Analysis

EPA 508

Gas Chromatography - Electron Capture Detection

Method Number 10085004

Technology Code GC-ECD

	Result Units	Accept / Warn	Z	Evaluation
Hexachlorobenzene 1, 3, 4 6,275 / O-005-2 - Lot 012150	2.96 µg/L	1.55 to 4.26	0.08	Acceptable
Hexachlorocyclopentadiene 1, 3, 4 6,285 / O-005-2 - Lot 012150	20.7 µg/L	5.08 to 37.5	-0.07	Acceptable
Aldrin 1, 3, 4 7,025 / O-005-1 - Lot 012148	1.26 µg/L	0.803 to 1.96	-0.42	Acceptable
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane) 1, 3, 4 7,120 / O-005-1 - Lot 012148	2.78 µg/L	1.60 to 4.20	-0.18	Acceptable
Chlordane (total) 1, 3, 4 7,250 / O-005-5 - Lot 012145	8.07 µg/L	4.33 to 11.4	0.11	Acceptable
Dieldrin 1, 3, 4 7,470 / O-005-1 - Lot 012148	0.820 µg/L	0.470 to 1.03	0.49	Acceptable
Endrin 1, 3, 4 7,540 / O-005-1 - Lot 012148	0.590 µg/L	0.315 to 0.825	0.16	Acceptable
Heptachlor 1, 3, 4 7,685 / O-005-1 - Lot 012148	0.850 µg/L	0.506 to 1.33	-0.34	Acceptable
Heptachlor epoxide 1, 3, 4 7,690 / O-005-2 - Lot 012150	2.88 µg/L	1.90 to 5.02	-0.75	Acceptable
Methoxychlor 1, 3, 4 7,810 / O-005-2 - Lot 012150	62.4 µg/L	33.3 to 87.9	0.13	Acceptable
Propachlor (Ramrod) 1, 3, 4 8,045 / O-005-2 - Lot 012150	1.46 µg/L	0.693 to 1.83	0.70	Acceptable
Toxaphene (Chlorinated camphene) 1, 3, 4 8,250 / O-005-6 - Lot 012146	3.04 µg/L	2.01 to 5.31	-0.75	Acceptable
Trifluralin (Treflan) 1, 3, 4 8,295 / O-005-2 - Lot 012150	1.82 µg/L	1.04 to 2.64	-0.05	Acceptable

Group Analysis Summary

Acceptable 13 / 13

Score 100.0% - (Acceptable)

Regulated VOCs

Analysis

EPA 524.2

Gas Chromatography - Mass Spectrometry

Method Number 10088605

Technology Code GC-MS

	Result Units	Accept / Warn	Z	Evaluation
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Regulated VOCs (continued)

Analysis
EPA 524.2
Gas Chromatography - Mass Spectrometry

(continued)
Method Number 10088605
Technology Code GC-MS

	Result Units	Accept / Warn	Z	Evaluation
Benzene 1, 3, 4 4,375 / O-007-2 - Lot 012164	7.87 µg/L	5.24 to 12.2	-1.19	Acceptable
Carbon tetrachloride 1, 3, 4 4,455 / O-007-1 - Lot 012163	8.95 µg/L	5.29 to 12.3	0.07	Acceptable
Chlorobenzene 1, 3, 4 4,475 / O-007-1 - Lot 012163	16.9 µg/L	13.8 to 20.8	-0.23	Acceptable
1,2-Dichlorobenzene 1, 3, 4 4,610 / O-007-2 - Lot 012164	15.2 µg/L	14.0 to 21.0	-1.10	Acceptable
1,4-Dichlorobenzene 1, 3, 4 4,620 / O-007-2 - Lot 012164	9.57 µg/L	8.72 to 13.1	-0.89	Acceptable
1,2-Dichloroethane 1, 3, 4 4,635 / O-007-1 - Lot 012163	12.4 µg/L	10.2 to 15.2	-0.23	Acceptable
1,1-Dichloroethylene 1, 3, 4 4,640 / O-007-1 - Lot 012163	5.97 µg/L	4.18 to 9.74	-1.65	Acceptable
cis-1,2-Dichloroethylene 1, 3, 4 4,645 / O-007-1 - Lot 012163	30.2 µg/L	24.3 to 36.5	-0.06	Acceptable
1,2-Dichloropropane 1, 3, 4 4,655 / O-007-1 - Lot 012163	17.9 µg/L	13.8 to 20.6	0.45	Acceptable
trans-1,2-Dichloroethylene 1, 3, 4 4,700 / O-007-1 - Lot 012163	47.2 µg/L	35.2 to 52.8	0.74	Acceptable
Ethylbenzene 1, 3, 4 4,765 / O-007-2 - Lot 012164	3.75 µg/L	2.50 to 5.84	-1.31	Acceptable
Methylene chloride (Dichloromethane) 1, 3, 4 4,975 / O-007-1 - Lot 012163	11.5 µg/L	5.70 to 13.3	1.39	Acceptable
Styrene 1, 3, 4 5,100 / O-007-1 - Lot 012163	8.29 µg/L	5.29 to 12.3	-0.50	Acceptable
Tetrachloroethylene (Perchloroethylene) 1, 3, 4 5,115 / O-007-1 - Lot 012163	8.59 µg/L	5.12 to 12.0	0.05	Acceptable
Toluene 1, 3, 4 5,140 / O-007-2 - Lot 012164	2.45 µg/L	1.75 to 4.09	-1.77	Acceptable
1,2,4-Trichlorobenzene 1, 3, 4 5,155 / O-007-1 - Lot 012163	13.1 µg/L	12.7 to 19.1	-1.54	Acceptable
1,1,1-Trichloroethane 1, 3, 4 5,160 / O-007-1 - Lot 012163	18.5 µg/L	14.7 to 22.1	0.04	Acceptable
1,1,2-Trichloroethane 1, 3, 4 5,165 / O-007-1 - Lot 012163	12.9 µg/L	10.4 to 15.6	-0.07	Acceptable
Trichloroethene (Trichloroethylene) 1, 3, 4 5,170 / O-007-1 - Lot 012163	17.1 µg/L	13.7 to 20.5	0.00	Acceptable
Vinyl chloride 1, 3, 4 5,235 / O-007-1 - Lot 012163	13.5 µg/L	8.64 to 20.2	-0.53	Acceptable
Xylene, total 1, 3, 4 5,260 / O-007-2 - Lot 012164	31.6 µg/L	26.4 to 39.6	-0.46	Acceptable

Group Analysis Summary
Acceptable 21 / 21
Score 100.0% - (Acceptable)



Regulated VOCs (continued)

Analysis
EPA 504.1
Gas Chromatography - Electron Capture Detection

Method Number 10082607
Technology Code GC-ECD

	Result Units	Accept / Warn	Z	Evaluation
1,2-Dibromo-3-chloropropane (DBCP) 1, 3, 4 4,570 / O-007-4 - Lot 012165	0.356 µg/L	0.166 to 0.434	0.74	Acceptable
1,2-Dibromoethane (EDB, Ethylene dibromide) 1, 3, 4 4,565 / O-007-4 - Lot 012165	0.888 µg/L	0.510 to 1.19	0.22	Acceptable

Trihalomethanes

Analysis
EPA 524.2
Gas Chromatography - Mass Spectrometry

Method Number 10088605
Technology Code GC-MS

	Result Units	Accept / Warn	Z	Evaluation
Bromodichloromethane 1, 3, 4 4,395 / O-002 - Lot 012156	22.9 µg/L	14.1 to 32.9	-0.13	Acceptable
Bromoform 1, 3, 4 4,400 / O-002 - Lot 012156	19.8 µg/L	13.0 to 30.2	-0.42	Acceptable
Chloroform 1, 3, 4 4,505 / O-002 - Lot 012156	17.7 µg/L	14.5 to 21.7	-0.22	Acceptable
Dibromochloromethane 1, 3, 4 4,575 / O-002 - Lot 012156	26.8 µg/L	17.0 to 39.6	-0.27	Acceptable
Total trihalomethanes 1, 3, 4 5,205 / O-002 - Lot 012156	87.2 µg/L	55.3 to 129	-0.27	Acceptable

Group Analysis Summary
Acceptable 5 / 5
Score 100.0% - (Acceptable)

Unregulated VOCs

Analysis
EPA 524.2
Gas Chromatography - Mass Spectrometry

Method Number 10088605
Technology Code GC-MS

	Result Units	Accept / Warn	Z	Evaluation
Bromobenzene 1, 3, 4 4,385 / O-007-3B - Lot 012168	27.8 µg/L	24.1 to 36.1	-0.71	Acceptable
Bromochloromethane 1, 3, 4 4,390 / O-007-3B - Lot 012168	43.7 µg/L	30.0 to 53.6	0.32	Acceptable
n-Butylbenzene 1, 3, 4 4,435 / O-007-3B - Lot 012168	31.4 µg/L	31.3 to 46.9	-1.59	Acceptable
sec-Butylbenzene 1, 3, 4 4,440 / O-007-3B - Lot 012168	20.7 µg/L	16.2 to 24.4	0.17	Acceptable
tert-Butylbenzene 1, 3, 4 4,445 / O-007-3B - Lot 012168	15.8 µg/L	8.94 to 20.9	0.73	Acceptable
Chloroethane 1, 3, 4 4,485 / O-007-3A - Lot 012167	33.4 µg/L	15.3 to 35.7	1.55	Acceptable
2-Chlorotoluene 1, 3, 4 4,535 / O-007-3B - Lot 012168	41.5 µg/L	35.5 to 53.3	-0.68	Acceptable
4-Chlorotoluene 1, 3, 4 4,540 / O-007-3B - Lot 012168	28.7 µg/L	23.7 to 35.5	-0.19	Acceptable

Unregulated VOCs (continued)

Analysis
EPA 524.2
Gas Chromatography - Mass Spectrometry

(continued)
Method Number 10088605
Technology Code GC-MS

	Result Units	Accept / Warn	Z	Evaluation
Dibromomethane 1, 3, 4 4,595 / O-007-3B - Lot 012168	23.5 µg/L	18.9 to 28.3	-0.04	Acceptable
1,3-Dichlorobenzene 1, 3, 4 4,615 / O-007-2 - Lot 012164	13.9 µg/L	12.2 to 18.2	-0.76	Acceptable
1,3-Dichlorobenzene 1, 3, 4 4,615 / O-007-3A - Lot 012167	25.9 µg/L	21.7 to 32.5	-0.50	Acceptable
Dichlorodifluoromethane 1, 3, 4 4,625 / O-007-3A - Lot 012167	<0.500 µg/L	0.0 to 0.0		Acceptable
1,1-Dichloroethane 1, 3, 4 4,630 / O-007-3A - Lot 012167	40.1 µg/L	32.0 to 48.0	0.03	Acceptable
1,3-Dichloropropane 1, 3, 4 4,660 / O-007-3B - Lot 012168	30.9 µg/L	25.8 to 38.8	-0.36	Acceptable
2,2-Dichloropropane 1, 3, 4 4,665 / O-007-3B - Lot 012168	45.4 µg/L	29.3 to 54.0	0.61	Acceptable
1,1-Dichloropropene 1, 3, 4 4,670 / O-007-3B - Lot 012168	47.1 µg/L	34.3 to 56.0	0.36	Acceptable
cis-1,3-Dichloropropene 1, 3, 4 4,680 / O-007-3A - Lot 012167	22.7 µg/L	15.1 to 22.7	1.54	Acceptable
trans-1,3-Dichloropropene 1, 3, 4 4,685 / O-007-3A - Lot 012167	6.11 µg/L	3.60 to 8.40	0.12	Acceptable
Hexachlorobutadiene 1, 3, 4 4,835 / O-007-3B - Lot 012168	27.2 µg/L	20.7 to 31.1	0.42	Acceptable
Isopropylbenzene 1, 3, 4 4,900 / O-007-3B - Lot 012168	42.4 µg/L	35.1 to 52.7	-0.32	Acceptable
4-Isopropyltoluene 1, 3, 4 4,901 / O-007-3B - Lot 012168	36.9 µg/L	29.8 to 44.8	-0.10	Acceptable
Methyl bromide (Bromomethane) 1, 3, 4 4,950 / O-007-3A - Lot 012167	39.8 µg/L	20.1 to 46.9	1.33	Acceptable
Methyl chloride (Chloromethane) 1, 3, 4 4,960 / O-007-3A - Lot 012167	12.2 µg/L	5.99 to 14.0	1.00	Acceptable
Methyl tert-butyl ether (MTBE) 1, 4 5,000 / O-007-2 - Lot 012164	35.2 µg/L	23.3 to 54.5	-0.54	Acceptable
Naphthalene 1, 4 5,005 / O-007-2 - Lot 012164	22.5 µg/L	20.1 to 46.9	-1.96	Acceptable
n-Propylbenzene 1, 3, 4 5,090 / O-007-3B - Lot 012168	28.9 µg/L	24.4 to 36.6	-0.54	Acceptable
1,1,1,2-Tetrachloroethane 1, 3, 4 5,105 / O-007-3B - Lot 012168	22.5 µg/L	19.5 to 29.3	-0.61	Acceptable
1,1,2,2-Tetrachloroethane 1, 3, 4 5,110 / O-007-3A - Lot 012167	9.65 µg/L	6.24 to 14.6	-0.65	Acceptable
1,2,3-Trichlorobenzene 1, 3, 4 5,150 / O-007-3B - Lot 012168	24.2 µg/L	22.0 to 33.0	-0.77	Acceptable
Trichlorofluoromethane 1, 3, 4 5,175 / O-007-3A - Lot 012167	47.3 µg/L	27.8 to 65.0	0.19	Acceptable
1,2,3-Trichloropropane 1, 3, 4 5,180 / O-007-3B - Lot 012168	43.5 µg/L	37.2 to 55.8	-0.77	Acceptable



Unregulated VOCs (continued)

Analysis
EPA 524.2
Gas Chromatography - Mass Spectrometry

(continued)
Method Number 10088605
Technology Code GC-MS

	Result Units	Accept / Warn	Z	Evaluation
1,2,4-Trimethylbenzene ^{1, 4} 5,210 / O-007-2 - Lot 012164	15.4 µg/L	14.4 to 21.6	-1.37	Acceptable
1,2,4-Trimethylbenzene ^{1, 3, 4} 5,210 / O-007-3B - Lot 012168	45.9 µg/L	37.8 to 56.6	-0.27	Acceptable
1,3,5-Trimethylbenzene ^{1, 4} 5,215 / O-007-2 - Lot 012164	5.44 µg/L	3.68 to 8.60	-1.44	Acceptable
1,3,5-Trimethylbenzene ^{1, 3, 4} 5,215 / O-007-3B - Lot 012168	18.4 µg/L	15.5 to 23.3	-0.37	Acceptable
m+p-Xylene ⁴ 5,240 / O-007-2 - Lot 012164	20.1 µg/L	16.3 to 24.5	-0.19	Acceptable
o-Xylene ⁴ 5,250 / O-007-2 - Lot 012164	11.5 µg/L	10.2 to 15.2	-0.92	Acceptable

Group Analysis Summary
Acceptable 37 / 37
Score 100.0% - (Acceptable)

End of Full Set - Organic Lab



Sample Information

Carbamate Pesticides - WS PEO-001

Study Lot 012147
Mfg Lot 012147

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Aldicarb (Temik) 7010 Carbamates	µg/L	21.07	2.68	21.62	2.18	21.55	2.76	21.2 ± 0.206
Aldicarb sulfone 7015 Carbamates	µg/L	44.60	5.20	43.42	2.81	43.66	2.99	44.6 ± 0.433
Aldicarb sulfoxide 7020 Carbamates	µg/L	0.00	0.00					0.00
Carbaryl (Sevin) 7195 Carbamates	µg/L	55.04	5.67	58.80	8.31	61.80	2.51	60.5 ± 0.586
Carbofuran (Furaden) 7205 Carbamates	µg/L	58.10	13.07	57.55	4.68	59.13	2.80	58.1 ± 0.564
3-Hydroxycarbofuran 7710 Carbamates	µg/L	69.10	5.46	72.61	3.02	72.89	3.11	69.1 ± 0.67
Methiocarb (Mesurol) 7800 Carbamates	µg/L	124.06	13.33	126.84	35.90	124.06	13.33	126 ± 1.23
Methomyl (Lannate) 7805 Carbamates	µg/L	64.22	6.11	60.39	12.08	64.86	4.55	65.3 ± 0.634
Oxamyl 7940 Carbamates	µg/L	47.28	5.42	48.44	2.67	48.60	3.12	48.1 ± 0.467
Propoxur (Baygon) 8080 Carbamates	µg/L	50.79	4.79	48.46	6.88	51.02	1.80	51.2 ± 0.496

Trihalomethanes - WS PEO-002

Study Lot 012156
Mfg Lot 012156

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Bromodichloromethane 4395 Trihalomethanes	µg/L	23.50	4.70	22.46	2.95	22.52	2.50	23.5 ± 0.228
Bromoform 4400 Trihalomethanes	µg/L	21.60	4.32	20.95	3.21	20.97	3.46	21.6 ± 0.209
Chloroform 4505 Trihalomethanes	µg/L	18.10	1.81	17.91	2.05	18.13	1.93	18.1 ± 0.182
Dibromochloromethane 4575 Trihalomethanes	µg/L	28.30	5.66	26.90	3.62	26.58	2.29	28.3 ± 0.275
Total trihalomethanes 5205 Trihalomethanes	µg/L	92.10	18.42	88.23	10.59	88.53	8.77	92.1 ± 0.894

PCB's - WS PEO-003

Study Lot 002195
Mfg Lot 002195

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
PCB Aroclor Identification 8872 PCBs in Water		1,240.00	0.00					1240
Aroclor-1016 (PCB-1016) 8880 PCBs in Water	µg/L	0.00	0.00					0.00
Aroclor-1221 (PCB-1221) 8885 PCBs in Water	µg/L	0.00	0.00					0.00
Aroclor-1232 (PCB-1232) 8890 PCBs in Water	µg/L	0.00	0.00					0.00
Aroclor-1242 (PCB-1242) 8895 PCBs in Water	µg/L	1.53	0.77	1.53	0.31	1.53	0.35	1.53
Aroclor-1248 (PCB-1248) 8900 PCBs in Water	µg/L	0.00	0.00					0.00
Aroclor-1254 (PCB-1254) 8905 PCBs in Water	µg/L	0.00	0.00					0.00
Aroclor-1260 (PCB-1260) 8910 PCBs in Water	µg/L	0.00	0.00					0.00

Organochlorine Pesticides 1 - WS PEO-005-1

Study Lot 012148
Mfg Lot 012148

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Aldrin 7025 Pesticides	µg/L	1.38	0.29	1.40	0.40	1.38	0.46	1.38 ± 0.013
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane) 7120 Pesticides	µg/L	2.90	0.65	2.96	0.35	2.95	0.42	2.90 ± 0.028
Dieldrin 7470 Pesticides	µg/L	0.75	0.14	0.87	0.14	0.83	0.10	0.750 ± 0.007

**Organochlorine Pesticides 1 - WS**

PEO-005-1

(continued)

Study Lot 012148

Mfg Lot 012148

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Endrin 7540 Pesticides	µg/L	0.57	0.13	0.57	0.11	0.57	0.13	0.430 ± 0.004
Heptachlor 7685 Pesticides	µg/L	0.92	0.21	0.88	0.20	0.86	0.21	0.920 ± 0.006

Organochlorine Pesticides 2 - WS

PEO-005-2

Study Lot 012150

Mfg Lot 012150

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Hexachlorobenzene 6275 Pesticides	µg/L	2.91	0.68	3.03	0.69	3.21	0.43	3.37 ± 0.033
Hexachlorocyclopentadiene 6285 Pesticides	µg/L	21.29	8.10	24.09	3.91	24.16	4.50	26.7 ± 0.259
Heptachlor epoxide 7690 Pesticides	µg/L	3.46	0.78	3.13	0.70	3.26	0.37	3.46 ± 0.034
Methoxychlor 7810 Pesticides	µg/L	60.60	13.64	58.23	9.33	58.48	10.35	60.6 ± 0.587
Propachlor (Ramrod) 8045 Pesticides	µg/L	1.26	0.28	1.36	0.12	1.36	0.14	1.32 ± 0.013
Trifluralin (Treflan) 8295 Pesticides	µg/L	1.84	0.40	1.97	0.41	1.96	0.48	1.84 ± 0.018

Organonitrogen Pesticides - WS

PEO-005-3

Study Lot 012151

Mfg Lot 012151

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Acetochlor 4310	µg/L	0.00	0.00					0.00
Alachlor 7005 Pesticides	µg/L	12.60	2.84	12.19	2.83	12.57	2.78	12.6 ± 0.128
Atrazine 7065 Pesticides	µg/L	14.50	3.26	14.39	4.13	14.48	4.63	17.3 ± 0.168
Bromacil 7130 Pesticides	µg/L	9.27	2.09					9.27 ± 0.09
Butachlor 7160 Pesticides	µg/L	38.08	7.86	36.71	8.95	37.58	9.21	42.4 ± 0.435
Metolachlor 7835 Pesticides	µg/L	56.86	11.92	57.77	14.03	58.03	16.34	65.2 ± 0.632
Metribuzin 7845 Pesticides	µg/L	23.39	8.59	22.00	9.56	22.28	11.32	28.8 ± 0.28
Molinate 7875 Pesticides	µg/L	35.30	7.94					35.3 ± 0.342
Simazine 8125 Pesticides	µg/L	4.67	1.72	4.20	1.45	4.17	1.41	4.77 ± 0.046

Herbicides - WS

PEO-005-4

Study Lot 012159

Mfg Lot 012159

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Pentachlorophenol 6605 Herbicides	µg/L	40.00	10.00	40.62	8.71	39.57	8.71	40.0 ± 0.366
Acifluorfen 8505 Herbicides	µg/L	39.05	9.37					43.9 ± 0.426
Bentazon 8530 Herbicides	µg/L	26.90	8.36					29.9 ± 0.29
2,4-D 8545 Herbicides	µg/L	101.00	25.25	99.53	34.22	101.05	39.88	128 ± 1.24
Dacthal (DCPA) 8550 Herbicides	µg/L	66.39	35.06					78.7 ± 0.763
Dalapon 8555 Herbicides	µg/L	12.59	8.83	16.98	10.66	16.51	10.56	18.7 ± 0.182
Dicamba 8595 Herbicides	µg/L	29.69	9.99	33.21	5.23	32.64	0.78	35.5 ± 0.344
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP) 8620 Herbicides	µg/L	17.62	6.78	22.87	3.78	22.86	4.62	22.3 ± 0.216
Picloram 8645 Herbicides	µg/L	36.18	12.96	40.86	6.32	40.53	7.15	44.1 ± 0.428
Silvex (2,4,5-TP) 8650 Herbicides	µg/L	30.30	7.58	29.60	4.49	28.42	0.91	30.3 ± 0.294



Chlordane (Total) - WS
EO-005-5

Study Lot 012145
Mfg Lot 012145

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Chlordane (total) 7250 Pesticides	µg/L	7.87	1.77	8.21	0.84	8.19	0.95	7.87 ± 0.08

Toxaphene (Total) - WS
PEO-005-6

Study Lot 012146
Mfg Lot 012146

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Toxaphene (Chlorinated camphene) 8250 Pesticides	µg/L	3.66	0.82	3.19	0.41	3.16	0.44	3.66 ± 0.04

Adipate/Phthalate - WS
PEO-006-1

Study Lot 012154
Mfg Lot 012154

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Benzo(a)pyrene 5580 Base/Neutrals	µg/L	0.56	0.11	0.54	0.18	0.54	0.20	0.627 ± 0.007
Di(2-ethylhexyl)adipate 6062 Base/Neutrals	µg/L	37.80	10.42	33.72	9.49	34.18	11.63	40.7 ± 0.395
Di(2-ethylhexyl)phthalate 6065 Base/Neutrals	µg/L	46.90	13.23	37.89	9.91	39.74	8.78	47.0 ± 0.456

PNAs in Water - WS
PEO-006-2

Study Lot 012155
Mfg Lot 012155

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Naphthalene 5005 Base/Neutrals	µg/L	10.80	2.16	10.18	1.43	10.20	1.75	10.8 ± 0.105
Acenaphthene 5500 Base/Neutrals	µg/L	6.10	1.53	6.41	0.36	6.42	0.41	6.10 ± 0.059
Acenaphthylene 5505 Base/Neutrals	µg/L	2.57	0.64	2.38	0.45	2.38	0.53	2.57 ± 0.025
Anthracene 5555 Base/Neutrals	µg/L	5.10	1.28	4.36	0.39	4.36	0.50	5.10 ± 0.049
Benzo(a)anthracene 5575 Base/Neutrals	µg/L	9.36	2.34	7.66	0.98	7.68	1.13	9.36 ± 0.091
Benzo(b)fluoranthene 5585 Base/Neutrals	µg/L	2.95	0.74	2.72	0.34	2.73	0.40	2.95 ± 0.029
Benzo(g,h,i)perylene 5590 Base/Neutrals	µg/L	6.75	1.69	6.52	0.71	6.52	0.89	6.75 ± 0.065
Benzo(k)fluoranthene 5600 Base/Neutrals	µg/L	2.79	0.70	2.96	0.28	2.94	0.07	2.79 ± 0.027
Butyl benzyl phthalate 5670 Base/Neutrals	µg/L	12.40	3.72	13.62	1.49	14.27	0.55	12.4 ± 0.121
Chrysene 5855 Base/Neutrals	µg/L	1.66	0.42	1.75	0.24	1.75	0.33	1.66 ± 0.016
Dibenz(a,h)anthracene 5895 Base/Neutrals	µg/L	5.75	1.44	5.25	0.94	5.17	0.99	5.75 ± 0.056
Di-n-butyl phthalate 5925 Base/Neutrals	µg/L	45.50	13.65	43.10	6.59	42.94	7.99	45.5 ± 0.442
Diethyl phthalate 6070 Base/Neutrals	µg/L	45.30	13.59	49.28	8.59	49.16	12.57	45.3 ± 0.439
Dimethyl phthalate 6135 Base/Neutrals	µg/L	22.10	6.63	20.02	2.48	20.06	3.39	22.1 ± 0.215
Di-n-octyl phthalate 6200 Base/Neutrals	µg/L	31.60	9.48					31.6 ± 0.306
Fluoranthene 6265 Base/Neutrals	µg/L	6.70	1.68	5.89	2.02	7.14	0.30	6.70 ± 0.065
Fluorene 6270 Base/Neutrals	µg/L	6.43	1.61	6.46	0.80	6.43	0.93	6.43 ± 0.062
Indeno(1,2,3-cd)pyrene 6315 Base/Neutrals	µg/L	2.08	0.52	1.85	0.23	1.85	0.27	2.08 ± 0.02
Phenanthrene 6615 Base/Neutrals	µg/L	7.20	1.80	6.95	0.56	6.95	0.70	7.20 ± 0.07
Pyrene 6665 Base/Neutrals	µg/L	2.90	0.73	2.79	0.29	2.79	0.32	2.90 ± 0.028

Regulated VOC's 1
PEO-007-1

Study Lot 012163
Mfg Lot 012163



WS07-2

Concluded 05/25/2007

Regulated VOC's 1

EO-007-1

Study Lot 012163

Mfg Lot 012163

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Carbon tetrachloride 4455 Regulated VOCs	µg/L	8.82	1.76	8.20	0.99	8.41	0.81	8.82 ± 0.086
Chlorobenzene 4475 Regulated VOCs	µg/L	17.30	1.72	17.58	1.55	17.59	1.72	17.3 ± 0.168
1,2-Dichloroethane 4635 Regulated VOCs	µg/L	12.70	1.33	12.54	1.21	12.47	1.33	12.7 ± 0.123
1,1-Dichloroethylene 4640 Regulated VOCs	µg/L	6.96	0.60	5.46	0.61	5.39	0.60	6.96 ± 0.068
cis-1,2-Dichloroethylene 4645 Regulated VOCs	µg/L	30.40	3.34	29.37	3.06	29.26	3.34	30.4 ± 0.295
1,2-Dichloropropane 4655 Regulated VOCs	µg/L	17.20	1.56	17.14	1.32	17.13	1.56	17.2 ± 0.167
trans-1,2-Dichloroethylene 4700 Regulated VOCs	µg/L	44.00	4.30	43.76	4.03	44.02	4.30	44.0 ± 0.438
Methylene chloride (Dichloromethane) 4975 Regulated VOCs	µg/L	9.50	1.43	9.31	1.34	9.24	1.43	9.50 ± 0.098
Styrene 5100 Regulated VOCs	µg/L	8.81	1.03	8.66	0.87	8.70	1.03	8.81 ± 0.085
Tetrachloroethylene (Perchloroethylene) 5115 Regulated VOCs	µg/L	8.54	1.05	8.19	0.98	8.17	1.05	8.54 ± 0.083
1,2,4-Trichlorobenzene 5155 Regulated VOCs	µg/L	15.90	1.82	14.88	2.51	15.16	1.82	15.9 ± 0.155
1,1,1-Trichloroethane 5160 Regulated VOCs	µg/L	18.40	2.26	17.89	2.08	17.95	2.26	18.4 ± 0.188
1,1,2-Trichloroethane 5165 Regulated VOCs	µg/L	13.00	1.36	13.05	1.31	13.04	1.36	13.0 ± 0.127
Trichloroethene (Trichloroethylene) 5170 Regulated VOCs	µg/L	17.10	1.86	16.25	1.65	16.26	1.86	17.1 ± 0.166
Vinyl chloride 5235 Regulated VOCs	µg/L	14.40	1.71	12.27	1.75	12.09	1.71	14.4 ± 0.139

Regulated VOC's 2 - WS

EO-007-2

Study Lot 012164

Mfg Lot 012164

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Benzene 4375 Regulated VOCs	µg/L	8.74	0.73	8.32	0.69	8.34	0.73	8.74 ± 0.085
1,2-Dichlorobenzene 4610 Regulated VOCs	µg/L	17.50	2.09	17.45	2.23	17.24	2.09	17.5 ± 0.169
1,3-Dichlorobenzene 4615 Unregulated VOCs	µg/L	15.20	1.71	15.00	1.56	15.02	1.71	15.2 ± 0.148
1,4-Dichlorobenzene 4620 Regulated VOCs	µg/L	10.90	1.50	11.13	1.24	11.10	1.50	10.9 ± 0.106
Ethylbenzene 4765 Regulated VOCs	µg/L	4.17	0.32	4.12	0.30	4.12	0.32	4.17 ± 0.04
Methyl tert-butyl ether (MTBE) 5000 Unregulated VOCs	µg/L	38.90	6.79	36.63	6.49	36.13	6.79	38.9 ± 0.378
Naphthalene 5005 Unregulated VOCs	µg/L	33.50	5.63	32.28	8.98	30.96	5.63	33.5 ± 0.325
Toluene 5140 Regulated VOCs	µg/L	2.92	0.26	2.91	0.23	2.90	0.26	2.92 ± 0.028
1,2,4-Trimethylbenzene 5210 Unregulated VOCs	µg/L	18.00	1.90	18.05	1.66	18.10	1.90	18.0 ± 0.175
1,3,5-Trimethylbenzene 5215 Unregulated VOCs	µg/L	6.14	0.49	6.08	0.48	6.09	0.49	6.14 ± 0.06
m+p-Xylene 5240 Unregulated VOCs	µg/L	20.40	1.62	20.43	1.73	20.46	1.62	20.4 ± 0.197
o-Xylene 5250 Unregulated VOCs	µg/L	12.70	1.30	12.92	1.18	12.95	1.30	12.7 ± 0.123
Xylene, total 5260 Regulated VOCs	µg/L	33.00	3.06	33.02	2.95	33.13	3.06	33.0 ± 0.32

Unregulated VOC's 1

PEO-007-3A

Study Lot 012167

Mfg Lot 012167

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Chloroethane 4485 Unregulated VOCs	µg/L	25.50	5.10	25.51	4.90	24.35	3.71	25.5 ± 0.182
1,3-Dichlorobenzene 4615 Unregulated VOCs	µg/L	27.10	2.39	26.49	2.41	26.29	2.39	27.1 ± 0.258



Unregulated VOC's 1

PEO-007-3A

(continued)

Study Lot 012167

Mfg Lot 012167

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Dichlorodifluoromethane 4625 Unregulated VOCs	µg/L	0.00	0.00					0.00
1,1-Dichloroethane 4630 Unregulated VOCs	µg/L	40.00	3.53	38.80	5.72	40.46	3.53	40.0 ± 0.388
cis-1,3-Dichloropropene 4680 Unregulated VOCs	µg/L	18.90	2.47	17.97	2.15	17.91	2.47	18.9 ± 0.188
trans-1,3-Dichloropropene 4685 Unregulated VOCs	µg/L	6.00	0.92	5.58	1.62	5.97	0.92	6.00 ± 0.066
Methyl bromide (Bromomethane) 4950 Unregulated VOCs	µg/L	33.50	4.73	30.46	5.47	29.53	4.73	33.5 ± 0.325
Methyl chloride (Chloromethane) 4960 Unregulated VOCs	µg/L	9.99	2.20	9.54	2.90	10.01	2.20	9.99 ± 0.18
1,1,2,2-Tetrachloroethane 5110 Unregulated VOCs	µg/L	10.40	1.15	9.54	1.13	9.64	1.15	10.4 ± 0.101
Trichlorofluoromethane 5175 Unregulated VOCs	µg/L	46.40	4.79	37.00	4.43	36.84	4.79	46.4 ± 0.45

Unregulated VOC's 2

PEO-007-3B

Study Lot 012168

Mfg Lot 012168

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Bromobenzene 4385 Unregulated VOCs	µg/L	30.10	3.22	29.66	3.18	29.49	3.22	30.1 ± 0.292
Bromochloromethane 4390 Unregulated VOCs	µg/L	41.79	5.89	41.76	5.30	41.79	5.89	42.6 ± 0.423
n-Butylbenzene 4435 Unregulated VOCs	µg/L	39.10	4.84	39.33	4.35	39.45	4.84	39.1 ± 0.388
sec-Butylbenzene 4440 Unregulated VOCs	µg/L	20.30	2.35	20.55	2.08	20.62	2.35	20.3 ± 0.203
tert-Butylbenzene 4445 Unregulated VOCs	µg/L	14.90	1.23	14.86	1.46	15.20	1.23	14.9 ± 0.151
2-Chlorotoluene 4535 Unregulated VOCs	µg/L	44.40	4.28	42.26	3.72	42.29	4.28	44.4 ± 0.431
4-Chlorotoluene 4540 Unregulated VOCs	µg/L	29.60	4.81	28.81	5.32	29.55	4.81	29.6 ± 0.287
Dibromomethane 4595 Unregulated VOCs	µg/L	23.60	2.25	23.61	2.73	23.17	2.25	23.6 ± 0.229
1,3-Dichloropropane 4660 Unregulated VOCs	µg/L	32.30	3.92	31.10	5.92	32.23	3.92	32.3 ± 0.313
2,2-Dichloropropane 4665 Unregulated VOCs	µg/L	41.65	6.17	41.77	5.50	41.65	6.17	43.7 ± 0.468
1,1-Dichloropropene 4670 Unregulated VOCs	µg/L	45.14	5.44	45.11	5.10	45.14	5.44	45.1 ± 0.483
Hexachlorobutadiene 4835 Unregulated VOCs	µg/L	25.90	3.07	25.60	2.86	25.67	3.07	25.9 ± 0.261
Isopropylbenzene 4900 Unregulated VOCs	µg/L	43.90	4.74	44.64	4.49	44.57	4.74	43.9 ± 0.426
4-Isopropyltoluene 4901 Unregulated VOCs	µg/L	37.30	4.07	38.09	3.79	38.27	4.07	37.3 ± 0.362
n-Propylbenzene 5090 Unregulated VOCs	µg/L	30.50	2.98	30.01	2.73	30.21	2.98	30.5 ± 0.296
1,1,1,2-Tetrachloroethane 5105 Unregulated VOCs	µg/L	24.40	3.10	22.79	4.21	23.54	3.10	24.4 ± 0.237
1,2,3-Trichlorobenzene 5150 Unregulated VOCs	µg/L	27.50	4.27	27.16	8.17	27.02	4.27	27.5 ± 0.267
1,2,3-Trichloropropane 5180 Unregulated VOCs	µg/L	46.50	3.89	43.61	9.36	45.38	3.89	46.5 ± 0.451
1,2,4-Trimethylbenzene 5210 Unregulated VOCs	µg/L	47.20	4.84	44.96	7.92	46.18	4.84	47.2 ± 0.458
1,3,5-Trimethylbenzene 5215 Unregulated VOCs	µg/L	19.40	2.73	18.38	4.03	19.44	2.73	19.4 ± 0.188

EDB/DBCP

PEO-007-4

Study Lot 012165

Mfg Lot 012165

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
1,2-Dibromo-3-chloropropane (DBCP) 4570 Regulated VOCs	µg/L	0.31	0.06	0.51	0.42	0.34	0.05	0.310 ± 0.003
1,2-Dibromoethane (EDB, Ethylene dibromide) 4585 Regulated VOCs	µg/L	0.85	0.17	1.29	1.01	0.89	0.18	0.850 ± 0.003



Gasoline Additives
EO-075

Study Lot 012170
Mfg Lot 012170

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
T-amylmethylether (TAME) 4370 Oxygenates - Gasoline Additives	µg/L	23.40						23.4 ± 0.227
tert-Butyl alcohol 4420 Oxygenates - Gasoline Additives	µg/L	20.10	4.02					20.1 ± 0.195
Carbon disulfide 4450 Oxygenates - Gasoline Additives	µg/L	6.80	1.36					6.80 ± 0.163
Ethyl-t-butylether (ETBE) 4770 Oxygenates - Gasoline Additives	µg/L	13.40	2.68					13.4 ± 0.129
Methyl tert-butyl ether (MTBE) 5000 Oxygenates - Gasoline Additives	µg/L	30.40	6.08					30.4 ± 0.295
n-Propylbenzene 5090 Oxygenates - Gasoline Additives	µg/L	23.90	4.78					23.9
Trichlorofluoromethane 5175 Oxygenates - Gasoline Additives	µg/L	20.40						20.4 ± 0.198
1,2,3-Trichloropropane 5180 Oxygenates - Gasoline Additives	µg/L	1.06						1.06 ± 0.01
Trichlorotrifluoroethane (Freon 113) 5185 Oxygenates - Gasoline Additives	µg/L	47.00	9.40					47.0 ± 0.456
Di-isopropylether (DIPE) 9375 Oxygenates - Gasoline Additives	µg/L	30.40	12.16					30.4 ± 0.294
1-Phenylpropane 9567 Oxygenates - Gasoline Additives	µg/L	23.90	4.78					23.9 ± 0.232

Chloral Hydrate
PEO-077

Study Lot 012161
Mfg Lot 012161

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Chloral hydrate 4460 Organic Disinfection By-Products	µg/L	7.25	3.03					8.23 ± 0.08

Diquat/Endothall/Glyphosate/Paraquat - WS
EO-097

Study Lot 012166
Mfg Lot 012166

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Endothall 7525 Herbicides	µg/L	222.42	67.50	189.20	67.39	188.19	93.14	251 ± 2.44
Diquat 9390 Herbicides	µg/L	23.32	10.27	18.03	4.60	16.06	2.55	30.4 ± 0.3
Glyphosate 9411 Herbicides	µg/L	413.37	37.76	408.22	36.01	408.13	42.48	401 ± 3.89
Paraquat 9528 Herbicides	µg/L	82.10	20.53					82.1 ± 0.8

Organic Disinfection By-Products - WS
PEO-098

Study Lot 012149
Mfg Lot 012149

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Monobromoacetic acid 9312 Haloacetic acids	µg/L	46.70	9.34	46.60	5.41	46.69	7.14	46.7 ± 0.342
Bromochloroacetic acid 9315 Organic Disinfection By-Products	µg/L	25.40	5.08	24.44	5.47	24.37	6.28	25.4 ± 0.22
Monochloroacetic acid 9336 Haloacetic acids	µg/L	20.40	4.08	20.96	3.28	21.02	3.66	20.4 ± 0.198
Dibromoacetic acid 9357 Haloacetic acids	µg/L	15.30	3.06	17.51	7.53	15.01	4.48	15.3 ± 0.148
Dichloroacetic acid 9360 Haloacetic acids	µg/L	35.40	7.08	35.22	5.49	34.43	5.27	35.4 ± 0.324
Total haloacetic acids 9414 Organic Disinfection By-Products	µg/L	155.00	31.00	169.68	19.80	174.51	15.15	155 ± 1.51
Trichloroacetic acid 9642 Haloacetic acids	µg/L	28.20	5.64	27.45	4.40	28.27	3.79	28.2 ± 0.277

Program analyte accrediting footnotes

- ¹ NELAC
- ³ NVLAP
- ⁵ NELAC Experimental

- ² EPA
- ⁴ A2LA

EPA CHECKLIST

OCWD's laboratory has specific instruments that are required to perform methods for which certification has been approved by the ELAP. Those instruments must meet the specifications in the federal EPA checklist entitle "Required Equipment and Instrument for Inorganic, Organic, and Microbiological Contaminants". An EPA checklist of the district's main laboratory is given below.

Instrument	Number of Units	Manufacturer Service Contract	Maintained In-House
GC – specific detector (GCs)	4	Yes	-
GC/Mass Spectrometers (GC/MS)	7	Yes	-
HPLCs	1	Yes	-
LC/MS	1	Yes	-
LC/MS/MS	1	Yes	-
ICP	1	Yes	-
ICP/MS	1	Yes	-
UV/VIS Spectrometer	1	No	Yes
TOC Analyzers	3	Yes	-
Flow Injection Analyzer (FIA)	2	Yes	-
Automatic Titrator	1	No	Yes
Turbidimeter	1	No	Yes
pH Meter	2	No	Yes
Specific Ion Meter	1	No	Yes
Conductivity Meter	1	No	Yes
Analytical Balances	4	Yes	-
Top Loading Balances	4	Yes	-
Microscope	3	No	Yes
Centrifuge	2	No	Yes
Recording Thermograph	2	No	Yes
Bacti Incubator, 35°C	1	No	Yes
Bacti Waterbath, 44.5°C	1	No	Yes
Autoclave	1	No	Yes
Certified Thermometer	4	No	Yes
Dry Heat Sterilizer, 180°C	1	No	Yes
Quebec Colony Counter	1	No	Yes
Glass Drying Oven	4	No	Yes
Muffle Furnace	1	No	Yes
Microwave Digester	1	No	Yes
Vacuum Evaporator	1	No	Yes
Sample Refrigerators	8	No	Yes
Freezers	8	No	Yes
Water Baths	6	No	Yes
Deionized Water System	2	No	Yes
Ultrasonic Cleaner	2	No	Yes
Turbo Vap Concentrator	4	No	Yes
Instrument Computer Data Stations	17	No	Yes
PC LIMS Terminals	12	Yes	-

Table 4-1

Jeremy Davis
Orange County Water District
P.O. Box 8300
Fountain Valley, CA 92728

WP-147



Final Report

WatR™ Pollution Proficiency Testing

WatR™ Pollution Study

Open Date: 04/16/07

Close Date: 05/31/07

Report Issued Date: 06/21/07

Study: **WP-147**
ERA Laboratory Code: **O127601**
Laboratory Name: **Orange County Water
District**

Inorganic Results



WP-147 Final Complete Report

Jeremy Davis
Supervising Chemist
Orange County Water District
P.O. Box 8300
Fountain Valley, CA 92728
(714) 378-3244

EPA ID: CA00043
ERA Laboratory Code: O127601
Report Issued: 06/21/07
Study Dates: 04/16/07 - 05/31/07

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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pH

0019	pH	S.U.	5.97	5.92	5.72 - 6.12	Acceptable	SM 4500 H+ B
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pH

0019	pH	S.U.	5.97	5.92	5.72 - 6.12	Acceptable	SM 4500 H+ B
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Hardness

0072	Non-Filterable Residue (TSS)	mg/L	28.0	30.4	21.5 - 36.4	Acceptable	SM 2540 D
0023	Calcium	mg/L	35.8	36.5	32.5 - 41.5	Acceptable	EPA 200.7
0024	Magnesium	mg/L	25.9	26.3	22.5 - 30.2	Acceptable	EPA 200.7
1550	Calcium Hardness as CaCO3	mg/L	89.4	91.1	81.0 - 104	Acceptable	SM 2340 B
0022	Total Hardness as CaCO3	mg/L	196	199	174 - 228	Acceptable	SM 2340 B

Demand

0038	BOD	mg/L		142	72.0 - 212	Not Reported	
0102	CBOD	mg/L		122	54.9 - 190	Not Reported	
0036	COD	mg/L	220	230	180 - 259	Acceptable	SM 5220 D
0037	TOC	mg/L	96.4	91.0	76.1 - 104	Acceptable	SM 5310 C

Simple Nutrients

0031	Ammonia as N	mg/L	4.26	4.46	3.22 - 5.74	Acceptable	SM 4500 NH3-H
1820	Nitrate + Nitrite as N	mg/L	4.61	4.67	3.80 - 5.44	Acceptable	SM 4500 NO3- F
0032	Nitrate as N	mg/L	4.61	4.67	3.64 - 5.65	Acceptable	SM 4500 NO3- F
0033	ortho-Phosphate as P	mg/L	1.74	1.74	1.39 - 2.11	Acceptable	EPA 365.1

Simple Nutrients

0031	Ammonia as N	mg/L		4.46	3.22 - 5.74	Not Reported	
1820	Nitrate + Nitrite as N	mg/L	4.31	4.67	3.80 - 5.44	Acceptable	EPA 300.0
0032	Nitrate as N	mg/L	4.31	4.67	3.64 - 5.65	Acceptable	EPA 300.0
0033	ortho-Phosphate as P	mg/L	1.70	1.74	1.39 - 2.11	Acceptable	EPA 300.0

Complex Nutrients

0034	Total Kjeldahl Nitrogen	mg/L	17.5	15.6	10.3 - 20.1	Acceptable	EPA 351.2
0035	Total phosphorus as P	mg/L		2.72	2.20 - 3.29	Not Reported	

Total Cyanide

0071	Cyanide, total	mg/L	0.243	0.223	0.0948 - 0.358	Acceptable	EPA 335.3
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Total Residual Chlorine

0098	Total Residual Chlorine	mg/L	0.785	0.837	0.605 - 1.05	Acceptable	SM 4500 Cl D
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Total Residual Chlorine

0098	Total Residual Chlorine	mg/L	0.795	0.837	0.605 - 1.05	Acceptable	SM 4500 Cl F
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WP-147 Final Complete Report

Jeremy Davis
Supervising Chemist
Orange County Water District
P.O. Box 8300
Fountain Valley, CA 92728
(714) 378-3244

EPA ID: CA00043
ERA Laboratory Code: O127601
Report Issued: 06/21/07
Study Dates: 04/16/07 - 05/31/07

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Trace Metals							
0001	Aluminum	µg/L		454	348 - 561	Not Reported	
0016	Antimony	µg/L		295	201 - 358	Not Reported	
0002	Arsenic	µg/L		314	261 - 369	Not Reported	
1015	Barium	µg/L		310	268 - 349	Not Reported	
0003	Beryllium	µg/L		502	427 - 567	Not Reported	
1025	Boron	µg/L	1670	1700	1380 - 1980	Acceptable	EPA 200.7
0004	Cadmium	µg/L		164	139 - 187	Not Reported	
0006	Chromium	µg/L	88.3	85.9	72.6 - 99.0	Acceptable	EPA 200.7
0005	Cobalt	µg/L		323	283 - 362	Not Reported	
0007	Copper	µg/L		524	472 - 576	Not Reported	
0008	Iron	µg/L	438	390	342 - 445	Acceptable	EPA 200.7
0012	Lead	µg/L		284	244 - 323	Not Reported	
0010	Manganese	µg/L		326	291 - 362	Not Reported	
0074	Molybdenum	µg/L		365	308 - 418	Not Reported	
0011	Nickel	µg/L		480	430 - 538	Not Reported	
0013	Selenium	µg/L		719	570 - 833	Not Reported	
0017	Silver	µg/L		389	334 - 446	Not Reported	
0075	Strontium	µg/L		104	88.4 - 120	Not Reported	
0018	Thallium	µg/L		130	82.0 - 172	Not Reported	
0014	Vanadium	µg/L	1250	1250	1100 - 1400	Acceptable	EPA 200.7
0015	Zinc	µg/L		476	408 - 550	Not Reported	



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Trace Metals

0001	Aluminum	µg/L	462	454	348 - 561	Acceptable	EPA 200.8
0016	Antimony	µg/L	297	295	201 - 358	Acceptable	EPA 200.8
0002	Arsenic	µg/L	310	314	261 - 369	Acceptable	EPA 200.8
1015	Barium	µg/L	303	310	268 - 349	Acceptable	EPA 200.8
0003	Beryllium	µg/L	522	502	427 - 567	Acceptable	EPA 200.8
1025	Boron	µg/L		1700	1380 - 1980	Not Reported	
0004	Cadmium	µg/L	159	164	139 - 187	Acceptable	EPA 200.8
0006	Chromium	µg/L	84.0	85.9	72.6 - 99.0	Acceptable	EPA 200.8
0005	Cobalt	µg/L	320	323	283 - 362	Acceptable	EPA 200.8
0007	Copper	µg/L	537	524	472 - 576	Acceptable	EPA 200.8
0008	Iron	µg/L	400	390	342 - 445	Acceptable	EPA 200.8
0012	Lead	µg/L	289	284	244 - 323	Acceptable	EPA 200.8
0010	Manganese	µg/L	336	326	291 - 362	Acceptable	EPA 200.8
0074	Molybdenum	µg/L	345	365	308 - 418	Acceptable	EPA 200.8
0011	Nickel	µg/L	485	480	430 - 538	Acceptable	EPA 200.8
0013	Selenium	µg/L	721	719	570 - 833	Acceptable	EPA 200.8
0017	Silver	µg/L	393	389	334 - 446	Acceptable	EPA 200.8
0075	Strontium	µg/L		104	88.4 - 120	Not Reported	
0018	Thallium	µg/L	130	130	82.0 - 172	Acceptable	EPA 200.8
0014	Vanadium	µg/L	1260	1250	1100 - 1400	Acceptable	EPA 200.8
0015	Zinc	µg/L	498	476	408 - 550	Acceptable	EPA 200.8

Mercury

0009	Mercury	µg/L	8.74	9.16	5.64 - 12.4	Acceptable	EPA 200.8
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Minerals

0027	Alkalinity as CaCO ₃	mg/L	91.8	96.2	85.2 - 106	Acceptable	SM 2320 B
0028	Chloride	mg/L	66.9	66.7	56.9 - 76.8	Acceptable	EPA 300.0
0020	Conductivity at 25°C	µmhos/cm	460	462	415 - 510	Acceptable	SM 2510 B
0029	Fluoride	mg/L	2.00	2.30	1.89 - 2.72	Acceptable	EPA 300.0
0026	Potassium	mg/L	23.4	24.9	20.5 - 29.7	Acceptable	EPA 200.7
0025	Sodium	mg/L	85.9	86.2	73.2 - 98.8	Acceptable	EPA 200.7
0030	Sulfate	mg/L	23.6	24.8	19.6 - 29.4	Acceptable	EPA 300.0
0021	Total Dissolved Solids at 180°C	mg/L	368	357	271 - 444	Acceptable	SM 2540 C
1950	Total Solids at 105°C	mg/L	384	382	338 - 420	Acceptable	SM 2540 B



WP-147 Final Complete Report

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Report Issued: 06/21/07
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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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Minerals

0027	Alkalinity as CaCO ₃	mg/L		96.2	85.2 - 106	Not Reported	
0028	Chloride	mg/L		66.7	56.9 - 76.8	Not Reported	
0020	Conductivity at 25°C	µmhos/cm		462	415 - 510	Not Reported	
0029	Fluoride	mg/L	2.15	2.30	1.89 - 2.72	Acceptable	SM 4500 F- C
0026	Potassium	mg/L		24.9	20.5 - 29.7	Not Reported	
0025	Sodium	mg/L		86.2	73.2 - 98.8	Not Reported	
0030	Sulfate	mg/L		24.8	19.6 - 29.4	Not Reported	
0021	Total Dissolved Solids at 180°C	mg/L		357	271 - 444	Not Reported	
1950	Total Solids at 105°C	mg/L		382	338 - 420	Not Reported	

Hexavalent Chromium

1045	Hexavalent Chromium	µg/L	421	527	429 - 620	Not Acceptable	EPA 218.6
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Nitrite

1840	Nitrite as N	mg/L	2.50	2.48	2.09 - 2.86	Acceptable	4500 NO ₃ -F
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Nitrite

1840	Nitrite as N	mg/L	2.50	2.48	2.09 - 2.86	Acceptable	EPA 300.0
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Turbidity

2055	Turbidity	NTU	13.4	12.6	10.7 - 14.1	Acceptable	SM 2130 B
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Settleable Solids

1965	Settleable Solids	mL/L	35.0	30.0	23.7 - 38.5	Acceptable	SM 2540 F
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Sulfide

2005	Sulfide	mg/L	4.75	4.89	1.98 - 7.21	Acceptable	SM 4500 S ₂ - D
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Volatile Solids

1970	Volatile Solids	mg/L	210	212	162 - 247	Acceptable	SM 2540 E
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Surfactants - MBAS

2025	Surfactants (MBAS)	mg/L	0.781	0.690	0.424 - 1.00	Acceptable	SM 5540 C
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Bromide

1540	Bromide	mg/L	6.97	6.87	5.84 - 7.90	Acceptable	EPA 300.1
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Bromide

1540	Bromide	mg/L	7.05	6.87	5.84 - 7.90	Acceptable	EPA 300.0
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Silica

1990	Silica as SiO ₂	mg/L	139	144	108 - 180	Acceptable	SM 4500 SiO C
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Color

1605	Color	PC units	30.0	30.0	20.0 - 40.0	Acceptable	SM 2120 B
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Study: **WP-147**

ERA Laboratory Code: **O127601**

Laboratory Name: **Orange County Water
District**

Microbiology Results

WP-147 Final Complete Report

Jeremy Davis
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EPA ID: CA00043
ERA Laboratory Code: O127601
Report Issued: 06/21/07
Study Dates: 04/16/07 - 05/31/07

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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WP Coliform MicrobE™

2500	Total Coliforms (MF)	CFU/100mL	180	63.0	12.0 - 342	Acceptable	SM9222B
2530	Fecal Coliforms - E.coli (MF)	CFU/100mL	164	46.0	8.00 - 254	Acceptable	SM9222D
2500	Total Coliforms (MPN)	MPN/100mL	520	70.8	7.62 - 659	Acceptable	SM9223 COLertQT
2530	Fecal Coliforms - E.coli (MPN)	MPN/100mL	520	68.6	8.42 - 560	Acceptable	SM9223 COLertQT

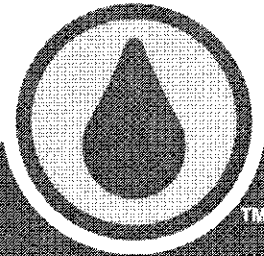
WP Coliform MicrobE™

2500	Total Coliforms (MF)	CFU/100mL		63.0	12.0 - 342	Not Reported	
2530	Fecal Coliforms - E.coli (MF)	CFU/100mL		46.0	8.00 - 254	Not Reported	
2500	Total Coliforms (MPN)	MPN/100mL	549	70.8	7.62 - 659	Acceptable	SM9221B LTB
2530	Fecal Coliforms - E.coli (MPN)	MPN/100mL	549	68.6	8.42 - 560	Acceptable	SM9221E LTB EC



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WS-129



Final Report

WatR™ Supply Proficiency Testing

WatR™ Supply Study

Open Date: 04/09/07

Close Date: 05/24/07

Report Issued Date: 06/14/07

Study: **WS-129**
ERA Laboratory Code: **O127601**
Laboratory Name: **Orange County Water
District**

Inorganic Results



WS-129 Final Complete Report

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EPA ID: CA00043
ERA Laboratory Code: O127601
Report Issued: 06/14/07
Study Dates: 04/09/07 - 05/24/07

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Metals							
1000	Aluminum	µg/L		1280	1100 - 1420	Not Reported	
0140	Antimony	µg/L		32.5	22.8 - 42.2	Not Reported	
0001	Arsenic	µg/L		17.3	12.1 - 22.5	Not Reported	
0002	Barium	µg/L		1570	1330 - 1800	Not Reported	
0141	Beryllium	µg/L		5.22	4.44 - 6.00	Not Reported	
0226	Boron	µg/L	1770	1780	1550 - 1970	Acceptable	EPA 200.7
0003	Cadmium	µg/L		43.7	35.0 - 52.4	Not Reported	
0004	Chromium	µg/L	46.4	44.5	37.8 - 51.2	Acceptable	EPA 200.7
0091	Copper	µg/L		835	752 - 918	Not Reported	
1070	Iron	µg/L	372	344	295 - 387	Acceptable	EPA 200.7
0005	Lead	µg/L		71.1	49.8 - 92.4	Not Reported	
0236	Manganese	µg/L		422	380 - 464	Not Reported	
0237	Molybdenum	µg/L		77.3	66.9 - 85.8	Not Reported	
0142	Nickel	µg/L		345	293 - 397	Not Reported	
0007	Selenium	µg/L		56.0	44.8 - 67.2	Not Reported	
1150	Silver	µg/L		258	228 - 285	Not Reported	
0143	Thallium	µg/L		8.43	5.90 - 11.0	Not Reported	
1185	Vanadium	µg/L	988	953	858 - 1050	Acceptable	EPA 200.7
0239	Zinc	µg/L		1760	1580 - 1940	Not Reported	

Metals							
1000	Aluminum	µg/L	1280	1280	1100 - 1420	Acceptable	EPA 200.8
0140	Antimony	µg/L	34.3	32.5	22.8 - 42.2	Acceptable	EPA 200.8
0001	Arsenic	µg/L	17.4	17.3	12.1 - 22.5	Acceptable	EPA 200.8
0002	Barium	µg/L	1520	1570	1330 - 1800	Acceptable	EPA 200.8
0141	Beryllium	µg/L	5.62	5.22	4.44 - 6.00	Acceptable	EPA 200.8
0226	Boron	µg/L		1780	1550 - 1970	Not Reported	
0003	Cadmium	µg/L	43.0	43.7	35.0 - 52.4	Acceptable	EPA 200.8
0004	Chromium	µg/L	44.8	44.5	37.8 - 51.2	Acceptable	EPA 200.8
0091	Copper	µg/L	858	835	752 - 918	Acceptable	EPA 200.8
1070	Iron	µg/L	344	344	295 - 387	Acceptable	EPA 200.8
0005	Lead	µg/L	72.0	71.1	49.8 - 92.4	Acceptable	EPA 200.8
0236	Manganese	µg/L	412	422	380 - 464	Acceptable	EPA 200.8
0237	Molybdenum	µg/L	76.3	77.3	66.9 - 85.8	Acceptable	EPA 200.8
0142	Nickel	µg/L	355	345	293 - 397	Acceptable	EPA 200.8
0007	Selenium	µg/L	57.3	56.0	44.8 - 67.2	Acceptable	EPA 200.8
1150	Silver	µg/L	258	258	228 - 285	Acceptable	EPA 200.8
0143	Thallium	µg/L	8.48	8.43	5.90 - 11.0	Acceptable	EPA 200.8
1185	Vanadium	µg/L	960	953	858 - 1050	Acceptable	EPA 200.8
0239	Zinc	µg/L	1740	1760	1580 - 1940	Acceptable	EPA 200.8



All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01



WS-129 Final Complete Report

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EPA ID: CA00043
ERA Laboratory Code: O127601
Report Issued: 06/14/07
Study Dates: 04/09/07 - 05/24/07

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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Mercury

0006	Mercury	µg/L	7.10	7.79	5.45 - 10.1	Acceptable	EPA 200.8
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pH

0026	pH	S.U.	6.41	6.37	6.17 - 6.57	Acceptable	SM 4500 H+ B
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pH

0026	pH	S.U.	6.42	6.37	6.17 - 6.57	Acceptable	SM 4500 H+ B
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Inorganics

0027	Alkalinity as CaCO3	mg/L	111	115	103 - 126	Acceptable	SM 2320 B
1575	Chloride	mg/L	7.84	7.35	5.71 - 9.15	Acceptable	EPA 300.0
1610	Conductivity at 25°C	µmhos/cm	300	296	266 - 326	Acceptable	SM 2510 B
0010	Fluoride	mg/L	1.90	1.68	1.51 - 1.85	Not Acceptable	SM 4500 F- C
1820	Nitrate + Nitrite as N	mg/L	3.81	3.99	3.53 - 4.39	Acceptable	EPA 300.0
0009	Nitrate as N	mg/L	3.81	3.99	3.59 - 4.39	Acceptable	EPA 300.0
1125	Potassium	mg/L	14.7	14.6	12.6 - 17.3	Acceptable	EPA 200.7
0145	Sulfate	mg/L	16.9	17.5	14.2 - 20.2	Acceptable	EPA 300.0
0024	Total Dissolved Solids at 180°C	mg/L	310	302	197 - 407	Acceptable	SM 2540 C

Inorganics

0027	Alkalinity as CaCO3	mg/L		115	103 - 126	Not Reported	
1575	Chloride	mg/L		7.35	5.71 - 9.15	Not Reported	
1610	Conductivity at 25°C	µmhos/cm		296	266 - 326	Not Reported	
0010	Fluoride	mg/L	1.61	1.68	1.51 - 1.85	Acceptable	EPA 300.0
1820	Nitrate + Nitrite as N	mg/L	3.83	3.99	3.53 - 4.39	Acceptable	SM 4500 NO3- F
0009	Nitrate as N	mg/L	3.83	3.99	3.59 - 4.39	Acceptable	SM 4500 NO3- F
1125	Potassium	mg/L		14.6	12.6 - 17.3	Not Reported	
0145	Sulfate	mg/L		17.5	14.2 - 20.2	Not Reported	
0024	Total Dissolved Solids at 180°C	mg/L		302	197 - 407	Not Reported	

Turbidity

0023	Turbidity	NTU	4.12	3.96	3.46 - 4.75	Acceptable	SM 2130 B
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Residual Chlorine

0022	Free Residual Chlorine	mg/L	1.64	1.70	1.38 - 2.01	Acceptable	SM 4500 Cl D
1940	Total Residual Chlorine	mg/L	1.66	1.70	1.43 - 1.95	Acceptable	SM 4500 Cl D

Residual Chlorine

0022	Free Residual Chlorine	mg/L	1.69	1.70	1.38 - 2.01	Acceptable	SM 4500 Cl F
1940	Total Residual Chlorine	mg/L	1.75	1.70	1.43 - 1.95	Acceptable	SM 4500 Cl F

Nitrite

0092	Nitrite as N	mg/L	1.23	1.22	1.04 - 1.40	Acceptable	SM 4500 NO3- F
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Nitrite

0092	Nitrite as N	mg/L	1.18	1.22	1.04 - 1.40	Acceptable	EPA 300.0
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WS-129 Final Complete Report

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(714) 378-3244

EPA ID: CA00043
ERA Laboratory Code: O127601
Report Issued: 06/14/07
Study Dates: 04/09/07 - 05/24/07

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
o-Phosphate Nutrients							
0261	ortho-Phosphate as P	mg/L	1.45	1.46	1.26 - 1.68	Acceptable	EPA 365.1
o-Phosphate Nutrients							
0261	ortho-Phosphate as P	mg/L	1.40	1.46	1.26 - 1.68	Acceptable	EPA 300.0
Cyanide							
0146	Cyanide	mg/L	0.172	0.186	0.140 - 0.232	Acceptable	EPA 335.3
Organic Carbon							
1710	Dissolved Organic Carbon (DOC)	mg/L	1.59	3.12	2.58 - 3.69	Not Acceptable	SM 5310 C
0263	Total Organic Carbon (TOC)	mg/L	1.58	3.12	2.58 - 3.69	Not Acceptable	SM 5310 C
Chlorite							
0195	Chlorite	µg/L	357	395	276 - 514	Acceptable	EPA 300.1
Bromide, Bromate & Chlorate							
0193	Bromate	µg/L	37.3	32.6	22.8 - 42.4	Acceptable	EPA 300.1
0260	Bromide	µg/L	473	459	356 - 567	Acceptable	EPA 300.1
0194	Chlorate	µg/L	71.3	69.7	55.3 - 86.8	Acceptable	EPA 300.1
Bromide, Bromate & Chlorate							
0193	Bromate	µg/L		32.6	22.8 - 42.4	Not Reported	
0260	Bromide	µg/L	423	459	356 - 567	Acceptable	EPA 300.0
0194	Chlorate	µg/L		69.7	55.3 - 86.8	Not Reported	
Hardness							
1035	Calcium	mg/L	44.2	44.7	39.8 - 49.9	Acceptable	EPA 200.7
1085	Magnesium	mg/L	15.0	15.7	14.1 - 17.5	Acceptable	EPA 200.7
0029	Sodium	mg/L	13.5	13.7	12.0 - 15.1	Acceptable	EPA 200.7
0025	Calcium Hardness as CaCO ₃	mg/L	110	112	99.8 - 125	Acceptable	SM 2340 B
1755	Total Hardness as CaCO ₃	mg/L	172	176	158 - 197	Acceptable	SM 2340 B
Corrosivity							
1620	Corrosivity	S.I. @ 20°C	2.06	2.11	1.71 - 2.51	Acceptable	SM 2330 B
Surfactants - MBAS							
2025	Surfactants - MBAS	mg/L	0.650	0.586	0.462 - 0.689	Acceptable	SM 5540 C
Silica							
1990	Silica as SiO ₂	mg/L	31.3	31.7	26.9 - 36.4	Acceptable	SM 4500 SiO ₂ C
Perchlorate							
1895	Perchlorate	µg/L	9.30	8.77	7.24 - 9.65	Acceptable	EPA 314
UV 254 Absorbance							
2060	UV 254 Absorbance	cm-1	0.574	0.471	0.401 - 0.625	Acceptable	SM 5910 B
Hexavalent Chromium							
1045	Hexavalent Chromium	µg/L	30.7	33.9	30.4 - 37.3	Acceptable	EPA 218.6



WS-129 Final Complete Report

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EPA ID: CA00043
ERA Laboratory Code: O127601
Report Issued: 06/14/07
Study Dates: 04/09/07 - 05/24/07

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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Vanadium

1185	Vanadium	µg/L	13.1	13.2	10.8 - 15.3	Acceptable	EPA 200.7
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Vanadium

1185	Vanadium	µg/L	12.3	13.2	10.8 - 15.3	Acceptable	EPA 200.8
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Study: **WS-129**

ERA Laboratory Code: **O127601**

Laboratory Name: **Orange County Water
District**

Microbiology Results



WS-129 Final Complete Report

Jeremy Davis
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EPA ID: CA00043
ERA Laboratory Code: O127601
Report Issued: 06/14/07
Study Dates: 04/09/07 - 05/24/07

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Heterotrophic Plate Count							
2555	Heterotrophic Plate Count	CFU/mL	69.0	63.0	47.0 - 85.0	Acceptable	SM 9215 B SPC
2555	Heterotrophic Plate Count (MPN)	MPN/mL		55.9	24.0 - 130	Not Reported	



WS-129 Final Complete Report

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EPA ID: CA00043
ERA Laboratory Code: O127601
Report Issued: 06/14/07
Study Dates: 04/09/07 - 05/24/07

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
MicrobE™ (Coliforms)							
0254	Total Coliforms - Sample 1	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221B LTB
0254	Total Coliforms - Sample 2	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B LTB
0254	Total Coliforms - Sample 3	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B LTB
0254	Total Coliforms - Sample 4	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B LTB
0254	Total Coliforms - Sample 5	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221B LTB
0254	Total Coliforms - Sample 6	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B LTB
0254	Total Coliforms - Sample 7	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B LTB
0254	Total Coliforms - Sample 8	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221B LTB
0254	Total Coliforms - Sample 9	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221B LTB
0254	Total Coliforms - Sample 10	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B LTB
0255	Fecal/E.coli Coliforms - Sample 1	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	Fecal/E.coli Coliforms - Sample 2	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221E LTB EC
0255	Fecal/E.coli Coliforms - Sample 3	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221E LTB EC
0255	Fecal/E.coli Coliforms - Sample 4	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	Fecal/E.coli Coliforms - Sample 5	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	Fecal/E.coli Coliforms - Sample 6	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	Fecal/E.coli Coliforms - Sample 7	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221E LTB EC
0255	Fecal/E.coli Coliforms - Sample 8	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	Fecal/E.coli Coliforms - Sample 9	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0255	Fecal/E.coli Coliforms - Sample 10	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC

Total Coliforms Evaluation : Acceptable

Fecal/E.coli Coliforms Evaluation : Acceptable

Definitions:

Assigned Value: 'Presence' indicates organisms of the coliform group are present in the sample.
'Absence' indicates organisms of the coliform group are not present in the sample as defined by standard water testing methods.

Fecal Coliform Organism - Escherichia coli, Samples 2, 3 and 7
Total Coliform Organism - Enterobacter cloacae, Samples 4, 6 and 10
Negative (1) Coliform Organism - Proteus mirabilis, Sample 1
Negative (2) Coliform Organism - Pseudomonas aeruginosa, Sample 5
Blank - No Organism, Samples 8 and 9



WS-129 Final Complete Report

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EPA ID: CA00043
ERA Laboratory Code: O127601
Report Issued: 06/14/07
Study Dates: 04/09/07 - 05/24/07

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
MicrobE™ (Coliforms)							
0254	Total Coliforms - Sample 1	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 2	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 3	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 4	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 5	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 6	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 7	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 8	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 9	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Total Coliforms - Sample 10	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	Fecal/E.coli Coliforms - Sample 1	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	Fecal/E.coli Coliforms - Sample 2	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	Fecal/E.coli Coliforms - Sample 3	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	Fecal/E.coli Coliforms - Sample 4	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	Fecal/E.coli Coliforms - Sample 5	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	Fecal/E.coli Coliforms - Sample 6	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	Fecal/E.coli Coliforms - Sample 7	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	Fecal/E.coli Coliforms - Sample 8	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	Fecal/E.coli Coliforms - Sample 9	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	Fecal/E.coli Coliforms - Sample 10	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT

Total Coliforms Evaluation : Acceptable

Fecal/E.coli Coliforms Evaluation : Acceptable

Definitions:

Assigned Value: 'Presence' indicates organisms of the coliform group are present in the sample.
'Absence' indicates organisms of the coliform group are not present in the sample as defined by standard water testing methods.

Fecal Coliform Organism - Escherichia coli, Samples 2, 3 and 7
Total Coliform Organism - Enterobacter cloacae, Samples 4, 6 and 10
Negative (1) Coliform Organism - Proteus mirabilis, Sample 1
Negative (2) Coliform Organism - Pseudomonas aeruginosa, Sample 5
Blank - No Organism, Samples 8 and 9



WS-129 Final Complete Report

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EPA ID: CA00043
ERA Laboratory Code: O127601
Report Issued: 06/14/07
Study Dates: 04/09/07 - 05/24/07

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
MicrobE™ (Coliforms)							
0254	Total Coliforms - Sample 1	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222B
0254	Total Coliforms - Sample 2	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B
0254	Total Coliforms - Sample 3	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B
0254	Total Coliforms - Sample 4	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B
0254	Total Coliforms - Sample 5	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222B
0254	Total Coliforms - Sample 6	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B
0254	Total Coliforms - Sample 7	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B
0254	Total Coliforms - Sample 8	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222B
0254	Total Coliforms - Sample 9	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222B
0254	Total Coliforms - Sample 10	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B
0255	Fecal/E.coli Coliforms - Sample 1	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D
0255	Fecal/E.coli Coliforms - Sample 2	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222D
0255	Fecal/E.coli Coliforms - Sample 3	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222D
0255	Fecal/E.coli Coliforms - Sample 4	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D
0255	Fecal/E.coli Coliforms - Sample 5	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D
0255	Fecal/E.coli Coliforms - Sample 6	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D
0255	Fecal/E.coli Coliforms - Sample 7	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222D
0255	Fecal/E.coli Coliforms - Sample 8	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D
0255	Fecal/E.coli Coliforms - Sample 9	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D
0255	Fecal/E.coli Coliforms - Sample 10	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D

Total Coliforms Evaluation : Acceptable

Fecal/E.coli Coliforms Evaluation : Acceptable


Definitions:

Assigned Value: 'Presence' indicates organisms of the coliform group are present in the sample.
'Absence' indicates organisms of the coliform group are not present in the sample as defined by standard water testing methods.

Fecal Coliform Organism - Escherichia coli, Samples 2, 3 and 7
Total Coliform Organism - Enterobacter cloacae, Samples 4, 6 and 10
Negative (1) Coliform Organism - Proteus mirabilis, Sample 1
Negative (2) Coliform Organism - Pseudomonas aeruginosa, Sample 5
Blank - No Organism, Samples 8 and 9



PERFORMANCE EVALUATION

First Choice for Quality | 

Quarterly Study

VS06-2
WSCHEM

12-Apr-2006 through 26-May-2006

RT1143
RTC Labcode

CA00043
US EPA Labcode

Orange Co Water District
Lee J. Yoo
10500 Ellis Ave, PO Box 8300
Fountain Valley CA 92728

Thank you for participating in study WS06-2. Additional information about this study may be found online at www.rt-corp.com. If you have any questions or comments about this study please contact me.

Sincerely,



Christopher Rucinski
Quality Director

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Laramie, WY 82070
(307) 742-5452
www.rt-corp.com

NVLAP[®]
Labcode: 200393-01
This report may contain data that
are not covered by the NVLAP
accreditation.


ACCREDITED
Certificate # 2122.01

Dataset

Dataset 1

Accreditors

Evaluations of this dataset will be sent to the accreditor(s) listed below using your laboratory's labcode listed above each accrediting agency. If any of the information listed below is incorrect, please contact RTC immediately.

Accrediting Labcode 1114

California Dept. of Health Services
Environmental Lab Accred. Program Branch
104 Fred Choske
850 Marina Bay Parkway
Bldg. P, 1st Floor, MS 7103
Richmond CA 94804
UNITED STATES

Base/Neutrals

Base/Neutrals

Analysis

EPA 550.1

High Performance Liquid Chromatography - Ultraviolet/visible Molecular Fluorescence

Method Number 10094005
Technology Code HPLC-FLUOR

	Result Units	Accept / Warn	Z	Rank	Evaluation
Naphthalene 1, 4, 5 5005 / PEO-006-2 - Lot 010934	17.5 µg/L	13.9 to 32.3	-1.21	2 / 3	ACCEPTABLE
Acenaphthene 1, 4, 5 5500 / PEO-006-2 - Lot 010934	12.5 µg/L	4.41 to 13.2	1.68	3 / 3	ACCEPTABLE
Anthracene 1, 4, 5 5555 / PEO-006-2 - Lot 010934	3.80 µg/L	2.66 to 7.99	-1.15	3 / 4	ACCEPTABLE
Benzo(a)anthracene 1, 4, 5 5575 / PEO-006-2 - Lot 010934	4.15 µg/L	2.28 to 6.83	-0.35	2 / 4	ACCEPTABLE
Benzo(a)pyrene 1, 3, 4 5580 / PEO-006-1 - Lot 010912	0.730 µg/L	0.439 to 0.961	0.23	1 / 6	ACCEPTABLE
Benzo(b)fluoranthene 1, 4, 5 5585 / PEO-006-2 - Lot 010934	1.65 µg/L	1.05 to 3.15	-0.86	3 / 4	ACCEPTABLE
Benzo(g,h,i)perylene 1, 4, 5 5590 / PEO-006-2 - Lot 010934	1.37 µg/L	0.850 to 2.55	-0.78	1 / 4	ACCEPTABLE
Benzo(k)fluoranthene 1, 4, 5 5600 / PEO-006-2 - Lot 010934	7.60 µg/L	4.66 to 14.0	-0.73	2 / 4	ACCEPTABLE
Chrysene 1, 4, 5 5855 / PEO-006-2 - Lot 010934	4.60 µg/L	2.73 to 8.19	-0.63	3 / 4	ACCEPTABLE
Dibenz(a,h) anthracene 1, 4, 5 5895 / PEO-006-2 - Lot 010934	4.10 µg/L	2.51 to 7.53	-0.73	3 / 4	ACCEPTABLE
Fluoranthene 1, 4, 5 6265 / PEO-006-2 - Lot 010934	0.970 µg/L	0.595 to 1.79	-0.74	3 / 3	ACCEPTABLE
Fluorene 1, 4, 5 6270 / PEO-006-2 - Lot 010934	3.32 µg/L	2.19 to 6.59	-0.97	2 / 4	ACCEPTABLE
Indeno(1,2,3-cd) pyrene 1, 4, 5 6315 / PEO-006-2 - Lot 010934	3.50 µg/L	2.15 to 6.45	-0.74	2 / 4	ACCEPTABLE
Phenanthrene 1, 4, 5 6615 / PEO-006-2 - Lot 010934	6.95 µg/L	4.70 to 14.1	-1.04	4 / 4	ACCEPTABLE
Pyrene 1, 4, 5 6665 / PEO-006-2 - Lot 010934	5.85 µg/L	3.68 to 11.0	-0.82	4 / 4	ACCEPTABLE

Group Analysis Summary

Acceptable 15 / 15
Score 100.0% - (Acceptable)

Analysis

EPA 506

Gas Chromatography - Photoionization Detection

Method Number 10083804
Technology Code GC-PID

	Result Units	Accept / Warn	Z	Rank	Evaluation
Butyl benzyl phthalate 1, 4 5670 / PEO-006-2 - Lot 010934	26.4 µg/L	16.2 to 64.6	-1.16	4 / 4	ACCEPTABLE
Di-n-butyl phthalate 1, 4, 5 5925 / PEO-006-2 - Lot 010934	27.3 µg/L	18.1 to 72.3	-1.32	4 / 4	ACCEPTABLE
bis(2-ethylhexyl)adipate 1, 3, 4 6062 / PEO-006-1 - Lot 010912	18.3 µg/L	6.12 to 25.9	0.47	3 / 6	ACCEPTABLE

Base/Neutrals (continued)

Base/Neutrals

Analysis

EPA 506

Gas Chromatography - Photoionization Detection

(continued)

Method Number 10083804
Technology Code GC-PID

	Result Units	Accept / Warn	Z	Rank	Evaluation
bis(2-ethylhexyl)phthalate 1, 3, 4 6065 / PEO-006-1 - Lot 010912	11.7 µg/L	3.48 to 14.7	0.94	4 / 6	ACCEPTABLE
Diethyl phthalate 1, 4, 5 6070 / PEO-006-2 - Lot 010934	27.4 µg/L	17.8 to 71.2	-1.28	3 / 4	ACCEPTABLE
Dimethyl phthalate 1, 4, 5 6135 / PEO-006-2 - Lot 010934	30.4 µg/L	19.6 to 78.6	-1.27	2 / 4	ACCEPTABLE
Di-n-octyl phthalate 1, 4, 5 6200 / PEO-006-2 - Lot 010934	20.3 µg/L	15.4 to 61.8	-1.58	2 / 2	ACCEPTABLE

Analysis

EPA 550.1

High Performance Liquid Chromatography - Ultraviolet/visible Molecular Absorption

Method Number 10094005
Technology Code HPLC-UV

	Result Units	Accept / Warn	Z	Rank	Evaluation
Acenaphthylene 1, 4, 5 5505 / PEO-006-2 - Lot 010934	4.98 µg/L	4.14 to 12.4	-1.59	4 / 4	ACCEPTABLE

Carbamates

Analysis

EPA 531.1

High Performance Liquid Chromatography - Ultraviolet/visible Molecular Fluorescence

Method Number 10090809
Technology Code HPLC-FLUOR

	Result Units	Accept / Warn	Z	Rank	Evaluation
Aldicarb (Temik) 1, 3, 4 7010 / PEO-001 - Lot 010922	22.5 µg/L	17.7 to 29.7	-0.41	2 / 3	ACCEPTABLE
Aldicarb sulfone 1, 3, 4 7015 / PEO-001 - Lot 010922	25.3 µg/L	24.9 to 38.6	-1.87	2 / 3	ACCEPTABLE
Aldicarb sulfoxide 1, 3, 4 7020 / PEO-001 - Lot 010922	39.5 µg/L	32.0 to 53.6	-0.61	2 / 3	ACCEPTABLE
Carbaryl (Sevin) 1, 4 7195 / PEO-001 - Lot 010922	37.6 µg/L	31.3 to 47.6	-0.45	1 / 3	ACCEPTABLE
Carbofuran (Furaden) 1, 3, 4 7205 / PEO-001 - Lot 010922	135 µg/L	80.3 to 212	-0.33	1 / 3	ACCEPTABLE
3-Hydroxycarbofuran 1, 4 7710 / PEO-001 - Lot 010922	36.6 µg/L	32.3 to 46.5	-0.79	1 / 3	ACCEPTABLE
Methiocarb (Mesurol) 1, 4, 5 7800 / PEO-001 - Lot 010922	31.0 µg/L	30.8 to 45.7	-1.95	2 / 2	ACCEPTABLE
Methomyl (Lannate) 1, 3, 4 7805 / PEO-001 - Lot 010922	71.4 µg/L	60.1 to 88.5	-0.41	1 / 3	ACCEPTABLE
Oxamyl 1, 3, 4 7940 / PEO-001 - Lot 010922	32.8 µg/L	31.5 to 49.7	-1.72	3 / 3	ACCEPTABLE
Propoxur (Baygon) 1, 4, 5 8080 / PEO-001 - Lot 010922	102 µg/L	88.7 to 128	-0.64	2 / 2	ACCEPTABLE

Group Analysis Summary

Acceptable 10 / 10

Score 100.0% - (Acceptable)

Herbicides

Herbicides

Analysis

EPA 515.4

Gas Chromatography - Electron Capture Detection

Method Number 10088503
Technology Code GC-ECD

	Result Units	Accept / Warn	Z	Rank	Evaluation
Pentachlorophenol 1, 3, 4 8605 / PEO-005-4 - Lot 010930	25.2 µg/L	17.3 to 51.9	-1.09	5 / 7	ACCEPTABLE
Acifluorfen 1, 3, 4 8505 / PEO-005-4 - Lot 010930	44.2 µg/L	18.0 to 51.3	1.20	3 / 3	ACCEPTABLE
Bentazon 1, 4, 5 8530 / PEO-005-4 - Lot 010930	87.2 µg/L	34.2 to 120	0.46	2 / 3	ACCEPTABLE
2,4-D 1, 3, 4 8545 / PEO-005-4 - Lot 010930	41.1 µg/L	23.9 to 71.7	-0.56	3 / 5	ACCEPTABLE

Herbicides (continued)

Herbicides

Analysis

EPA 515.4

Gas Chromatography - Electron Capture Detection

(continued)

Method Number 10088503
Technology Code GC-ECD

	Result Units	Accept / Warn	Z	Rank	Evaluation
Dacthal (DCPA) 1, 4, 5 8550 / PEO-005-4 - Lot 010930	22.0 µg/L	0.00 to 104	-1.06	2 / 3	ACCEPTABLE
Dalapon 1, 3, 4 8555 / PEO-005-4 - Lot 010930	89.4 µg/L	0.00 to 111	1.28	5 / 5	ACCEPTABLE
Dicamba 1, 3, 4 8595 / PEO-005-4 - Lot 010930	26.7 µg/L	8.81 to 44.9	-0.02	1 / 5	ACCEPTABLE
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP) 1, 3, 4 8620 / PEO-005-4 - Lot 010930	37.1 µg/L	7.53 to 51.0	0.72	3 / 5	ACCEPTABLE
Picloram 1, 3, 4 8645 / PEO-005-4 - Lot 010930	25.2 µg/L	3.99 to 25.8	1.89	5 / 5	ACCEPTABLE
Silvex (2,4,5-TP) 1, 3, 4 8650 / PEO-005-4 - Lot 010930	99.8 µg/L	57.5 to 173	-0.53	4 / 5	ACCEPTABLE

Group Analysis Summary

Acceptable 10 / 10

Score 100.0% - (Acceptable)

Analysis

EPA 548.1

Gas Chromatography - Mass Spectrometry

Method Number 10092601
Technology Code GC-MS

	Result Units	Accept / Warn	Z	Rank	Evaluation
Endothall 1, 3, 4 7525 / PEO-097 - Lot 010904	114 µg/L	41.2 to 144	0.84	2 / 3	ACCEPTABLE

Analysis

EPA 549.1

High Performance Liquid Chromatography - Ultraviolet/visible Molecular Absorption

Method Number 10093002
Technology Code HPLC-UV

	Result Units	Accept / Warn	Z	Rank	Evaluation
Diquat 1, 3, 4 9390 / PEO-097 - Lot 010904	12.4 µg/L	3.13 to 35.1	-0.84	1 / 2	ACCEPTABLE
Paraquat 1, 4, 5 9528 / PEO-097 - Lot 010904	16.9 µg/L	13.4 to 40.2	-1.48	1 / 1	ACCEPTABLE

Analysis

EPA 547

High Performance Liquid Chromatography - Ultraviolet/visible Molecular Fluorescence

Method Number 10091802
Technology Code HPLC-FLUOR

	Result Units	Accept / Warn	Z	Rank	Evaluation
Glyphosate 1, 3, 4 9411 / PEO-097 - Lot 010904	800 µg/L	642 to 896	0.49	2 / 2	ACCEPTABLE

Organic Disinfection By-Products

Analysis

EPA 552.2

Gas Chromatography - Electron Capture Detection

Method Number 10095600
Technology Code GC-ECD

	Result Units	Accept / Warn	Z	Rank	Evaluation
Bromoacetic acid 1, 3, 4 9312 / PEO-098 - Lot 010932	43.0 µg/L	26.9 to 62.7	-0.20	1 / 9	ACCEPTABLE
Bromochloroacetic acid 1, 3, 4 9315 / PEO-098 - Lot 010932	33.0 µg/L	25.1 to 58.7	-1.06	7 / 7	ACCEPTABLE
Chloroacetic acid 1, 3, 4 9336 / PEO-098 - Lot 010932	28.7 µg/L	21.5 to 50.1	-0.99	7 / 8	ACCEPTABLE
Dibromoacetic acid 1, 3, 4 9357 / PEO-098 - Lot 010932	34.2 µg/L	28.7 to 67.1	-1.43	8 / 9	ACCEPTABLE
Dichloroacetic acid 1, 3, 4 9360 / PEO-098 - Lot 010932	25.0 µg/L	19.0 to 44.4	-1.06	6 / 9	ACCEPTABLE
Total haloacetic acids 9414 / PEO-098 - Lot 010932	203 µg/L	146 to 340	-0.82	5 / 8	ACCEPTABLE
Trichloroacetic acid 1, 3, 4 9642 / PEO-098 - Lot 010932	39.5 µg/L	30.7 to 71.7	-1.14	8 / 9	ACCEPTABLE

Organic Disinfection By-Products (continued)

Analysis

EPA 551

Gas Chromatography - Electron Capture Detection

Method Number 10094403

Technology Code GC-ECD

	Result Units	Accept / Warn	Z	Rank	Evaluation
Chloral hydrate 1, 3, 4 4460 / PEO-077 - Lot 010758	27.8 µg/L	6.34 to 43.8	0.29	1 / 1	ACCEPTABLE

Oxygenates - Gasoline Additives

Analysis

EPA 524.2

Gas Chromatography - Mass Spectrometry

Method Number 10088605

Technology Code GC-MS

	Result Units	Accept / Warn	Z	Rank	Evaluation
T-amylnmethylether (TAME) 1, 4, 5 4370 / PEO-075 - Lot 011119	36.5 µg/L	21.4 to 50.0		1 / 3	ACCEPTABLE
tert-Butyl alcohol 1, 4, 5 4420 / PEO-075 - Lot 011119	27.9 µg/L	16.1 to 37.5	0.21	1 / 3	ACCEPTABLE
Carbon disulfide 4 4450 / PEO-075 - Lot 011119	40.2 µg/L	28.7 to 67.1		1 / 2	ACCEPTABLE
Ethyl-t-butylether (ETBE) 1, 4, 5 4770 / PEO-075 - Lot 011119	22.4 µg/L	13.0 to 30.4	0.16	1 / 3	ACCEPTABLE
Methyl tert-butyl ether (MTBE) 4 5000 / PEO-075 - Lot 011119	36.8 µg/L	22.9 to 53.5		1 / 3	ACCEPTABLE
n-Propylbenzene 4 5090 / PEO-075 - Lot 011119	34.8 µg/L	21.7 to 50.7		1 / 2	ACCEPTABLE
Trichlorofluoromethane 4 5175 / PEO-075 - Lot 011119	33.5 µg/L	23.5 to 54.9		1 / 2	ACCEPTABLE
1,2,3-Trichloropropane 1, 4, 5 5180 / PEO-075 - Lot 011119	1.62 µg/L	1.10 to 2.56		1 / 2	ACCEPTABLE
Trichlorotrifluoroethane (Freon 113) 1, 4, 5 5185 / PEO-075 - Lot 011119	27.2 µg/L	15.7 to 36.7	0.19	1 / 2	ACCEPTABLE
Di-isopropylether (DIPE) 1, 4, 5 9375 / PEO-075 - Lot 011119	22.3 µg/L	12.8 to 29.8	0.23	1 / 3	ACCEPTABLE
1-Phenylpropane 4 9567 / PEO-075 - Lot 011119	34.8 µg/L	21.7 to 50.7		1 / 1	ACCEPTABLE

Group Analysis Summary

Acceptable 11 / 11

Score 100.0% - (Acceptable)

PCBs in Water

Analysis

EPA 508.1

Gas Chromatography - Electron Capture Detection

Method Number 10086007

Technology Code GC-ECD

	Result Units	Accept / Warn	Z	Rank	Evaluation
PCB Aroclor Identification 1 8872 / PEO-003 - Lot 010826	1242			1	ACCEPTABLE
Aroclor-1016 (PCB-1016) 1, 4 8880 / PEO-003 - Lot 010826	<0.500 µg/L	0.0 to 0.0 0.0 to 0.0		1 / 1	ACCEPTABLE
Aroclor-1221 (PCB-1221) 1, 4 8885 / PEO-003 - Lot 010826	<0.500 µg/L	0.0 to 0.0 0.0 to 0.0		1 / 1	ACCEPTABLE
Aroclor-1232 (PCB-1232) 1, 4 8890 / PEO-003 - Lot 010826	<0.500 µg/L	0.0 to 0.0 0.0 to 0.0		1 / 1	ACCEPTABLE
Aroclor-1242 (PCB-1242) 1, 4 8895 / PEO-003 - Lot 010826	1.33 µg/L	0.00 to 6.60 0.00 to 5.28	-0.99	7 / 7	ACCEPTABLE
Aroclor-1254 (PCB-1254) 1, 4 8905 / PEO-003 - Lot 010826	<0.500 µg/L	0.0 to 0.0 0.0 to 0.0		1 / 1	ACCEPTABLE
Aroclor-1260 (PCB-1260) 1, 4 8910 / PEO-003 - Lot 010826	<0.500 µg/L	0.0 to 0.0 0.0 to 0.0		1 / 1	ACCEPTABLE

Pesticides

Pesticides

Pesticides (continued)

Pesticides

Analysis

EPA 507

Gas Chromatography - Nitrogen/phosphorus Detection

Method Number 10084409
Technology Code GC-NPD

	Result Units	Accept / Warn	Z	Rank	Evaluation
Alachlor 1, 3, 4 7005 / PEO-005-3 - Lot 010916	2.96 µg/L	1.53 to 4.05	0.27	3 / 9	ACCEPTABLE
Atrazine 1, 3, 4 7065 / PEO-005-3 - Lot 010916	17.0 µg/L	11.1 to 29.3	-0.70	6 / 9	ACCEPTABLE
Bromacil 1, 4, 5 7130 / PEO-005-3 - Lot 010916	16.2 µg/L	7.92 to 20.9	0.56	2 / 3	ACCEPTABLE
Butachlor 1, 4 7160 / PEO-005-3 - Lot 010916	28.6 µg/L	19.1 to 42.1	-0.35	2 / 6	ACCEPTABLE
Metolachlor 1, 4 7835 / PEO-005-3 - Lot 010916	13.2 µg/L	11.7 to 27.6	-1.63	5 / 6	ACCEPTABLE
Metribuzin 1, 4 7845 / PEO-005-3 - Lot 010916	42.1 µg/L	8.84 to 58.1	0.70	2 / 6	ACCEPTABLE
Molinate 1, 4, 5 7875 / PEO-005-3 - Lot 010916	12.5 µg/L	7.37 to 19.4	-0.30	2 / 3	ACCEPTABLE
Simazine 1, 3, 4 8125 / PEO-005-3 - Lot 010916	13.2 µg/L	3.62 to 23.1	-0.03	1 / 9	ACCEPTABLE

Analysis

EPA 508

Gas Chromatography - Electron Capture Detection

Method Number 10085004
Technology Code GC-ECD

	Result Units	Accept / Warn	Z	Rank	Evaluation
Trifluralin (Treflan) 1, 3, 4 8295 / PEO-005-2 - Lot 010896	3.28 µg/L	1.58 to 3.94	0.88	4 / 7	ACCEPTABLE

Analysis

EPA 508.1

Gas Chromatography - Electron Capture Detection

Method Number 10086007
Technology Code GC-ECD

	Result Units	Accept / Warn	Z	Rank	Evaluation
Hexachlorobenzene 1, 3, 4 6275 / PEO-005-2 - Lot 010896	0.896 µg/L	0.383 to 1.13	0.75	6 / 9	ACCEPTABLE
Hexachlorocyclopentadiene 1, 3, 4 6285 / PEO-005-2 - Lot 010896	2.32 µg/L	0.319 to 3.68	0.38	2 / 9	ACCEPTABLE
Aldrin 1, 3, 4 7025 / PEO-005-1 - Lot 010892	1.37 µg/L	0.661 to 1.96	0.18	3 / 8	ACCEPTABLE
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane) 1, 3, 4 7120 / PEO-005-1 - Lot 010892	4.24 µg/L	2.66 to 7.00	-0.54	3 / 9	ACCEPTABLE
Chlordane (total) 1, 3, 4 7250 / PEO-005-5 - Lot 010806	4.84 µg/L	2.83 to 7.47	-0.27	2 / 7	ACCEPTABLE
Dieldrin 1, 3, 4 7470 / PEO-005-1 - Lot 010892	0.630 µg/L	0.392 to 0.872	-0.01	1 / 8	ACCEPTABLE
Endrin 1, 3, 4 7540 / PEO-005-1 - Lot 010892	0.940 µg/L	0.664 to 1.23	-0.06	1 / 9	ACCEPTABLE
Heptachlor 1, 3, 4 7685 / PEO-005-1 - Lot 010892	4.08 µg/L	2.63 to 6.95	-0.66	6 / 9	ACCEPTABLE
Heptachlor epoxide 1, 3, 4 7690 / PEO-005-2 - Lot 010896	4.44 µg/L	2.47 to 6.51	-0.05	1 / 9	ACCEPTABLE
Methoxychlor 1, 3, 4 7810 / PEO-005-2 - Lot 010896	73.8 µg/L	33.4 to 88.0	0.96	6 / 9	ACCEPTABLE
Propachlor (Ramrod) 1, 3, 4 8045 / PEO-005-2 - Lot 010896	2.10 µg/L	1.38 to 3.31	-0.51	3 / 6	ACCEPTABLE
Toxaphene (Chlorinated camphene) 1, 3, 4 8250 / PEO-005-6 - Lot 010811	6.20 µg/L	2.93 to 7.73	0.73	3 / 7	ACCEPTABLE

Group Analysis Summary

Acceptable 12 / 12

Score 100.0% - (Acceptable)

Regulated VOCs

Analysis

EPA 524.2

Gas Chromatography - Mass Spectrometry

Method Number 10088605
Technology Code GC-MS

Regulated VOCs (continued)

Analysis

EPA 524.2

Gas Chromatography - Mass Spectrometry

(continued)

Method Number 10088605
Technology Code GC-MS

	Result Units	Accept / Warn	Z	Rank	Evaluation
Benzene 1, 3, 4 4375 / PEO-007-2 - Lot 011118	15.2 µg/L	13.2 to 19.8	-0.91	13 / 20	ACCEPTABLE
Carbon tetrachloride 1, 3, 4 4455 / PEO-007-1 - Lot 011117	5.15 µg/L	3.25 to 7.59	-0.25	7 / 20	ACCEPTABLE
Chlorobenzene 1, 3, 4 4475 / PEO-007-1 - Lot 011117	4.65 µg/L	2.90 to 6.78	-0.49	8 / 20	ACCEPTABLE
1,2-Dichlorobenzene 1, 3, 4 4610 / PEO-007-2 - Lot 011118	14.3 µg/L	12.9 to 19.3	-0.99	15 / 19	ACCEPTABLE
1,4-Dichlorobenzene 1, 3, 4 4620 / PEO-007-2 - Lot 011118	16.1 µg/L	14.8 to 22.2	-1.37	16 / 20	ACCEPTABLE
1,2-Dichloroethane 1, 3, 4 4635 / PEO-007-1 - Lot 011117	6.89 µg/L	4.36 to 10.2	-0.57	10 / 20	ACCEPTABLE
1,1-Dichloroethylene 1, 3, 4 4640 / PEO-007-1 - Lot 011117	14.0 µg/L	11.9 to 17.9	-0.53	9 / 20	ACCEPTABLE
cis-1,2-Dichloroethylene 1, 3, 4 4645 / PEO-007-1 - Lot 011117	32.4 µg/L	22.7 to 34.1	1.46	18 / 20	ACCEPTABLE
1,2-Dichloropropane 1, 3, 4 4655 / PEO-007-1 - Lot 011117	10.2 µg/L	5.85 to 13.6	0.58	8 / 19	ACCEPTABLE
trans-1,2-Dichloroethylene 1, 3, 4 4700 / PEO-007-1 - Lot 011117	28.4 µg/L	21.5 to 32.3	0.48	11 / 20	ACCEPTABLE
Ethylbenzene 1, 3, 4 4765 / PEO-007-2 - Lot 011118	3.55 µg/L	2.33 to 5.43	-0.73	10 / 19	ACCEPTABLE
Methylene chloride (Dichloromethane) 1, 3, 4 4975 / PEO-007-1 - Lot 011117	8.95 µg/L	5.63 to 13.1	-0.48	7 / 19	ACCEPTABLE
Styrene 1, 3, 4 5100 / PEO-007-1 - Lot 011117	7.78 µg/L	4.87 to 11.4	-0.39	7 / 19	ACCEPTABLE
Tetrachloroethylene (Perchloroethylene) 1, 3, 4 5115 / PEO-007-1 - Lot 011117	16.1 µg/L	13.4 to 20.2	-0.40	5 / 20	ACCEPTABLE
Toluene 1, 3, 4 5140 / PEO-007-2 - Lot 011118	8.61 µg/L	5.60 to 13.1	-0.95	14 / 20	ACCEPTABLE
1,2,4-Trichlorobenzene 1, 3, 4 5155 / PEO-007-1 - Lot 011117	3.19 µg/L	2.06 to 4.80	-0.50	7 / 19	ACCEPTABLE
1,1,1-Trichloroethane 1, 3, 4 5160 / PEO-007-1 - Lot 011117	8.87 µg/L	5.71 to 13.3	-0.75	12 / 20	ACCEPTABLE
1,1,2-Trichloroethane 1, 3, 4 5165 / PEO-007-1 - Lot 011117	16.0 µg/L	13.8 to 20.8	-0.91	12 / 19	ACCEPTABLE
Trichloroethene (Trichloroethylene) 1, 3, 4 5170 / PEO-007-1 - Lot 011117	14.2 µg/L	10.3 to 15.5	1.06	15 / 20	ACCEPTABLE
Vinyl chloride 1, 3, 4 5235 / PEO-007-1 - Lot 011117	1.12 µg/L	0.894 to 2.09	-1.82	8 / 20	ACCEPTABLE
Xylene, total 1, 3, 4 5260 / PEO-007-2 - Lot 011118	45.4 µg/L	38.2 to 57.4	-0.45	8 / 19	ACCEPTABLE

Group Analysis Summary

Acceptable 21 / 21

Score 100.0% - (Acceptable)

Analysis

EPA 504.1

Gas Chromatography - Electron Capture Detection

Method Number 10082607
Technology Code GC-ECD

	Result Units	Accept / Warn	Z	Rank	Evaluation
1,2-Dibromo-3-chloropropane (DBCP) 1, 3, 4 4570 / PEO-007-4 - Lot 011116	1.68 µg/L	0.960 to 2.24	0.25	4 / 12	ACCEPTABLE
1,2-Dibromoethane (EDB, Ethylene dibromide) 1, 3, 4 4585 / PEO-007-4 - Lot 011116	0.276 µg/L	0.168 to 0.392	-0.07	1 / 12	ACCEPTABLE

Trihalomethanes

Analysis

EPA 524.2

Gas Chromatography - Mass Spectrometry

Method Number 10088605
Technology Code GC-MS

	Result Units	Accept / Warn	Z	Rank	Evaluation
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Trihalomethanes (continued)

Analysis

EPA 524.2

Gas Chromatography - Mass Spectrometry

(continued)

Method Number 10088605
Technology Code GC-MS

	Result Units	Accept / Warn	Z	Rank	Evaluation
Bromodichloromethane 1, 3, 4 4395 / PEO-002 - Lot 011115	12.5 µg/L	9.84 to 14.8	0.16	2 / 20	ACCEPTABLE
Bromodichloromethane 1, 3, 4 4395 / PEO-007-3A - Lot 011144	<0.500 µg/L	0.0 to 0.0		1 / 1	ACCEPTABLE
Bromoform 1, 3, 4 4400 / PEO-002 - Lot 011115	39.8 µg/L	31.6 to 47.4	0.08	2 / 20	ACCEPTABLE
Bromoform 1, 3, 4 4400 / PEO-007-3A - Lot 011144	<0.500 µg/L	0.0 to 0.0		2 / 2	ACCEPTABLE
Chloroform 1, 3, 4 4505 / PEO-002 - Lot 011115	22.0 µg/L	19.0 to 28.4	-0.72	12 / 20	ACCEPTABLE
Chloroform 1, 3, 4 4505 / PEO-007-3A - Lot 011144	<0.500 µg/L	0.0 to 0.0		1 / 1	ACCEPTABLE
Dibromochloromethane 1, 3, 4 4575 / PEO-002 - Lot 011115	28.9 µg/L	20.8 to 38.8 23.8 to 35.6	-0.27	6 / 20	ACCEPTABLE
Dibromochloromethane 1, 3, 4 4575 / PEO-007-3A - Lot 011144	<0.500 µg/L	0.0 to 0.0		1 / 1	ACCEPTABLE
Total trihalomethanes 1, 3, 4 5205 / PEO-002 - Lot 011115	103 µg/L	73.5 to 137 84.0 to 126	-0.19	3 / 20	ACCEPTABLE

Group Analysis Summary

Acceptable 9 / 9

Score 100.0% - (Acceptable)

Unregulated VOCs

Analysis

EPA 524.2

Gas Chromatography - Mass Spectrometry

Method Number 10088605
Technology Code GC-MS

	Result Units	Accept / Warn	Z	Rank	Evaluation
Bromobenzene 1, 3, 4 4385 / PEO-007-3B - Lot 011145	7.37 µg/L	3.93 to 9.17	1.06	12 / 16	ACCEPTABLE
Bromochloromethane 1, 3, 4 4390 / PEO-007-3B - Lot 011145	35.6 µg/L	25.3 to 37.9	0.86	11 / 16	ACCEPTABLE
n-Butylbenzene 1, 3, 4 4435 / PEO-007-3B - Lot 011145	44.7 µg/L	35.6 to 53.4	0.03	1 / 16	ACCEPTABLE
sec-Butylbenzene 1, 3, 4 4440 / PEO-007-3B - Lot 011145	5.66 µg/L	3.07 to 7.17	0.96	10 / 16	ACCEPTABLE
tert-Butylbenzene 1, 3, 4 4445 / PEO-007-3B - Lot 011145	21.1 µg/L	15.0 to 22.6	1.13	11 / 16	ACCEPTABLE
Chloroethane 1, 3, 4 4485 / PEO-007-3A - Lot 011144	32.1 µg/L	22.9 to 53.3	-0.79	5 / 14	ACCEPTABLE
2-Chlorotoluene 1, 3, 4 4535 / PEO-007-3B - Lot 011145	23.3 µg/L	18.5 to 27.7	0.08	3 / 16	ACCEPTABLE
4-Chlorotoluene 1, 3, 4 4540 / PEO-007-3B - Lot 011145	32.0 µg/L	22.6 to 33.8	1.34	15 / 16	ACCEPTABLE
Dibromomethane 1, 3, 4 4595 / PEO-007-3B - Lot 011145	42.2 µg/L	33.4 to 50.0	0.12	2 / 16	ACCEPTABLE
1,3-Dichlorobenzene 1, 3, 4 4615 / PEO-007-2 - Lot 011118	33.5 µg/L	27.6 to 41.4	-0.26	5 / 17	ACCEPTABLE
1,3-Dichlorobenzene 1, 3, 4 4615 / PEO-007-3A - Lot 011144	22.5 µg/L	19.5 to 29.3	-0.84	11 / 16	ACCEPTABLE
Dichlorodifluoromethane 1, 3, 4 4625 / PEO-007-3A - Lot 011144	<0.500 µg/L	0.0 to 0.0			ACCEPTABLE
1,1-Dichloroethane 1, 3, 4 4630 / PEO-007-3A - Lot 011144	17.8 µg/L	14.2 to 21.4	0.00	1 / 17	ACCEPTABLE
1,3-Dichloropropane 1, 3, 4 4660 / PEO-007-3B - Lot 011145	41.6 µg/L	31.9 to 47.9	0.58	10 / 16	ACCEPTABLE
2,2-Dichloropropane 1, 3, 4 4665 / PEO-007-3B - Lot 011145	42.4 µg/L	37.9 to 56.9	-0.77	9 / 16	ACCEPTABLE
1,1-Dichloropropene 1, 3, 4 4670 / PEO-007-3B - Lot 011145	<0.500 µg/L	0.0 to 0.0		1 / 1	ACCEPTABLE

Unregulated VOCs (continued)

Analysis

EPA 524.2

Gas Chromatography - Mass Spectrometry

(continued)

Method Number 10088605
Technology Code GC-MS

	Result Units	Accept / Warn	Z	Rank	Evaluation
cis-1,3-Dichloropropene 1, 3, 4 4680 / PEO-007-3A - Lot 011144	6.39 µg/L	3.53 to 8.25	1.12	11 / 16	ACCEPTABLE
trans-1,3-Dichloropropene 1, 3, 4 4685 / PEO-007-3A - Lot 011144	41.3 µg/L	32.1 to 48.1	0.33	5 / 16	ACCEPTABLE
Hexachlorobutadiene 1, 3, 4 4635 / PEO-007-3B - Lot 011145	20.5 µg/L	14.9 to 22.3	0.83	12 / 16	ACCEPTABLE
Isopropylbenzene 1, 3, 4 4900 / PEO-007-3B - Lot 011145	49.3 µg/L	36.7 to 55.1	0.67	11 / 16	ACCEPTABLE
4-Isopropyltoluene 1, 3, 4 4901 / PEO-007-3B - Lot 011145	38.5 µg/L	28.5 to 42.7	0.77	9 / 16	ACCEPTABLE
Methyl bromide (Bromomethane) 1, 3, 4 4950 / PEO-007-3A - Lot 011144	32.1 µg/L	22.6 to 52.8	-1.34	4 / 15	ACCEPTABLE
Methyl chloride (Chloromethane) 1, 3, 4 4960 / PEO-007-3A - Lot 011144	17.3 µg/L	12.1 to 28.3	-1.05	7 / 16	ACCEPTABLE
Methyl tert-butyl ether (MTBE) 1, 4 5000 / PEO-007-2 - Lot 011118	7.65 µg/L	4.77 to 11.1	-0.45	5 / 14	ACCEPTABLE
Naphthalene 1, 4 5005 / PEO-007-2 - Lot 011118	26.4 µg/L	17.5 to 40.9	-0.64	9 / 18	ACCEPTABLE
n-Propylbenzene 1, 3, 4 5090 / PEO-007-3B - Lot 011145	45.7 µg/L	34.7 to 52.1	0.45	4 / 16	ACCEPTABLE
1,1,1,2-Tetrachloroethane 1, 3, 4 5105 / PEO-007-3B - Lot 011145	24.1 µg/L	19.8 to 29.8	-0.35	7 / 16	ACCEPTABLE
1,1,2,2-Tetrachloroethane 1, 3, 4 5110 / PEO-007-3A - Lot 011144	14.2 µg/L	11.2 to 16.8	0.20	3 / 16	ACCEPTABLE
1,2,3-Trichlorobenzene 1, 3, 4 5150 / PEO-007-3B - Lot 011145	19.7 µg/L	15.1 to 22.7	0.50	9 / 16	ACCEPTABLE
Trichlorofluoromethane 1, 3, 4 5175 / PEO-007-3A - Lot 011144	19.6 µg/L	15.1 to 35.1	-1.38	10 / 15	ACCEPTABLE
1,2,3-Trichloropropane 1, 3, 4 5180 / PEO-007-3B - Lot 011145	11.3 µg/L	6.06 to 14.1	1.01	10 / 15	ACCEPTABLE
1,2,4-Trimethylbenzene 1, 4 5210 / PEO-007-2 - Lot 011118	5.61 µg/L	3.55 to 8.27	-0.37	7 / 17	ACCEPTABLE
1,2,4-Trimethylbenzene 1, 3, 4 5210 / PEO-007-3B - Lot 011145	22.8 µg/L	15.7 to 23.5	1.73	16 / 16	ACCEPTABLE
1,3,5-Trimethylbenzene 1, 4 5215 / PEO-007-2 - Lot 011118	17.7 µg/L	15.5 to 23.3	-0.80	11 / 17	ACCEPTABLE
1,3,5-Trimethylbenzene 1, 3, 4 5215 / PEO-007-3B - Lot 011145	25.4 µg/L	18.8 to 28.2	1.23	12 / 16	ACCEPTABLE
m+p-Xylene 4 5240 / PEO-007-2 - Lot 011118	31.7 µg/L	29.4 to 44.0	-1.48	13 / 17	ACCEPTABLE
o-Xylene 4 5250 / PEO-007-2 - Lot 011118	13.7 µg/L	11.6 to 17.4	-0.56	9 / 17	ACCEPTABLE

Group Analysis Summary

Acceptable 37 / 37

Score 100.0% - (Acceptable)

Analysis

EPA 504.1

Gas Chromatography - Electron Capture Detection

Method Number 10082607
Technology Code GC-ECD

	Result Units	Accept / Warn	Z	Rank	Evaluation
1,2,3-Trichloropropane 1, 3, 4 5180 / PEO-007-4 - Lot 011116	46.1 µg/L	28.3 to 61.3	0.26	3 / 8	ACCEPTABLE

End of Dataset 1

Dataset

Dataset 2

Accreditors

Evaluations of this dataset will be sent to the accreditor(s) listed below using your laboratory's labcode listed above each accrediting agency. If any of the information listed below is incorrect, please contact RTC immediately.

Accrediting Labcode 1114

California Dept. of Health Services
Environmental Lab Accred. Program Branch
104 Fred Choske
850 Marina Bay Parkway
Bldg. P, 1st Floor, MS 7103
Richmond CA 94804
UNITED STATES

Base/Neutrals

Base/Neutrals

Analysis

EPA 525.2

Gas Chromatography - Mass Spectrometry

Method Number 10089608
Technology Code GC-MS

	Result Units	Accept / Warn	Z	Rank	Evaluation
Acenaphthylene 1, 4, 5 5505 / PEO-006-2 - Lot 010934	6.99 µg/L	4.14 to 12.4	-0.62	3 / 4	ACCEPTABLE
Anthracene 1, 4, 5 5555 / PEO-006-2 - Lot 010934	3.65 µg/L	2.66 to 7.99	-1.26	4 / 4	ACCEPTABLE
Benzo(a)anthracene 1, 4, 5 5575 / PEO-006-2 - Lot 010934	2.62 µg/L	2.28 to 6.83	-1.70	4 / 4	ACCEPTABLE
Benzo(a)pyrene 1, 3, 4 5580 / PEO-006-1 - Lot 010912	0.650 µg/L	0.439 to 0.961	-0.38	2 / 6	ACCEPTABLE
Benzo(b)fluoranthene 1, 4, 5 5585 / PEO-006-2 - Lot 010934	1.24 µg/L	1.05 to 3.15	-1.64	4 / 4	ACCEPTABLE
Benzo(g,h,i)perylene 1, 4, 5 5590 / PEO-006-2 - Lot 010934	1.26 µg/L	0.850 to 2.55	-1.04	3 / 4	ACCEPTABLE
Benzo(k)fluoranthene 1, 4, 5 5600 / PEO-006-2 - Lot 010934	6.88 µg/L	4.66 to 14.0	-1.13	4 / 4	ACCEPTABLE
Butyl benzyl phthalate 1, 4 5670 / PEO-006-2 - Lot 010934	28.2 µg/L	16.2 to 64.6	-1.01	3 / 4	ACCEPTABLE
Chrysene 1, 4, 5 5855 / PEO-006-2 - Lot 010934	4.52 µg/L	2.73 to 8.19	-0.69	4 / 4	ACCEPTABLE
Dibenz(a,h) anthracene 1, 4, 5 5895 / PEO-006-2 - Lot 010934	3.78 µg/L	2.51 to 7.53	-0.99	4 / 4	ACCEPTABLE
Di-n-butyl phthalate 1, 4, 5 5925 / PEO-006-2 - Lot 010934	36.0 µg/L	18.1 to 72.3	-0.68	1 / 4	ACCEPTABLE
bis(2-ethylhexyl)adipate 1, 3, 4 6062 / PEO-006-1 - Lot 010912	24.7 µg/L	6.12 to 25.9	1.77	6 / 6	ACCEPTABLE
bis(2-ethylhexyl)phthalate 1, 3, 4 6065 / PEO-006-1 - Lot 010912	11.7 µg/L	3.48 to 14.7	0.94	4 / 6	ACCEPTABLE
Diethyl phthalate 1, 4, 5 6070 / PEO-006-2 - Lot 010934	29.4 µg/L	17.8 to 71.2	-1.13	2 / 4	ACCEPTABLE
Dimethyl phthalate 1, 4, 5 6135 / PEO-006-2 - Lot 010934	30.2 µg/L	19.6 to 78.6	-1.28	3 / 4	ACCEPTABLE
Fluorene 1, 4, 5 6270 / PEO-006-2 - Lot 010934	6.25 µg/L	2.19 to 6.59	1.69	4 / 4	ACCEPTABLE
Indeno(1,2,3-cd) pyrene 1, 4, 5 6315 / PEO-006-2 - Lot 010934	3.19 µg/L	2.15 to 6.45	-1.03	4 / 4	ACCEPTABLE
Phenanthrene 1, 4, 5 6615 / PEO-006-2 - Lot 010934	7.72 µg/L	4.70 to 14.1	-0.71	3 / 4	ACCEPTABLE
Pyrene 1, 4, 5 6665 / PEO-006-2 - Lot 010934	6.33 µg/L	3.68 to 11.0	-0.56	2 / 4	ACCEPTABLE

Group Analysis Summary

Acceptable 19 / 19
Score 100.0% - (Acceptable)

Herbicides

Herbicides

Herbicides (continued)

Herbicides

Analysis

EPA 525.2

Gas Chromatography - Mass Spectrometry

Method Number 10089608
Technology Code GC-MS

	Result Units	Accept / Warn	Z	Rank	Evaluation
Pentachlorophenol 1, 3, 4 6605 / PEO-005-4 - Lot 010930	29.7 µg/L	17.3 to 51.9	-0.57	2 / 7	ACCEPTABLE

Pesticides

Pesticides

Analysis

EPA 525.2

Other

Method Number 10089608
Technology Code NA

	Result Units	Accept / Warn	Z	Rank	Evaluation
Trifluralin (Treflan) 1, 3, 4 8295 / PEO-005-2 - Lot 010896	3.05 µg/L	1.58 to 3.94	0.49	2 / 7	ACCEPTABLE

Analysis

EPA 525.2

Gas Chromatography - Mass Spectrometry

Method Number 10089608
Technology Code GC-MS

	Result Units	Accept / Warn	Z	Rank	Evaluation
Hexachlorobenzene 1, 3, 4 6275 / PEO-005-2 - Lot 010896	0.810 µg/L	0.383 to 1.13	0.29	3 / 9	ACCEPTABLE
Hexachlorocyclopentadiene 1, 3, 4 6285 / PEO-005-2 - Lot 010896	2.43 µg/L	0.319 to 3.68	0.51	4 / 9	ACCEPTABLE
Alachlor 1, 3, 4 7005 / PEO-005-3 - Lot 010916	2.61 µg/L	1.53 to 4.05	-0.29	4 / 9	ACCEPTABLE
Aldrin 1, 3, 4 7025 / PEO-005-1 - Lot 010892	1.27 µg/L	0.661 to 1.96	-0.13	2 / 8	ACCEPTABLE
Atrazine 1, 3, 4 7065 / PEO-005-3 - Lot 010916	19.3 µg/L	11.1 to 29.3	-0.20	1 / 9	ACCEPTABLE
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane) 1, 3, 4 7120 / PEO-005-1 - Lot 010892	4.55 µg/L	2.68 to 7.00	-0.26	1 / 9	ACCEPTABLE
Bromacil 1, 4, 5 7130 / PEO-005-3 - Lot 010916	12.2 µg/L	7.92 to 20.9	-0.68	3 / 3	ACCEPTABLE
Butachlor 1, 4 7160 / PEO-005-3 - Lot 010916	32.0 µg/L	19.1 to 42.1	0.24	1 / 6	ACCEPTABLE
Dieldrin 1, 3, 4 7470 / PEO-005-1 - Lot 010892	0.570 µg/L	0.392 to 0.872	-0.61	4 / 8	ACCEPTABLE
Endrin 1, 3, 4 7540 / PEO-005-1 - Lot 010892	0.830 µg/L	0.664 to 1.23	-0.83	5 / 9	ACCEPTABLE
Heptachlor 1, 3, 4 7685 / PEO-005-1 - Lot 010892	3.98 µg/L	2.63 to 6.95	-0.75	7 / 9	ACCEPTABLE
Heptachlor epoxide 1, 3, 4 7690 / PEO-005-2 - Lot 010896	4.17 µg/L	2.47 to 6.51	-0.32	4 / 9	ACCEPTABLE
Methoxychlor 1, 3, 4 7810 / PEO-005-2 - Lot 010896	69.0 µg/L	33.4 to 88.0	0.61	3 / 9	ACCEPTABLE
Metolachlor 1, 4 7835 / PEO-005-3 - Lot 010916	16.4 µg/L	11.7 to 27.6	-0.82	2 / 6	ACCEPTABLE
Metribuzin 1, 4 7845 / PEO-005-3 - Lot 010916	54.0 µg/L	8.84 to 58.1	1.67	6 / 6	ACCEPTABLE
Molinate 1, 4, 5 7875 / PEO-005-3 - Lot 010916	13.6 µg/L	7.37 to 19.4	0.07	1 / 3	ACCEPTABLE
Propachlor (Ramrod) 1, 3, 4 8045 / PEO-005-2 - Lot 010896	2.24 µg/L	1.38 to 3.31	-0.22	2 / 6	ACCEPTABLE
Simazine 1, 3, 4 8125 / PEO-005-3 - Lot 010916	13.9 µg/L	3.62 to 23.1	0.11	4 / 9	ACCEPTABLE

Group Analysis Summary

Acceptable 18 / 18

Score 100.0% - (Acceptable)

End of Dataset 2

Sample Information

Carbamate Pesticides - WS
PEO-001

Study Lot 010922
Mfg Lot 010922

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Aldicarb (Temik) 7010 Carbamates	µg/L	23.71	2.98					23.8
Aldicarb sulfone 7015 Carbamates	µg/L	31.72	3.44					31.6
Aldicarb sulfoxide 7020 Carbamates	µg/L	42.79	5.39					46.6
Carbaryl (Sevin) 7195 Carbamates	µg/L	39.44	4.06					43.3
Carbofuran (Furaden) 7205 Carbamates	µg/L	146.00	32.85					146
3-Hydroxycarbofuran 7710 Carbamates	µg/L	39.41	3.54					42.4
Methiocarb (Mesurol) 7800 Carbamates	µg/L	38.26	3.72					39.8
Methomyl (Lannate) 7805 Carbamates	µg/L	74.28	7.09					75.5
Oxamyl 7940 Carbamates	µg/L	40.63	4.56					41.3
Propoxur (Baygon) 8080 Carbamates	µg/L	108.25	9.78					107

Trihalomethanes - WS
PEO-002

Study Lot 011115
Mfg Lot 011115

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Bromodichloromethane 4395 Trihalomethanes	µg/L	12.30	1.23	13.02	1.26	12.97	1.35	12.3
Bromoform 4400 Trihalomethanes	µg/L	39.50	3.95	42.40	4.95	42.18	5.63	39.5
Chloroform 4505 Trihalomethanes	µg/L	23.70	2.37	24.24	1.80	24.26	1.96	23.7
Dibromochloromethane 4575 Trihalomethanes	µg/L	29.70	2.97	31.51	2.75	31.48	3.02	29.7
Total trihalomethanes 5205 Trihalomethanes	µg/L	105.00	10.50	111.03	7.71	110.25	7.82	105

PCB's - WS
PEO-003

Study Lot 010826
Mfg Lot 010826

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
PCB Aroclor Identification 8872 PCBs in Water								-
Aroclor-1016 (PCB-1016) 8880 PCBs in Water	µg/L	0.00	0.00					0.00
Aroclor-1221 (PCB-1221) 8885 PCBs in Water	µg/L	0.00	0.00					0.00
Aroclor-1232 (PCB-1232) 8890 PCBs in Water	µg/L	0.00	0.00					0.00
Aroclor-1242 (PCB-1242) 8895 PCBs in Water	µg/L	2.64	1.32	1.88	0.41	1.89	0.44	2.64
Aroclor-1254 (PCB-1254) 8905 PCBs in Water	µg/L	0.00	0.00					0.00
Aroclor-1260 (PCB-1260) 8910 PCBs in Water	µg/L	0.00	0.00					0.00

Organochlorine Pesticides 1 - WS
PEO-005-1

Study Lot 010892
Mfg Lot 010892

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Aldrin 7025 Pesticides	µg/L	1.31	0.33	1.50	0.25	1.49	0.30	1.56
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane) 7120 Pesticides	µg/L	4.83	1.09	4.66	1.48	4.47	1.42	4.83
Dieldrin 7470 Pesticides	µg/L	0.63	0.12	0.64	0.13	0.63	0.14	0.623

Organochlorine Pesticides 1 - WS

PEO-005-1

(continued)

Study Lot 010892

Mfg Lot 010892

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Endrin 7540 Pesticides	µg/L	0.95	0.14	0.91	0.23	0.90	0.23	0.948
Heptachlor 7685 Pesticides	µg/L	4.79	1.08	4.24	0.76	4.29	0.83	4.79

Organochlorine Pesticides 2 - WS

PEO-005-2

Study Lot 010896

Mfg Lot 010896

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Hexachlorobenzene 6275 Pesticides	µg/L	0.76	0.19	0.77	0.15	0.77	0.21	0.852
Hexachlorocyclopentadiene 6285 Pesticides	µg/L	2.00	0.84	2.40	0.83	2.43	0.90	2.42
Heptachlor epoxide 7690 Pesticides	µg/L	4.49	1.01	4.49	0.96	4.51	1.04	4.49
Methoxychlor 7810 Pesticides	µg/L	60.70	13.66	62.70	14.85	62.90	19.11	60.7
Propachlor (Ramrod) 8045 Pesticides	µg/L	2.34	0.48	2.63	1.12	2.27	0.72	2.40
Trifluralin (Treflan) 8295 Pesticides	µg/L	2.76	0.59	3.24	0.89	3.13	0.27	3.10

Organonitrogen Pesticides - WS

PEO-005-3

Study Lot 010916

Mfg Lot 010916

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Alachlor 7005 Pesticides	µg/L	2.79	0.63	3.44	1.02	3.12	0.64	2.79
Atrazine 7065 Pesticides	µg/L	20.20	4.55	20.64	2.93	20.67	3.41	20.2
Bromacil 7130 Pesticides	µg/L	14.40	3.24					14.4
Butachlor 7160 Pesticides	µg/L	30.60	5.73	33.15	4.42	33.10	5.13	30.6
Metolachlor 7835 Pesticides	µg/L	19.64	3.96	20.77	5.65	20.77	6.74	21.3
Metribuzin 7845 Pesticides	µg/L	33.47	12.32	43.02	9.37	45.85	5.69	41.5
Molinate 7875 Pesticides	µg/L	13.40	3.02					13.4
Simazine 8125 Pesticides	µg/L	13.37	4.87	16.00	3.27	15.97	5.96	15.9

Herbicides - WS

PEO-005-4

Study Lot 010930

Mfg Lot 010930

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Pentachlorophenol 6605 Herbicides	µg/L	34.60	8.65	39.00	13.54	38.20	16.20	34.6
Acifluorfen 8505 Herbicides	µg/L	33.64	8.83					37.8
Bentazon 8530 Herbicides	µg/L	77.32	21.56					85.6
2,4-D 8545 Herbicides	µg/L	47.80	11.95	37.16	12.50	37.51	14.32	47.8
Dacthal (DCPA) 8550 Herbicides	µg/L	50.47	26.97					60.6
Dalapon 8555 Herbicides	µg/L	50.83	30.20	68.68	17.97	68.47	30.57	80.6
Dicamba 8595 Herbicides	µg/L	26.85	9.02	28.10	5.93	27.91	7.06	32.0
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP) 8620 Herbicides	µg/L	29.26	10.87	33.90	7.36	33.96	9.61	36.1
Picloram 8645 Herbicides	µg/L	14.88	5.45	18.28	4.26	17.99	4.90	18.1
Silvex (2,4,5-TP) 8650 Herbicides	µg/L	115.00	28.75	107.36	14.54	106.87	19.75	115

Chlordane (Total) - WS
O-005-5

Study Lot 010806
Mfg Lot 010806

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Chlordane (total) 7250 Pesticides	µg/L	5.15	1.16	5.69	0.62	5.70	0.73	5.15

Toxaphene (Total) - WS
PEO-005-6

Study Lot 010811
Mfg Lot 010811

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Toxaphene (Chlorinated camphene) 8250 Pesticides	µg/L	5.33	1.20	6.40	2.47	6.09	2.40	5.33

Adipate/Phthalate - WS
PEO-006-1

Study Lot 010912
Mfg Lot 010912

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Benzo(a)pyrene 5580 Base/Neutrals	µg/L	0.70	0.13	0.71	0.13	0.71	0.16	0.700
bis(2-ethylhexyl)adipate 6062 Base/Neutrals	µg/L	15.99	4.93	20.13	3.33	20.09	3.90	17.6
bis(2-ethylhexyl)phthalate 6065 Base/Neutrals	µg/L	9.07	2.80	10.67	1.56	10.73	1.94	9.62

PNAs in Water - WS
PEO-006-2

Study Lot 010934
Mfg Lot 010934

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Naphthalene 5005 Base/Neutrals	µg/L	23.10	4.62					23.1
Acenaphthene 5500 Base/Neutrals	µg/L	8.81	2.20					8.81
Acenaphthylene 5505 Base/Neutrals	µg/L	8.27	2.07	6.99	1.45	7.03	1.91	8.27
Anthracene 5555 Base/Neutrals	µg/L	5.33	1.33	4.29	0.83	4.13	0.62	5.33
Benzo(a)anthracene 5575 Base/Neutrals	µg/L	4.55	1.14	4.12	1.08	4.15	1.41	4.55
Benzo(b)fluoranthene 5585 Base/Neutrals	µg/L	2.10	0.53	1.77	0.43	1.78	0.52	2.10
Benzo(g,h,i)perylene 5590 Base/Neutrals	µg/L	1.70	0.43	1.73	0.49	1.73	0.57	1.70
Benzo(k)fluoranthene 5600 Base/Neutrals	µg/L	9.31	2.33	7.65	0.98	7.62	1.30	9.31
Butyl benzyl phthalate 5670 Base/Neutrals	µg/L	40.40	12.12	35.13	9.15	35.10	10.89	40.4
Chrysene 5855 Base/Neutrals	µg/L	5.46	1.37	4.76	0.30	4.69	0.22	5.46
Dibenz(a,h) anthracene 5895 Base/Neutrals	µg/L	5.02	1.26	4.49	0.65	4.49	0.78	5.02
Di-n-butyl phthalate 5925 Base/Neutrals	µg/L	45.20	13.56	45.48	16.43	45.59	19.92	45.2
Diethyl phthalate 6070 Base/Neutrals	µg/L	44.50	13.35	50.08	29.02	49.17	40.14	44.5
Dimethyl phthalate 6135 Base/Neutrals	µg/L	49.10	14.73	46.25	21.63	45.34	26.95	49.1
Di-n-octyl phthalate 6200 Base/Neutrals	µg/L	38.60	11.58					38.6
Fluoranthene 6265 Base/Neutrals	µg/L	1.19	0.30					1.19
Fluorene 6270 Base/Neutrals	µg/L	4.39	1.10	5.11	1.31	5.15	1.74	4.39
Indeno(1,2,3-cd) pyrene 6315 Base/Neutrals	µg/L	4.30	1.08	4.15	1.00	4.14	1.25	4.30
Phenanthrene 6615 Base/Neutrals	µg/L	9.39	2.35	8.21	1.06	8.22	1.31	9.39
Pyrene 6665 Base/Neutrals	µg/L	7.36	1.84	7.02	1.28	6.98	1.68	7.36

Regulated VOC's 1
PEO-007-1

Study Lot 011117
Mfg Lot 011117

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Carbon tetrachloride 4455 Regulated VOCs	µg/L	5.42	1.08	5.48	0.59	5.46	0.63	5.42
Chlorobenzene 4475 Regulated VOCs	µg/L	4.84	0.39	4.89	0.36	4.86	0.39	4.84
1,2-Dichloroethane 4635 Regulated VOCs	µg/L	7.27	0.67	10.25	12.38	7.47	0.67	7.27
1,1-Dichloroethylene 4640 Regulated VOCs	µg/L	14.90	1.69	14.29	1.71	14.23	1.69	14.9
cis-1,2-Dichloroethylene 4645 Regulated VOCs	µg/L	28.40	2.74	28.64	2.48	28.76	2.74	28.4
1,2-Dichloropropane 4655 Regulated VOCs	µg/L	9.75	0.77	9.85	0.67	9.84	0.77	9.75
trans-1,2-Dichloroethylene 4700 Regulated VOCs	µg/L	26.90	3.10	26.73	2.76	26.75	3.10	26.9
Methylene chloride (Dichloromethane) 4975 Regulated VOCs	µg/L	9.38	0.90	9.40	1.24	9.24	0.90	9.38
Styrene 5100 Regulated VOCs	µg/L	8.11	0.84	8.15	0.78	8.18	0.84	8.11
Tetrachloroethylene (Perchloroethylene) 5115 Regulated VOCs	µg/L	16.80	1.74	15.98	1.88	15.83	1.74	16.8
1,2,4-Trichlorobenzene 5155 Regulated VOCs	µg/L	3.43	0.48	3.13	0.96	3.31	0.48	3.43
1,1,1-Trichloroethane 5160 Regulated VOCs	µg/L	9.51	0.85	9.57	0.80	9.60	0.85	9.51
1,1,2-Trichloroethane 5165 Regulated VOCs	µg/L	17.30	1.43	17.60	1.31	17.57	1.43	17.3
Trichloroethene (Trichloroethylene) 5170 Regulated VOCs	µg/L	12.90	1.23	12.82	1.12	12.87	1.23	12.9
Vinyl chloride 5235 Regulated VOCs	µg/L	1.49	0.20	1.03	0.31	1.08	0.20	1.49

Regulated VOC's 2 - WS
PEO-007-2

Study Lot 011118
Mfg Lot 011118

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Benzene 4375 Regulated VOCs	µg/L	16.50	1.42	16.03	1.38	16.14	1.42	16.5
1,2-Dichlorobenzene 4610 Regulated VOCs	µg/L	16.10	1.81	16.07	1.48	15.99	1.81	16.1
1,3-Dichlorobenzene 4615 Unregulated VOCs	µg/L	34.50	3.85	35.11	3.94	34.75	3.85	34.5
1,4-Dichlorobenzene 4620 Regulated VOCs	µg/L	18.50	1.75	18.52	2.32	18.06	1.75	18.5
Ethylbenzene 4765 Regulated VOCs	µg/L	3.88	0.45	3.99	0.42	4.01	0.45	3.88
Methyl tert-butyl ether (MTBE) 5000 Unregulated VOCs	µg/L	7.95	0.67	7.63	0.90	7.77	0.67	7.95
Naphthalene 5005 Unregulated VOCs	µg/L	29.20	4.40	26.77	4.99	27.31	4.40	29.2
Toluene 5140 Regulated VOCs	µg/L	9.33	0.76	9.21	0.73	9.23	0.76	9.33
1,2,4-Trimethylbenzene 5210 Unregulated VOCs	µg/L	5.91	0.81	6.21	0.74	6.16	0.81	5.91
1,3,5-Trimethylbenzene 5215 Unregulated VOCs	µg/L	19.40	2.12	19.44	1.99	19.47	2.12	19.4
m+p-Xylene 5240 Unregulated VOCs	µg/L	36.70	3.39	33.70	3.07	33.72	3.39	36.7
o-Xylene 5250 Unregulated VOCs	µg/L	14.50	1.43	14.76	1.30	14.76	1.43	14.5
Xylene, total 5260 Regulated VOCs	µg/L	47.80	5.35	48.31	4.63	48.40	5.35	47.8

Unregulated VOC's 1
PEO-007-3A

Study Lot 011144
Mfg Lot 011144

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Bromodichloromethane 4395 Trihalomethanes	µg/L	0.00	0.00					0.00

Unregulated VOC's 1

PEO-007-3A

(continued)

Study Lot 011144

Mfg Lot 011144

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Bromoform 4400 Trihalomethanes	µg/L	0.00	0.00					0.00
Chloroethane 4485 Unregulated VOCs	µg/L	38.10	7.62	32.81	6.28	31.34	4.77	38.1
Chloroform 4505 Trihalomethanes	µg/L	0.00	0.00					0.00
Dibromochloromethane 4575 Trihalomethanes	µg/L	0.00	0.00					0.00
1,3-Dichlorobenzene 4815 Unregulated VOCs	µg/L	24.40	2.25	25.41	2.94	24.81	2.25	24.4
Dichlorodifluoromethane 4625 Unregulated VOCs	µg/L	0.00	0.00					0.00
1,1-Dichloroethane 4630 Unregulated VOCs	µg/L	17.80	1.93	17.68	2.88	18.25	1.93	17.8
cis-1,3-Dichloropropene 4680 Unregulated VOCs	µg/L	5.89	0.45	6.07	0.44	6.10	0.45	5.89
trans-1,3-Dichloropropene 4685 Unregulated VOCs	µg/L	40.10	3.67	40.24	3.30	40.21	3.67	40.1
Methyl bromide (Bromomethane) 4950 Unregulated VOCs	µg/L	37.70	4.19	31.19	5.48	29.89	4.19	37.7
Methyl chloride (Chloromethane) 4960 Unregulated VOCs	µg/L	20.20	2.76	18.37	4.00	17.27	2.76	20.2
1,1,2,2-Tetrachloroethane 5110 Unregulated VOCs	µg/L	14.00	0.99	13.69	0.97	13.77	0.99	14.0
Trichlorofluoromethane 5175 Unregulated VOCs	µg/L	25.10	3.99	22.52	4.38	21.78	3.99	25.1

Unregulated VOC's 2

PEO-007-3B

Study Lot 011145

Mfg Lot 011145

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Bromobenzene 4385 Unregulated VOCs	µg/L	6.55	0.77	6.54	0.69	6.56	0.77	6.55
Bromochloromethane 4390 Unregulated VOCs	µg/L	31.60	4.64	31.48	4.46	31.78	4.64	31.6
n-Butylbenzene 4435 Unregulated VOCs	µg/L	44.50	6.83	42.61	7.24	43.23	6.83	44.5
sec-Butylbenzene 4440 Unregulated VOCs	µg/L	5.12	0.56	5.43	0.50	5.42	0.56	5.12
tert-Butylbenzene 4445 Unregulated VOCs	µg/L	18.80	2.03	18.51	1.76	18.49	2.03	18.8
2-Chlorotoluene 4535 Unregulated VOCs	µg/L	23.10	2.66	22.74	2.15	22.71	2.66	23.1
4-Chlorotoluene 4540 Unregulated VOCs	µg/L	28.20	2.85	28.41	2.61	28.38	2.85	28.2
Dibromomethane 4585 Unregulated VOCs	µg/L	41.70	4.29	41.49	3.97	41.23	4.29	41.7
1,3-Dichloropropane 4660 Unregulated VOCs	µg/L	39.90	2.96	41.12	3.16	41.04	2.96	39.9
2,2-Dichloropropane 4685 Unregulated VOCs	µg/L	47.40	6.46	44.49	6.01	44.48	6.46	47.4
1,1-Dichloropropene 4670 Unregulated VOCs	µg/L	0.00	0.00					0.00
Hexachlorobutadiene 4835 Unregulated VOCs	µg/L	18.60	2.29	19.09	2.18	18.92	2.29	18.6
Isopropylbenzene 4900 Unregulated VOCs	µg/L	45.90	5.04	45.55	6.98	46.22	5.04	45.9
4-Isopropyltoluene 4901 Unregulated VOCs	µg/L	35.60	3.75	36.14	4.27	36.00	3.75	35.6
n-Propylbenzene 5090 Unregulated VOCs	µg/L	43.40	5.07	41.65	6.76	42.93	5.07	43.4
1,1,1,2-Tetrachloroethane 5105 Unregulated VOCs	µg/L	24.80	2.03	24.89	2.20	24.62	2.03	24.8
1,2,3-Trichlorobenzene 5150 Unregulated VOCs	µg/L	18.90	1.60	18.59	1.96	18.67	1.60	18.9
1,2,3-Trichloropropane 5180 Unregulated VOCs	µg/L	10.10	1.19	10.83	1.33	10.67	1.19	10.1
1,2,4-Trimethylbenzene 5210 Unregulated VOCs	µg/L	19.60	1.85	20.53	1.72	20.62	1.85	19.6

Unregulated VOC's 2

PEO-007-3B
(continued)

Study Lot 011145
Mfg Lot 011145

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
1,3,5-Trimethylbenzene 5215 Unregulated VOCs	µg/L	23.50	1.55	24.05	1.82	23.96	1.55	23.5

EDB/DBCP

PEO-007-4

Study Lot 011116
Mfg Lot 011116

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
1,2-Dibromo-3-chloropropane (DBCP) 4570 Regulated VOCs	µg/L	1.60	0.32	1.64	0.29	1.64	0.32	1.60
1,2-Dibromoethane (EDB, Ethylene dibromide) 4585 Regulated VOCs	µg/L	0.28	0.06	0.28	0.06	0.29	0.05	0.280
1,2,3-Trichloropropane 5180 Unregulated VOCs	µg/L	43.80	8.76	37.30	7.08	37.45	9.95	43.8

Gasoline Additives

PEO-075

Study Lot 011119
Mfg Lot 011119

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
T-amylmethylether (TAME) 4370 Oxygenates - Gasoline Additives	µg/L	35.70	7.14					35.7
tert-Butyl alcohol 4420 Oxygenates - Gasoline Additives	µg/L	26.80	5.36					26.8
Carbon disulfide 4450 Oxygenates - Gasoline Additives	µg/L	47.90						47.9
Ethyl-t-butylether (ETBE) 4770 Oxygenates - Gasoline Additives	µg/L	21.70	4.34					21.7
Methyl tert-butyl ether (MTBE) 5000 Oxygenates - Gasoline Additives	µg/L	38.20						38.2
n-Propylbenzene 5090 Oxygenates - Gasoline Additives	µg/L	36.20						36.2
Trichlorofluoromethane 5175 Oxygenates - Gasoline Additives	µg/L	39.20						39.2
1,2,3-Trichloropropane 5180 Oxygenates - Gasoline Additives	µg/L	1.83						1.83
Trichlorotrifluoroethane (Freon 113) 5185 Oxygenates - Gasoline Additives	µg/L	26.20	5.24					26.2
Di-isopropylether (DIPE) 9375 Oxygenates - Gasoline Additives	µg/L	21.30	4.26					21.3
1-Phenylpropane 9567 Oxygenates - Gasoline Additives	µg/L	36.20						36.2

Chloral Hydrate

PEO-077

Study Lot 010758
Mfg Lot 010758

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Chloral hydrate 4460 Organic Disinfection By-Products	µg/L	25.07	9.37					27.4

Diquat/Endothall/Glyphosate/Paraquat - WS

PEO-097

Study Lot 010904
Mfg Lot 010904

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Endothall 7525 Herbicides	µg/L	92.53	25.69					98.0
Diquat 9390 Herbicides	µg/L	19.13	8.00					24.5
Glyphosate 9411 Herbicides	µg/L	768.98	63.69					784
Paraquat 9528 Herbicides	µg/L	26.80	6.70					26.8

Organic Disinfection By-Products - WS

PEO-098

Study Lot 010932
Mfg Lot 010932

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
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Organic Disinfection By-Products - WS

EO-098

Study Lot 010932

Mfg Lot 010932

(continued)

	Units	Proficiency Value	Proficiency Std. Dev.	Mean	Standard Deviation	Robust Mean	Robust Std. Dev.	Gravimetric
Bromoacetic acid 9312 Organic Disinfection By-Products	µg/L	44.80	8.96	51.94	10.67	48.50	6.09	44.8
Bromochloroacetic acid 9315 Organic Disinfection By-Products	µg/L	41.90	8.38	42.56	5.06	43.48	3.51	41.9
Chloroacetic acid 9336 Organic Disinfection By-Products	µg/L	35.80	7.16	38.65	14.01	33.82	4.24	35.8
Dibromoacetic acid 9357 Organic Disinfection By-Products	µg/L	47.90	9.58	45.00	9.82	46.01	10.06	47.9
Dichloroacetic acid 9360 Organic Disinfection By-Products	µg/L	31.70	6.34	31.77	7.08	32.23	7.60	31.7
Total haloacetic acids 9414 Organic Disinfection By-Products	µg/L	243.00	48.60	230.88	65.72	231.43	51.91	243
Trichloroacetic acid 9642 Organic Disinfection By-Products	µg/L	51.20	10.24	52.14	11.25	53.77	10.75	51.2

Program analyte accrediting footnotes

1 NELAC

3 NVLAP

5 NELAC Experimental

2 EPA

4 A2LA



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The Industry Standard™

June 15, 2006

Jeremy M. Davis
Orange County Water District
P.O. Box 8300
Fountain Valley, CA 92728

Enclosed is your final report for ERA's WatR™ Supply Proficiency Testing (PT) Study, WS-117. Your final report includes an evaluation of all results submitted by your laboratory to ERA. Attached is a table listing which regulatory agencies have been sent a copy of your final results and the report type received by those agencies.

Data Evaluation Protocols: All analytes in the WS-117 PT study have been evaluated using the following tiered approach. If the analyte is listed in the National Environmental Laboratory Accreditation Conference (NELAC) PT Field of Testing list (June 2005), the evaluation was completed by comparing the reported result to the acceptance limits generated using the criteria contained in the NELAC FoPT tables. If the analyte is not included in the NELAC FoPT tables, the reported result has been evaluated using the procedures outlined in ERA's Standard Operating Procedure for the Generation of Performance Acceptance Limits (SOP 0260).

Corrective Action Help: As part of your accreditation(s), you may be required to identify the root cause of any "Not Acceptable" results, implement the necessary corrective actions, and then satisfy your PT requirements by participating in a Supplemental (QuiK™ Response) or future ERA PT study. ERA's technical staff is available to help your laboratory resolve any technical issues that may be impairing your PT performance and possibly affecting your routine data quality. Our laboratory and technical staff have well over three hundred years of collective experience in performing the full range of environmental analyses. As part of our technical support, ERA offers QC samples that can be helpful in helping you work through your technical issues.

Thank you for your participation in ERA's WatR™ Supply Proficiency Testing Study, WS-117. If you have any questions, please contact myself, or Curtis Wood, Quality Assurance Director, at 1-800-372-0122.

Sincerely,

Shawn Kassner
Proficiency Testing Manager

attachments
smk





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Regulatory Agency	Agency Requested Report Type	Agency Lab ID	Contact
California	Complete Report	1114	Fred Choske



**ENVIRONMENTAL
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The Industry Standard™

June 15, 2006

Jeremy M. Davis
Orange County Water District
P.O. Box 8300
Fountain Valley, CA 92728

In my role as ERA's Quality Assurance Director, I have independently reviewed all aspects of ERA's WatR™ Supply Proficiency Testing Study, WS-117, for compliance with all USEPA, NELAC, NIST NVLAP, and all state technical and program requirements in effect during this study, as well as those of our ISO 9001 Registered Quality System.

All aspects of ERA's WS-117 Study, from standard manufacture to final report generation, were completed by ERA in accordance with the "National Standards for Water Proficiency Testing Studies Criteria Document", USEPA December 30, 1998. ERA has reviewed all of the data that is contained in this report and has made every possible effort to make it complete, accurate and compliant. However, if you find anything in your report that you feel is incomplete, inaccurate or have any quality-related issues, please call me directly at 1-800-372-0122. As required by ERA Standard Operating Procedure for Handling Product and Service Problems (SOP 0150, Rev. 7.0), we will initiate an internal investigation and take corrective action as appropriate.

On behalf of ERA, thank you again for your participation in WS-117.

Sincerely,

Curtis J. Wood
Quality Assurance Director





ERA Laboratory Code: O1276-01 EPA ID: CA00043

Report Issued: 06/15/06
Study Dates: 04/10/06 - 05/25/06

WS Study Definitions:

The Reported Value is the value that the laboratory reported to ERA.

The ERA Assigned Values are established per the USEPA/NELAC FoPT Tables, June 2005. A parameter not added to the standard is given an Assigned Value of "0" per the guidelines contained in the USEPA's Criteria Document and NELAC standards.

The Acceptance Limits are established per the criteria contained in the USEPA/NELAC FoPT Tables, June 2005, or ERA's SOP for the Generation of Performance Acceptance Limits™ as applicable.

The Performance Evaluation:

Acceptable = Reported Value falls within the Acceptance Limits.

Not Acceptable = Reported Value falls outside of the Acceptance Limits.

No Evaluation = Reported Value cannot be evaluated.

The Method Description is the method the laboratory reported to ERA.

Any Performance Evaluation left blank indicates results were evaluated as 'Not Reported'.

WS Study Discussion:

ERA's WatR™ Supply Proficiency Testing Study, WS-117, has been reviewed by ERA Senior Management and certified compliant with the requirements of the USEPA's National Standards for Water Proficiency Testing Studies Criteria Document (December 1998), and the criteria contained in the NELAC FoPT Tables, June 2005. ERA is a NIST NVLAP accredited PT Provider (Lab Code 200386-0).

This report contains data that are not covered by the NVLAP accreditation.

ERA's WatR™ Supply Study, WS-117, standards were examined for any anomalies. A full review of all homogeneity, stability and accuracy verification data was completed. All analytical verification data for all analytes in the WS-117 standards met the acceptance criteria contained in the USEPA's National Criteria Document for Water Proficiency Testing Studies, December 1998, and the criteria contained in the NELAC FoPT Tables, June 2005.

The data submitted by participating laboratories was also examined for study anomalies. One anomaly was observed during the statistical review of the WS-117 data. This anomaly is detailed on the following page.

WatR™ Supply Study, WS-117, reports shall not be reproduced except in their entirety and not without the permission of the participating laboratories. The report must not be used by the participating laboratories to claim product endorsement by NVLAP or any agency of the U. S. government.

If you have any questions regarding ERA's WatR™ Supply Proficiency Testing Study, WS-117, please contact Shawn Kassner, Proficiency Testing Manager, or Curtis Wood, Quality Assurance Director, at 1-800-372-0122.



ERA Laboratory Code: 01276-01 EPA ID: CA00043

Report Issued: 06/15/06
Study Dates: 04/10/06 - 05/25/06

Study Discussion Gasoline Additives - Tert-Butyl Alcohol

During the statistical review of the WS-117 study data for Gasoline Additives, ERA observed a failure rate of 42.1% for tert-butyl alcohol. As we believe this failure rate is high, we carefully reviewed all data related to proving the efficacy of the standard including manufacturing and internal analytical verification data for both accuracy and homogeneity. Our review of the data confirmed that the standard is 'fit for use'.

During a review of historical failure rates for tert-butyl alcohol, ERA observed a concentration bias in the failure rates. For the 5 studies where the concentration of tert-butyl alcohol was below 20 µg/L, the failure rate averaged 20.0%. For the 4 studies where the tert-butyl alcohol concentration was above 20 µg/L, the failure rate averaged 7.14%. The NELAC concentration range for tert-butyl alcohol is 5 to 50 µg/L.

Tert-Butyl Alcohol is listed on the NELAC FoPT Potable Water Experimental Table and laboratory accreditations may not be bound to their proficiency testing evaluations. The purpose of the experimental tables is to gather information for analytes of regulatory interest that did not have enough data to create valid acceptance criteria as listed in the NELAC Chapter 2 standards. ERA will communicate this information to NELAC to ensure that appropriate acceptance criteria and concentrations can be applied during the next review of the acceptance criteria data for tert-butyl alcohol.

If you have any questions concerning the analysis of tert-butyl alcohol or any of the gasoline additives, please feel free to contact ERA's Organic Chemistry Department at 1-800-372-0122.



ENVIRONMENTAL
RESOURCE ASSOCIATES®

Study: **WS-117**

ERA Laboratory Code: **O1276-01**

Laboratory Name: **Orange County Water
District**

Report Type: **Complete**

Report Method: **Method A**



Page 3 of 13

Proficiency Testing Studies / Quality Control Standards



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EPA ID: CA00043
ERA Laboratory Code: O1276-01
Report Issued: 06/15/06
Study Dates: 04/10/06 - 05/25/06

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Metals							
1000	Aluminum	µg/L	818	850	727 - 953	Acceptable	EPA 200.8
0140	Antimony †	µg/L	29.6	29.6	20.7 - 38.5	Acceptable	EPA 200.8
0001	Arsenic †	µg/L	26.6	26.8	18.8 - 34.8	Acceptable	EPA 200.8
0002	Barium †	µg/L	971	1020	867 - 1170	Acceptable	EPA 200.8
0141	Beryllium †	µg/L	4.34	4.36	3.71 - 5.01	Acceptable	EPA 200.8
0226	Boron †	µg/L	4.34	1280	1120 - 1420	Not Acceptable	EPA 200.7
0003	Cadmium †	µg/L	15.5	15.2	12.2 - 18.2	Acceptable	EPA 200.8
0004	Chromium †	µg/L	163	168	143 - 193	Acceptable	EPA 200.8
0091	Copper †	µg/L	266	262	236 - 288	Acceptable	EPA 200.8
1070	Iron	µg/L	540	562	493 - 623	Acceptable	EPA 200.7
0005	Lead †	µg/L	70.8	71.3	49.9 - 92.7	Acceptable	EPA 200.8
0236	Manganese †	µg/L	304	288	259 - 317	Acceptable	EPA 200.8
0237	Molybdenum †	µg/L	41.8	43.1	36.7 - 48.5	Acceptable	EPA 200.8
0142	Nickel †	µg/L	110	105	89.3 - 121	Acceptable	EPA 200.8
0007	Selenium †	µg/L	54.1	52.7	42.2 - 63.2	Acceptable	EPA 200.8
1150	Silver	µg/L	89.7	91.3	79.7 - 102	Acceptable	EPA 200.8
0143	Thallium †	µg/L	8.73	9.00	6.30 - 11.7	Acceptable	EPA 200.8
1185	Vanadium	µg/L	528	544	490 - 598	Acceptable	EPA 200.8
0239	Zinc †	µg/L	1320	1220	1100 - 1340	Acceptable	EPA 200.8
Mercury							
0006	Mercury †	µg/L	1.80	1.84	1.29 - 2.39	Acceptable	EPA 200.8
pH							
0026	pH †	S.U.	7.48	7.45	7.25 - 7.65	Acceptable	SM 4500H+B auto
Inorganics							
0027	Alkalinity as CaCO ₃ †	mg/L	45.2	45.1	40.6 - 49.6	Acceptable	SM 2320 B
1575	Chloride	mg/L	13.0	13.3	11.2 - 15.6	Acceptable	EPA 300.0
1610	Conductivity at 25°C	µmhos/cm	426	424	382 - 466	Acceptable	SM 2510 B
0010	Fluoride †	mg/L	3.89	3.87	3.48 - 4.26	Acceptable	EPA 300.0
0009	Nitrate as N †	mg/L	6.08	6.57	5.91 - 7.23	Acceptable	EPA 300.0
1820	Nitrate + Nitrite as N	mg/L	6.08	6.57	5.90 - 7.23	Acceptable	EPA 300.0
1125	Potassium	mg/L	22.9	26.3	22.7 - 30.0	Acceptable	EPA 200.7
0145	Sulfate †	mg/L	89.8	91.1	79.9 - 102	Acceptable	EPA 300.0
0024	Total Dissolved Solids at 180°C †	mg/L	290	302	197 - 407	Acceptable	SM 2540 C

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

† Indicates analytes included in ERA's NIST/NVLAP accreditation. Lab Code 200386-0



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EPA ID: CA00043
ERA Laboratory Code: O1276-01
Report Issued: 06/15/06
Study Dates: 04/10/06 - 05/25/06

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Turbidity							
0023	Turbidity †	NTU	4.73	4.63	4.06 - 5.52	Acceptable	SM 2130 B
Residual Chlorine							
0022	Free residual chlorine †	mg/L	0.890	1.01	0.804 - 1.22	Acceptable	SM 4500 Cl D
1940	Total residual chlorine	mg/L	0.965	1.01	0.846 - 1.16	Acceptable	SM 4500 Cl D
Nitrite							
0092	Nitrite as N †	mg/L	1.43	1.43	1.22 - 1.64	Acceptable	SM 4500 NO3- F
o-Phosphate Nutrients							
0261	ortho-Phosphate as P †	mg/L	2.00	1.98	1.72 - 2.26	Acceptable	EPA 300.0
Cyanide							
0146	Cyanide †	mg/L	0.430	0.429	0.322 - 0.536	Acceptable	EPA 335.3
Organic Carbon							
1710	Dissolved organic carbon (DOC)	mg/L	1.68	1.47	1.16 - 1.85	Acceptable	SM 5310 C
0263	Total organic carbon (TOC) †	mg/L	1.68	1.47	1.16 - 1.85	Acceptable	SM 5310 C
Chlorite							
0195	Chlorite †	µg/L	850	843	715 - 1020	Acceptable	EPA 300.1
Bromide / Bromate / Chlorate							
0260	Bromide †	µg/L	122	121	88.8 - 152	Acceptable	EPA 300.1
0193	Bromate †	µg/L	47.9	42.5	35.1 - 48.3	Acceptable	EPA 300.1
0194	Chlorate †	µg/L	93.3	95.3	77.0 - 113	Acceptable	EPA 300.1
Hardness							
1755	Total Hardness as CaCO3	mg/L	216	227	203 - 252	Acceptable	SM 2340 B
0025	Calcium Hardness as CaCO3 †	mg/L	172	180	160 - 199	Acceptable	SM 2340 B
1035	Calcium	mg/L	68.9	72.2	64.3 - 79.8	Acceptable	EPA 200.7
1085	Magnesium	mg/L	11.1	11.4	10.3 - 12.7	Acceptable	EPA 200.7
0029	Sodium †	mg/L	18.0	17.0	15.0 - 18.8	Acceptable	EPA 200.7
Heterotrophic Plate Count							
2555	Heterotrophic Plate Count	CFU/mL	151	147	108 - 201	Acceptable	SM 9215 B

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

† Indicates analytes included in ERA's NIST/NVLAP accreditation. Lab Code 200386-0

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ERA Laboratory Code: O1276-01
Report Issued: 06/15/06
Study Dates: 04/10/06 - 05/25/06

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WS Coliform MicrobE™							
0254	Sample 1 Total Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	Sample 1 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Sample 2 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	Sample 2 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Sample 3 Total Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	Sample 3 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Sample 4 Total Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	Sample 4 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Sample 5 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	Sample 5 Fecal Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Sample 6 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	Sample 6 Fecal Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Sample 7 Total Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	Sample 7 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Sample 8 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	Sample 8 Fecal Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Sample 9 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	Sample 9 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Sample 10 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	Sample 10 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT

Total Coliform Evaluation : Acceptable
Fecal Coliform Evaluation : Acceptable

Definitions:

- **Assigned Value:** 'Presence' indicates organisms of the coliform group are present in the sample, 'Absence' indicates organisms of the coliform group are not present in the sample as defined by standard water testing methods.
- **Fecal Coliform organism** - Escherichia coli, Samples 5, 6 and 8 ATCC Strain #: 35421
- **Total Coliform organism** - Enterobacter cloacae, Samples 2, 9 and 10 ATCC Strain #: 35030
- **Negative (1) Coliform organism** - Proteus mirabilis, Sample 4 ATCC Strain #: 25933
- **Negative (2) Coliform organism** - Pseudomonas aeruginosa, Sample 1 ATCC Strain #: 27853
- **Blank** - Samples 3 and 7

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

† Indicates analytes included in ERA's NIST/NVLAP accreditation. Lab Code 200386-0

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EPA ID: CA00043
ERA Laboratory Code: O1276-01
Report Issued: 06/15/06
Study Dates: 04/10/06 - 05/25/06

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Corrosivity							
1620	Corrosivity	S.I. @ 20°C	1.38	1.57	1.17 - 1.97	Acceptable	SM 2330 B
Surfactants - MBAS							
2025	Surfactants - MBAS	mg/L	0.190	0.193	0.144 - 0.258	Acceptable	SM 5540 C
Silica							
1990	Silica as SiO ₂	mg/L	30.5	30.9	26.3 - 35.5	Acceptable	SM 4500 Si D
Perchlorate							
1895	Perchlorate	µg/L	17.6	18.0	14.9 - 19.8	Acceptable	EPA 314
UV 254 Absorbance							
2060	UV 254 Absorbance	cm-1	0.626	0.621	0.533 - 0.822	Acceptable	SM 5910 B
Hexavalent Chromium							
1045	Chromium (VI)	µg/L	27.9	28.4	25.5 - 31.3	Acceptable	EPA 218.6
Vanadium							
1185	Vanadium	µg/L	12.9	13.6	11.2 - 15.8	Acceptable	EPA 200.7

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

† Indicates analytes included in ERA's NIST/NVLAP accreditation. Lab Code 200386-0

Study: **WS-117**

ERA Laboratory Code: **O1276-01**

Laboratory Name: **Orange County Water
District**

Report Type: **Complete**

Report Method: **Method B**



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EPA ID: CA00043
ERA Laboratory Code: 01276-01
Report Issued: 06/15/06
Study Dates: 04/10/06 - 05/25/06

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Metals							
1000	Aluminum	µg/L		850	727 - 953		
0140	Antimony †	µg/L		29.6	20.7 - 38.5		
0001	Arsenic †	µg/L		26.8	18.8 - 34.8		
0002	Barium †	µg/L		1020	867 - 1170		
0141	Beryllium †	µg/L		4.36	3.71 - 5.01		
0226	Boron †	µg/L		1280	1120 - 1420		
0003	Cadmium †	µg/L		15.2	12.2 - 18.2		
0004	Chromium †	µg/L	160	168	143 - 193	Acceptable	EPA 200.7
0091	Copper †	µg/L		262	236 - 288		
1070	Iron	µg/L		562	493 - 623		
0005	Lead †	µg/L		71.3	49.9 - 92.7		
0236	Manganese †	µg/L		288	259 - 317		
0237	Molybdenum †	µg/L		43.1	36.7 - 48.5		
0142	Nickel †	µg/L		105	89.3 - 121		
0007	Selenium †	µg/L		52.7	42.2 - 63.2		
1150	Silver	µg/L		91.3	79.7 - 102		
0143	Thallium †	µg/L		9.00	6.30 - 11.7		
1185	Vanadium	µg/L	533	544	490 - 598	Acceptable	EPA 200.7
0239	Zinc †	µg/L		1220	1100 - 1340		
pH							
0026	pH †	S.U.	7.53	7.45	7.25 - 7.65	Acceptable	SM 4500 H+ B
Inorganics							
0027	Alkalinity as CaCO ₃ †	mg/L		45.1	40.6 - 49.6		
1575	Chloride	mg/L		13.3	11.2 - 15.6		
1610	Conductivity at 25°C	µmhos/cm		424	382 - 466		
0010	Fluoride †	mg/L	3.84	3.87	3.48 - 4.26	Acceptable	SM 4500 F- C
0009	Nitrate as N †	mg/L	6.44	6.57	5.91 - 7.23	Acceptable	SM 4500 NO ₃ - F
1820	Nitrate + Nitrite as N	mg/L	6.44	6.57	5.90 - 7.23	Acceptable	SM 4500 NO ₃ - F
1125	Potassium	mg/L		26.3	22.7 - 30.0		
0145	Sulfate †	mg/L		91.1	79.9 - 102		
0024	Total Dissolved Solids at 180°C †	mg/L		302	197 - 407		
Residual Chlorine							
0022	Free residual chlorine †	mg/L	0.932	1.01	0.804 - 1.22	Acceptable	SM 4500 Cl F

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

† Indicates analytes included in ERA's NIST/NVLAP accreditation. Lab Code 200386-0



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EPA ID: CA00043
ERA Laboratory Code: 01276-01
Report Issued: 06/15/06
Study Dates: 04/10/06 - 05/25/06

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Residual Chlorine (Cont.)							
1940	Total residual chlorine	mg/L	1.00	1.01	0.846 - 1.16	Acceptable	SM 4500 Cl F
Nitrite							
0092	Nitrite as N †	mg/L	1.46	1.43	1.22 - 1.64	Acceptable	EPA 300.0
o-Phosphate Nutrients							
0261	ortho-Phosphate as P †	mg/L	1.96	1.98	1.72 - 2.26	Acceptable	EPA 365.1

... analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

† Indicates analytes included in ERA's NIST/NVLAP accreditation. Lab Code 200386-0



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EPA ID: CA00043
ERA Laboratory Code: O1276-01
Report Issued: 06/15/06
Study Dates: 04/10/06 - 05/25/06

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WS Coliform MicrobE™							
0254	Sample 1 Total Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221B LTB
0255	Sample 1 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0254	Sample 2 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B LTB
0255	Sample 2 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0254	Sample 3 Total Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221B LTB
0255	Sample 3 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0254	Sample 4 Total Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221B LTB
0255	Sample 4 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0254	Sample 5 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B LTB
0255	Sample 5 Fecal Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221E LTB EC
0254	Sample 6 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B LTB
0255	Sample 6 Fecal Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221E LTB EC
0254	Sample 7 Total Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221B LTB
0255	Sample 7 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0254	Sample 8 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B LTB
0255	Sample 8 Fecal Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221E LTB EC
0254	Sample 9 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B LTB
0255	Sample 9 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0254	Sample 10 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B LTB
0255	Sample 10 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC

Total Coliform Evaluation : Acceptable
Fecal Coliform Evaluation : Acceptable

Definitions:

- **Assigned Value:** 'Presence' indicates organisms of the coliform group are present in the sample, 'Absence' indicates organisms of the coliform group are not present in the sample as defined by standard water testing methods.
- **Fecal Coliform organism** - Escherichia coli, Samples 5, 6 and 8 ATCC Strain #: 35421
- **Total Coliform organism** - Enterobacter cloacae, Samples 2, 9 and 10 ATCC Strain #: 35030
- **Negative (1) Coliform organism** - Proteus mirabilis, Sample 4 ATCC Strain #: 25933
- **Negative (2) Coliform organism** - Pseudomonas aeruginosa, Sample 1 ATCC Strain #: 27853
- **Blank** - Samples 3 and 7

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

† Indicates analytes included in ERA's NIST/NVLAP accreditation. Lab Code 200386-0

Study: **WS-117**

ERA Laboratory Code: **O1276-01**

Laboratory Name: **Orange County Water
District**

Report Type: **Complete**

Report Method: **Method C**



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EPA ID: CA00043
ERA Laboratory Code: O1276-01
Report Issued: 06/15/06
Study Dates: 04/10/06 - 05/25/06

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WS Coliform MicrobE™							
0254	Sample 1 Total Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222B
0255	Sample 1 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D
0254	Sample 2 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B
0255	Sample 2 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D
0254	Sample 3 Total Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222B
0255	Sample 3 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D
0254	Sample 4 Total Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222B
0255	Sample 4 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D
0254	Sample 5 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B
0255	Sample 5 Fecal Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222D
0254	Sample 6 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B
0255	Sample 6 Fecal Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222D
0254	Sample 7 Total Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222B
0255	Sample 7 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D
0254	Sample 8 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B
0255	Sample 8 Fecal Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222D
0254	Sample 9 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B
0255	Sample 9 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D
0254	Sample 10 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B
0255	Sample 10 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D

Total Coliform Evaluation : Acceptable
Fecal Coliform Evaluation : Acceptable

Definitions:

- **Assigned Value:** 'Presence' indicates organisms of the coliform group are present in the sample, 'Absence' indicates organisms of the coliform group are not present in the sample as defined by standard water testing methods.
- **Fecal Coliform organism** - Escherichia coli, Samples 5, 6 and 8 ATCC Strain #: 35421
- **Total Coliform organism** - Enterobacter cloacae, Samples 2, 9 and 10 ATCC Strain #: 35030
- **Negative (1) Coliform organism** - Proteus mirabilis, Sample 4 ATCC Strain #: 25933
- **Negative (2) Coliform organism** - Pseudomonas aeruginosa, Sample 1 ATCC Strain #: 27853
- **lank** - Samples 3 and 7

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

† Indicates analytes included in ERA's NIST/NVLAP accreditation. Lab Code 200386-0



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Performance Evaluation Report

WSCHEM **WS05-2**

Commenced 13-Apr-2005 | Concluded 27-May-2005

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This report may contain
data that are not covered
by the NVLAP
accreditation.

PEO-001

Carbamate Pesticides

Program: WSCHM

PEO-001

Evaluation

Analyte	Result Units	Method	Method ID	Evaluation	Z
Summary for Method EPA 531.1			Overall method evaluation Acceptable		
7010 Aldicarb (Temik)	43.0 µg/L	EPA 531.1	10090809	Acceptable	-0.557
7015 Aldicarb sulfone	21.0 µg/L	EPA 531.1	10090809	Acceptable	-1.65
7020 Aldicarb sulfoxide	<1.00 µg/L	EPA 531.1	10090809	Acceptable	
7195 Carbaryl (Sevin)*	28.0 µg/L	EPA 531.1	10090809	Acceptable	-0.997
7205 Carbofuran (Furaden)	100 µg/L	EPA 531.1	10090809	Acceptable	
7710 3-Hydroxycarbofuran*	<2.00 µg/L	EPA 531.1	10090809	Acceptable	
7800 Methiocarb (Mesurol)*	84.6 µg/L	EPA 531.1	10090809	Acceptable	-1.99
7805 Methomyl (Lannate)	48.0 µg/L	EPA 531.1	10090809	Acceptable	0.203
7940 Oxamyl	36.5 µg/L	EPA 531.1	10090809	Acceptable	-1.25
8080 Propoxur (Baygon)*	41.5 µg/L	EPA 531.1	10090809	Acceptable	-0.684
Summary for Method EPA 531.1		Analytes Evaluated 10	Acceptable 10	Acceptance Percentage 100.0%	

Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
7010 Aldicarb (Temik)	µg/L	46.1	45.8			35.0 - 57.2	
7015 Aldicarb sulfone	µg/L	25.2	25.0			20.1 - 30.3	
7020 Aldicarb sulfoxide	µg/L		0			0 - 0	
7195 Carbaryl (Sevin)*	µg/L	31.2	34.2			24.8 - 37.6	
7205 Carbofuran (Furaden)	µg/L	112	112			61.6 - 162	
7710 3-Hydroxycarbofuran*	µg/L		0			0 - 0	
7800 Methiocarb (Mesurol)*	µg/L	98.2	105			84.5 - 112	
7805 Methomyl (Lannate)	µg/L	47.1	47.9			38.2 - 55.9	
7940 Oxamyl	µg/L	42.5	43.2			32.9 - 52.1	
8080 Propoxur (Baygon)*	µg/L	44.4	45.0			35.9 - 52.9	

PEO-002

Trihalomethanes

Program: WSCHM

PEO-002

Evaluation

Analyte	Result Units	Method	Method ID	Evaluation	Z
4395 Bromodichloromethane	16.8 µg/L	EPA 524.2	10088605	Acceptable	0.230
4400 Bromoform	49.2 µg/L	EPA 524.2	10088605	Acceptable	0.858
4505 Chloroform	33.6 µg/L	EPA 524.2	10088605	Acceptable	0.000
4575 Dibromochloromethane	38.6 µg/L	EPA 524.2	10088605	Acceptable	-0.284
5205 Total trihalomethanes	138 µg/L	EPA 524.2	10088605	Acceptable	0.240

Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
4395 Bromodichloromethane	µg/L	16.4	16.0	16.4	1.74	12.9 - 19.9	
4400 Bromoform	µg/L	45.1	46.1	45.1	4.78	23.0 - 69.2	
4505 Chloroform	µg/L	33.6	34.1	33.6	2.62	17.0 - 51.2	
4575 Dibromochloromethane	µg/L	39.9	41.1	39.9	4.57	20.5 - 61.7	
5205 Total trihalomethanes	µg/L	135	137	135	12.5	68.5 - 206	

PEO-003

PCBs

Program: WSCHEM

Evaluation

Analyte	Result Units	Method	Method ID	Evaluation	Z
8870 PCBs, total*	0.509 µg/L	EPA 508.1	10086007	Acceptable	-1.71

Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
8870 PCBs, total*	µg/L	0.670	0.70			0.00 - 1.40	

PEO-005-1

Organochlorine Pesticides (Sample 1)

Program: WSCHEM

Evaluation

Analyte	Result Units	Method	Method ID	Evaluation	Z
7025 Aldrin	0.340 µg/L	EPA 508.1	10086007	Acceptable	-1.24
7120 gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	1.20 µg/L	EPA 508.1	10086007	Acceptable	-1.53
7470 Dieldrin	1.74 µg/L	EPA 508.1	10086007	Acceptable	-1.89
7540 Endrin	0.640 µg/L	EPA 508.1	10086007	Acceptable	-1.33
7685 Heptachlor	0.360 µg/L	EPA 508.1	10086007	Acceptable	-1.70
7025 Aldrin	0.400 µg/L	EPA 525.2	10089608	Acceptable	-0.773
7120 gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	1.92 µg/L	EPA 525.2	10089608	Acceptable	0.590
7470 Dieldrin	2.44 µg/L	EPA 525.2	10089608	Acceptable	-0.352
7540 Endrin	0.680 µg/L	EPA 525.2	10089608	Acceptable	-1.04
7685 Heptachlor	0.412 µg/L	EPA 525.2	10089608	Acceptable	-1.36

Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
7025 Aldrin	µg/L	0.499	0.60	0.581	0.147	0.243 - 0.756	
7120 gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	µg/L	1.72	1.72	1.54	0.339	0.946 - 2.49	
7470 Dieldrin	µg/L	2.60	2.71	2.36	0.302	1.69 - 3.51	
7540 Endrin	µg/L	0.820	0.82	0.757	0.135	0.574 - 1.07	
7685 Heptachlor	µg/L	0.620	0.62	0.574	0.153	0.341 - 0.899	

PEO-005-2

Organochlorine Pesticides (Sample 2)

Program: WSCHEM

Evaluation

Analyte	Result Units	Method	Method ID	Evaluation	Z
8045 Propachlor (Ramrod)	2.60 µg/L	EPA 507	10084409	Acceptable	-0.531
6275 Hexachlorobenzene	1.48 µg/L	EPA 508	10085004	Acceptable	-1.70
6285 Hexachlorocyclopentadiene	6.90 µg/L	EPA 508	10085004	Acceptable	-1.48
7690 Heptachlor epoxide	2.98 µg/L	EPA 508	10085004	Acceptable	-0.774
7810 Methoxychlor	69.6 µg/L	EPA 508	10085004	Acceptable	-0.669
8045 Propachlor (Ramrod)	2.42 µg/L	EPA 508	10085004	Acceptable	-0.839
8295 Trifluralin (Treflan)	1.62 µg/L	EPA 508	10085004	Acceptable	-1.78
6275 Hexachlorobenzene	2.15 µg/L	EPA 525.2	10089608	Acceptable	-0.537
6285 Hexachlorocyclopentadiene	10.9 µg/L	EPA 525.2	10089608	Acceptable	-0.824
7690 Heptachlor epoxide	2.84 µg/L	EPA 525.2	10089608	Acceptable	-0.925
7810 Methoxychlor	61.4 µg/L	EPA 525.2	10089608	Acceptable	-1.25
8045 Propachlor (Ramrod)	2.88 µg/L	EPA 525.2	10089608	Acceptable	-0.0514
8295 Trifluralin (Treflan)	2.61 µg/L	EPA 525.2	10089608	Acceptable	-0.0353

Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
6275 Hexachlorobenzene	µg/L	2.46	2.85	2.65	0.780	1.31 - 3.62	
6285 Hexachlorocyclopentadiene	µg/L	15.9	19.9	15.9	6.85	3.75 - 28.0	
7690 Heptachlor epoxide	µg/L	3.70	3.70	3.76	0.930	2.04 - 5.37	
7810 Methoxychlor	µg/L	79.1	79.1	72.3	14.2	43.5 - 115	

Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
7810 Methoxychlor	µg/L	79.1	79.1	72.3	14.2	43.5 - 115	
8045 Propachlor (Ramrod)	µg/L	2.91	2.96	2.54	0.224	1.74 - 4.07	
8295 Trifluralin (Treflan)	µg/L	2.63	2.96	2.49	0.807	1.50 - 3.77	

PEO-005-3

Organonitrogen Pesticides

Program: WSCHEM

Evaluation

Analyte	Result Units	Method	Method ID	Evaluation	Z
7005 Alachlor	14.1 µg/L	EPA 507	10084409	Acceptable	-1.00
7065 Atrazine	28.1 µg/L	EPA 507	10084409	Acceptable	0.246
7130 Bromacil*	<0.10 µg/L	EPA 507	10084409	Acceptable	
7160 Butachlor	77.1 µg/L	EPA 507	10084409	Acceptable	0.524
7835 Metolachlor	<0.10 µg/L	EPA 507	10084409	Acceptable	
7845 Metribuzin	44.2 µg/L	EPA 507	10084409	Acceptable	0.685
7875 Molinate*	<0.10 µg/L	EPA 507	10084409	Acceptable	
8125 Simazine	22.7 µg/L	EPA 507	10084409	Acceptable	0.167
7005 Alachlor	18.2 µg/L	EPA 525.2	10089608	Acceptable	0.640
7065 Atrazine	29.7 µg/L	EPA 525.2	10089608	Acceptable	0.639
7130 Bromacil*	<0.100 µg/L	EPA 525.2	10089608	Acceptable	
7160 Butachlor	77.6 µg/L	EPA 525.2	10089608	Acceptable	0.559
7835 Metolachlor	<0.100 µg/L	EPA 525.2	10089608	Acceptable	
7845 Metribuzin	34.0 µg/L	EPA 525.2	10089608	Acceptable	-0.1000
7875 Molinate*	<0.100 µg/L	EPA 525.2	10089608	Acceptable	
8125 Simazine	17.5 µg/L	EPA 525.2	10089608	Acceptable	-0.501

Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
7005 Alachlor	µg/L	16.6	16.6	16.4	3.63	9.13 - 24.1	
7065 Atrazine	µg/L	27.1	27.1	27.5	5.14	14.9 - 39.3	
7130 Bromacil*	µg/L		0			0 - 0	
7160 Butachlor	µg/L	69.6	78.2	75.7	15.1	40.9 - 98.2	
7835 Metolachlor	µg/L		0			0 - 0	
7845 Metribuzin	µg/L	35.3	43.8	34.9	10.5	9.32 - 61.3	
7875 Molinate*	µg/L		0			0 - 0	
8125 Simazine	µg/L	21.4	26.2	23.9	5.49	5.83 - 37.0	

PEO-005-4

Herbicides

Program: WSCHEM

Evaluation

Analyte	Result Units	Method	Method ID	Evaluation	Z
Summary for Method EPA 515.1					
6605 Pentachlorophenol	25.8 µg/L	EPA 515.1	10087000	Acceptable	-0.963
8505 Acifluorfen	36.8 µg/L	EPA 515.1	10087000	Acceptable	0.270
8530 Bentazon*	<0.10 µg/L	EPA 515.1	10087000	Acceptable	
8545 2,4-D	30.9 µg/L	EPA 515.1	10087000	Acceptable	-0.0694
8550 Dacthal (DCPA)*	<0.10 µg/L	EPA 515.1	10087000	Acceptable	
8555 Dalapon	28.7 µg/L	EPA 515.1	10087000	Acceptable	-0.655
8595 Dicamba	46.5 µg/L	EPA 515.1	10087000	Acceptable	0.588
8620 Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	12.5 µg/L	EPA 515.1	10087000	Acceptable	-0.684
8645 Picloram	33.8 µg/L	EPA 515.1	10087000	Acceptable	0.675
8650 Silvex (2,4,5-TP)	11.6 µg/L	EPA 515.1	10087000	Acceptable	
Summary for Method EPA 515.1					
6605 Pentachlorophenol	38.7 µg/L	EPA 525.2	10089608	Acceptable	0.231

Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
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Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
6605 Pentachlorophenol	µg/L	36.2	36.2	35.0	10.8	18.1 - 54.3	
8505 Acifluorfen	µg/L	34.4	38.6	36.1	9.38	16.6 - 52.2	
8530 Bentazon*	µg/L		0			0 - 0	
8545 2,4-D	µg/L	31.5	31.5	24.9	8.64	15.8 - 47.3	
8550 Dacthal (DCPA)*	µg/L		0			0 - 0	
8555 Dalapon	µg/L	47.1	74.6	34.1	17.7	0.000 - 103	
8595 Dicamba	µg/L	38.8	46.7	47.8	2.08	12.5 - 65.0	
8620 Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	µg/L	17.0	21.6	20.7	2.92	3.88 - 30.2	
8645 Picloram	µg/L	27.2	33.1	29.8	4.55	7.61 - 46.7	
8650 Silvex (2,4,5-TP)	µg/L	12.7	12.7	11.5	1.63	6.35 - 19.1	

PEO-005-5

Chlordane (Total)

Program: WSCHM

Evaluation

Analyte	Result Units	Method	Method ID	Evaluation	Z
7250 Chlordane, total	14.9 µg/L	EPA 508.1	10086007	Acceptable	-1.32

Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
7250 Chlordane, total	µg/L	17.6	17.6	16.1	2.05	9.68 - 25.5	

PEO-005-6

Toxaphene (Total)

Program: WSCHM

Evaluation

Analyte	Result Units	Method	Method ID	Evaluation	Z
8250 Toxaphene (Chlorinated camphene)	6.71 µg/L	EPA 508.1	10086007	Acceptable	-0.117

Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
8250 Toxaphene (Chlorinated camphene)	µg/L	6.86	6.86	6.59	1.28	3.77 - 9.95	

PEO-006-1

Adipate/Phthalate

Program: WSCHM

Evaluation

Analyte	Result Units	Method	Method ID	Evaluation	Z
6062 bis(2-ethylhexyl)adipate	17.3 µg/L	EPA 506	10083804	Acceptable	-0.583
6065 bis(2-ethylhexyl)phthalate	9.72 µg/L	EPA 506	10083804	Acceptable	-0.274
5580 Benzo(a)pyrene	0.962 µg/L	EPA 525.2	10089608	Acceptable	0.242
6062 bis(2-ethylhexyl)adipate	21.7 µg/L	EPA 525.2	10089608	Acceptable	0.130
6065 bis(2-ethylhexyl)phthalate	12.7 µg/L	EPA 525.2	10089608	Acceptable	0.654
5580 Benzo(a)pyrene	0.796 µg/L	EPA 550.1	10094005	Acceptable	-0.502

Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
5580 Benzo(a)pyrene	µg/L	0.908	1.05	0.922	0.238	0.462 - 1.35	
6062 bis(2-ethylhexyl)adipate	µg/L	20.9	22.8	20.0	4.96	8.56 - 33.2	
6065 bis(2-ethylhexyl)phthalate	µg/L	10.6	11.1	11.1	1.89	4.15 - 17.0	

PEO-006-2

PNAs

Program: WSCHM

PEO-006-2

Evaluation

Analyte	Result Units	Method	Method ID	Evaluation	Z
5670 Butyl benzyl phthalate*	<1.00 µg/L	EPA 506	10083804	Acceptable	
5925 Di-n-butyl phthalate*	12.5 µg/L	EPA 506	10083804	Acceptable	-0.394
6070 Diethyl phthalate*	19.9 µg/L	EPA 506	10083804	Acceptable	-0.0239
6135 Dimethyl phthalate*	34.2 µg/L	EPA 506	10083804	Acceptable	0.417
6200 Di-n-octyl phthalate*	18.1 µg/L	EPA 506	10083804	Acceptable	-1.44

▼ Summary for Method EPA 525.2

Analyte	Result Units	Method	Method ID	Evaluation	Z
5505 Acenaphthylene*	<0.10 µg/L	EPA 525.2	10089608	Acceptable	
5555 Anthracene*	8.08 µg/L	EPA 525.2	10089608	Acceptable	-0.908
5575 Benzo(a)anthracene*	<0.10 µg/L	EPA 525.2	10089608	Acceptable	
5585 Benzo(b)fluoranthene*	7.50 µg/L	EPA 525.2	10089608	Acceptable	-0.611
5590 Benzo(g,h,i)perylene*	7.45 µg/L	EPA 525.2	10089608	Acceptable	-0.719
5600 Benzo(k)fluoranthene*	<0.10 µg/L	EPA 525.2	10089608	Acceptable	
5670 Butyl benzyl phthalate*	<0.10 µg/L	EPA 525.2	10089608	Acceptable	
5855 Chrysene*	<0.10 µg/L	EPA 525.2	10089608	Acceptable	
5895 Dibenzo(a,h) anthracene*	4.80 µg/L	EPA 525.2	10089608	Acceptable	-1.32
5925 Di-n-butyl phthalate*	16.3 µg/L	EPA 525.2	10089608	Acceptable	0.604
6070 Diethyl phthalate*	25.2 µg/L	EPA 525.2	10089608	Acceptable	1.24
6135 Dimethyl phthalate*	37.6 µg/L	EPA 525.2	10089608	Acceptable	0.905
6270 Fluorene*	<0.10 µg/L	EPA 525.2	10089608	Acceptable	
6315 Indeno(1,2,3-cd) pyrene*	<0.10 µg/L	EPA 525.2	10089608	Acceptable	
6615 Phenanthrene*	8.86 µg/L	EPA 525.2	10089608	Acceptable	
6665 Pyrene*	<0.10 µg/L	EPA 525.2	10089608	Acceptable	

Overall method evaluation **Acceptable**

▲ Summary for Method EPA 525.2

Analytes Evaluated 16 Acceptable 16 Acceptance Percentage 100.0%

▼ Summary for Method EPA 550.1

Analyte	Result Units	Method	Method ID	Evaluation	Z
5005 Naphthalene*	22.1 µg/L	EPA 550.1	10094005	Acceptable	-2.06
5500 Acenaphthene*	16.3 µg/L	EPA 550.1	10094005	Acceptable	-1.97
5505 Acenaphthylene*	<1.00 µg/L	EPA 550.1	10094005	Acceptable	
5555 Anthracene*	6.45 µg/L	EPA 550.1	10094005	Acceptable	-2.55
5575 Benzo(a)anthracene*	<0.10 µg/L	EPA 550.1	10094005	Acceptable	
5585 Benzo(b)fluoranthene*	6.07 µg/L	EPA 550.1	10094005	Acceptable	-1.57
5590 Benzo(g,h,i)perylene*	5.75 µg/L	EPA 550.1	10094005	Acceptable	-1.46
5600 Benzo(k)fluoranthene*	<0.05 µg/L	EPA 550.1	10094005	Acceptable	
5855 Chrysene*	<0.05 µg/L	EPA 550.1	10094005	Acceptable	
5895 Dibenzo(a,h) anthracene*	3.29 µg/L	EPA 550.1	10094005	Acceptable	-4.08
6265 Fluoranthene*	<0.10 µg/L	EPA 550.1	10094005	Acceptable	
6270 Fluorene*	<0.10 µg/L	EPA 550.1	10094005	Acceptable	
6315 Indeno(1,2,3-cd) pyrene*	<0.05 µg/L	EPA 550.1	10094005	Acceptable	
6615 Phenanthrene*	6.84 µg/L	EPA 550.1	10094005	Acceptable	
6665 Pyrene*	<0.10 µg/L	EPA 550.1	10094005	Acceptable	

Overall method evaluation **Acceptable**

▲ Summary for Method EPA 550.1

Analytes Evaluated 15 Acceptable 15 Acceptance Percentage 100.0%

Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
5005 Naphthalene*	µg/L	28.5	28.5	21.9	3.10	17.1 - 39.9	
5500 Acenaphthene*	µg/L	25.8	25.8	21.4	4.82	12.9 - 38.7	
5505 Acenaphthylene*	µg/L	0.000	0			0.000 - 0.000	
5555 Anthracene*	µg/L	8.98	8.98	7.64	0.991	4.49 - 13.5	
5575 Benzo(a)anthracene*	µg/L	0.000	0			0.000 - 0.000	
5585 Benzo(b)fluoranthene*	µg/L	8.41	8.41	7.09	1.49	4.21 - 12.6	
5590 Benzo(g,h,i)perylene*	µg/L	9.09	9.09	7.54	2.28	4.50 - 13.6	
5600 Benzo(k)fluoranthene*	µg/L	0.000	0			0.000 - 0.000	
5670 Butyl benzyl phthalate*	µg/L	0.000	0			0.000 - 0.000	
5855 Chrysene*	µg/L	0.000	0			0.000 - 0.000	
5895 Dibenzo(a,h) anthracene*	µg/L	5.52	5.52	4.63	0.546	2.76 - 8.28	
5925 Di-n-butyl phthalate*	µg/L	14.0	14.0	13.5	3.81	5.60 - 22.4	

PEO-006-2

Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
5925 Di-n-butyl phthalate*	µg/L	14.0	14.0	13.5	3.81	5.60 - 22.4	
6070 Diethyl phthalate*	µg/L	20.0	20.0	20.0	4.18	8.00 - 32.0	
6135 Dimethyl phthalate*	µg/L	31.3	31.3	29.9	6.96	12.5 - 50.1	
6200 Di-n-octyl phthalate*	µg/L	27.6	27.6	23.6	6.59	11.0 - 44.2	
6265 Fluoranthene*	µg/L	0.000	0			0.000 - 0.000	
6270 Fluorene*	µg/L	0.000	0			0.000 - 0.000	
6315 Indeno(1,2,3-cd) pyrene*	µg/L	0.000	0			0.000 - 0.000	
6615 Phenanthrene*	µg/L	8.93	8.93	8.80	0.523	4.47 - 13.4	
6665 Pyrene*	µg/L	0.000	0			0.000 - 0.000	

PEO-007-1

Regulated VOCs (Sample 1)

Program: WSICHEM

Evaluation

PEO-007-1

Analyte	Result Units	Method	Method ID	Evaluation	Z
Summary for Method EPA 524.2					
				Overall method evaluation	Acceptable
4455 Carbon tetrachloride	12.7 µg/L	EPA 524.2	10088605	Acceptable	0.360
4475 Chlorobenzene	3.96 µg/L	EPA 524.2	10088605	Acceptable	0.000
4635 1,2-Dichloroethane	18.6 µg/L	EPA 524.2	10088605	Acceptable	0.704
4640 1,1-Dichloroethylene	3.82 µg/L	EPA 524.2	10088605	Acceptable	0.000
4645 cis-1,2-Dichloroethylene	27.9 µg/L	EPA 524.2	10088605	Acceptable	0.928
4655 1,2-Dichloropropane	6.47 µg/L	EPA 524.2	10088605	Acceptable	2.22
4700 trans-1,2-Dichloroethylene	3.85 µg/L	EPA 524.2	10088605	Acceptable	0.320
4975 Methylene chloride (Dichloromethane)	4.78 µg/L	EPA 524.2	10088605	Acceptable	-1.43
5100 Styrene	6.00 µg/L	EPA 524.2	10088605	Acceptable	-1.04
5115 Tetrachloroethylene (Perchloroethylene)	13.0 µg/L	EPA 524.2	10088605	Acceptable	0.426
5155 1,2,4-Trichlorobenzene	13.4 µg/L	EPA 524.2	10088605	Acceptable	-0.405
5160 1,1,1-Trichloroethane	13.8 µg/L	EPA 524.2	10088605	Acceptable	0.992
5165 1,1,2-Trichloroethane	19.0 µg/L	EPA 524.2	10088605	Acceptable	0.197
5170 Trichloroethene (Trichloroethylene)	12.0 µg/L	EPA 524.2	10088605	Acceptable	2.33
5235 Vinyl chloride	25.1 µg/L	EPA 524.2	10088605	Acceptable	0.671
Summary for Method EPA 524.2		Analytes Evaluated 15	Acceptable 15	Acceptance Percentage 100.0%	

Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
4455 Carbon tetrachloride	µg/L	12.2	12.6	12.2	1.39	10.1 - 15.1	
4475 Chlorobenzene	µg/L	3.96	4.05	3.96	0.259	2.43 - 5.67	
4635 1,2-Dichloroethane	µg/L	17.6	17.6	17.6	1.42	14.1 - 21.1	
4640 1,1-Dichloroethylene	µg/L	3.82	3.73	3.82	0.640	2.24 - 5.22	
4645 cis-1,2-Dichloroethylene	µg/L	24.8	25.1	24.8	3.34	20.1 - 30.1	
4655 1,2-Dichloropropane	µg/L	5.23	5.20	5.23	0.558	3.12 - 7.28	
4700 trans-1,2-Dichloroethylene	µg/L	3.73	3.34	3.73	0.375	2.00 - 4.68	
4975 Methylene chloride (Dichloromethane)	µg/L	6.52	6.75	6.52	1.22	4.05 - 9.45	
5100 Styrene	µg/L	6.79	7.22	6.79	0.763	4.33 - 10.1	
5115 Tetrachloroethylene (Perchloroethylene)	µg/L	12.2	13.2	12.2	1.88	10.4 - 16.0	
5155 1,2,4-Trichlorobenzene	µg/L	14.0	14.9	14.0	1.48	11.9 - 17.9	
5160 1,1,1-Trichloroethane	µg/L	12.5	12.6	12.5	1.31	10.1 - 15.1	
5165 1,1,2-Trichloroethane	µg/L	18.6	18.9	18.6	2.03	15.1 - 22.7	
5170 Trichloroethene (Trichloroethylene)	µg/L	9.97	10.4	9.97	0.870	8.32 - 12.5	
5235 Vinyl chloride	µg/L	22.0	22.0	22.0	4.62	13.2 - 30.8	

PEO-007-1

PEO-007-2

Regulated VOCs (Sample 2)

Program: WSCHEM

PEO-007-2

Evaluation

Analyte	Result Units	Method	Method ID	Evaluation	Z
Summary for Method EPA 524.2			Overall method evaluation Acceptable		
4375 Benzene	11.3 µg/L	EPA 524.2	10088605	Acceptable	-1.20
4610 1,2-Dichlorobenzene	6.12 µg/L	EPA 524.2	10088605	Acceptable	-1.62
4615 1,3-Dichlorobenzene	25.4 µg/L	EPA 524.2	10088605	Acceptable	-2.03
4620 1,4-Dichlorobenzene	7.71 µg/L	EPA 524.2	10088605	Acceptable	-0.829
4765 Ethylbenzene	4.91 µg/L	EPA 524.2	10088605	Acceptable	-0.701
5000 Methyl tert-butyl ether (MTBE)	26.4 µg/L	EPA 524.2	10088605	Acceptable	-0.358
5005 Naphthalene*	19.2 µg/L	EPA 524.2	10088605	Acceptable	-0.231
5140 Toluene	11.1 µg/L	EPA 524.2	10088605	Acceptable	-2.25
5210 1,2,4-Trimethylbenzene*	16.4 µg/L	EPA 524.2	10088605	Acceptable	-0.659
5215 1,3,5-Trimethylbenzene*	15.4 µg/L	EPA 524.2	10088605	Acceptable	0.298
5240 m+p-Xylene*	15.8 µg/L	EPA 524.2	10088605	Acceptable	1.58
5250 o-Xylene*	7.21 µg/L	EPA 524.2	10088605	Acceptable	0.462
5260 Xylene, total	23.0 µg/L	EPA 524.2	10088605	Acceptable	1.24
Summary for Method EPA 524.2		Analytes Evaluated 13	Acceptable 13	Acceptance Percentage 100.0%	

Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
4375 Benzene	µg/L	12.4	12.8	12.4	0.915	10.2 - 15.4	
4610 1,2-Dichlorobenzene	µg/L	7.02	7.10	7.02	0.554	4.26 - 9.94	
4615 1,3-Dichlorobenzene	µg/L	31.4	31.6	31.4	2.95	25.3 - 37.9	
4620 1,4-Dichlorobenzene	µg/L	8.50	8.52	8.50	0.953	5.11 - 11.9	
4765 Ethylbenzene	µg/L	5.24	5.38	5.24	0.471	3.23 - 7.53	
5000 Methyl tert-butyl ether (MTBE)	µg/L	27.6	27.6	26.9	3.35	16.6 - 38.6	
5005 Naphthalene*	µg/L	20.0	20.2	20.0	3.47	12.1 - 28.3	
5140 Toluene	µg/L	13.0	13.6	13.0	0.846	10.9 - 16.3	
5210 1,2,4-Trimethylbenzene*	µg/L	17.6	17.2	17.6	1.82	13.8 - 20.8	
5215 1,3,5-Trimethylbenzene*	µg/L	14.9	15.0	14.9	1.68	11.9 - 18.1	
5240 m+p-Xylene*	µg/L	14.8	15.4	14.8	0.631	12.3 - 18.5	
5250 o-Xylene*	µg/L	6.94	7.17	6.94	0.584	4.30 - 10.0	
5260 Xylene, total	µg/L	21.6	22.6	21.6	1.13	18.1 - 27.1	

PEO-007-3A

Unregulated VOCs (Sample 1)

Program: WSCHEM

PEO-007-3A

Evaluation

Analyte	Result Units	Method	Method ID	Evaluation	Z
Summary for Method EPA 524.2			Overall method evaluation Acceptable		
4395 Bromodichloromethane	<0.50 µg/L	EPA 524.2	10088605	Acceptable	
4400 Bromoform	<0.50 µg/L	EPA 524.2	10088605	Acceptable	
4485 Chloroethane	14.8 µg/L	EPA 524.2	10088605	Acceptable	
4505 Chloroform	<0.50 µg/L	EPA 524.2	10088605	Acceptable	
4575 Dibromochloromethane	<0.50 µg/L	EPA 524.2	10088605	Acceptable	
4615 1,3-Dichlorobenzene	32.1 µg/L	EPA 524.2	10088605	Acceptable	
4625 Dichlorodifluoromethane	1.93 µg/L	EPA 524.2	10088605	Acceptable	-0.762
4630 1,1-Dichloroethane	49.2 µg/L	EPA 524.2	10088605	Acceptable	0.473
4680 cis-1,3-Dichloropropene	9.65 µg/L	EPA 524.2	10088605	Acceptable	2.19
4685 trans-1,3-Dichloropropylene	14.2 µg/L	EPA 524.2	10088605	Acceptable	0.318
4950 Methyl bromide (Bromomethane)	15.0 µg/L	EPA 524.2	10088605	Acceptable	-0.0213
4960 Methyl chloride (Chloromethane)	19.9 µg/L	EPA 524.2	10088605	Acceptable	0.610
5000 Methyl tert-butyl ether (MTBE)	26.4 µg/L	EPA 524.2	10088605	Acceptable	-0.926
5110 1,1,2,2-Tetrachloroethane	48.5 µg/L	EPA 524.2	10088605	Acceptable	0.696
5175 Trichlorofluoromethane	8.90 µg/L	EPA 524.2	10088605	Acceptable	
Summary for Method EPA 524.2		Analytes Evaluated 15	Acceptable 15	Acceptance Percentage 100.0%	

Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
4395 Bromodichloromethane	µg/L	0.000	0			0.000 - 0.000	
4400 Bromoform	µg/L	0.000	0			0.000 - 0.000	
4485 Chloroethane	µg/L	12.0	12.0	11.7	2.60	7.20 - 16.8	
4505 Chloroform	µg/L	0.000	0			0.000 - 0.000	
4575 Dibromochloromethane	µg/L	0.000	0			0.000 - 0.000	
4615 1,3-Dichlorobenzene	µg/L	NaN	35.1	35.0	3.68	28.1 - 42.1	
4625 Dichlorodifluoromethane	µg/L	2.40	2.40	2.35	0.617	1.44 - 3.36	
4630 1,1-Dichloroethane	µg/L	47.2	48.6	47.2	4.23	38.9 - 58.3	
4680 cis-1,3-Dichloropropene	µg/L	7.78	9.43	7.78	0.852	5.66 - 13.2	
4685 trans-1,3-Dichloropropylene	µg/L	13.5	14.5	13.5	2.20	8.70 - 20.3	
4950 Methyl bromide (Bromomethane)	µg/L	15.1	15.1	14.9	4.69	9.06 - 21.1	
4960 Methyl chloride (Chloromethane)	µg/L	18.1	17.7	18.1	2.95	10.6 - 25.4	
5000 Methyl tert-butyl ether (MTBE)	µg/L	29.8	29.8	29.1	3.67	17.9 - 41.7	
5110 1,1,2,2-Tetrachloroethane	µg/L	44.4	47.0	44.4	5.89	35.5 - 56.4	
5175 Trichlorofluoromethane	µg/L	9.54	9.54	9.19	1.52	5.72 - 13.4	

PEO-007-3B

Unregulated VOCs (Sample 2)

Program: WSCHEM

Evaluation

PEO-007-3B

Analyte	Result Units	Method	Method ID	Evaluation	Z
Summary for Method EPA 524.2					
Overall method evaluation Acceptable					
4385 Bromobenzene	[19.5] µg/L	EPA 524.2	10088605	Acceptable	0.465
4390 Bromochloromethane	[40.3] µg/L	EPA 524.2	10088605	Acceptable	1.46
4435 n-Butylbenzene	[39.8] µg/L	EPA 524.2	10088605	Acceptable	0.620
4440 sec-Butylbenzene	[26.6] µg/L	EPA 524.2	10088605	Acceptable	0.726
4445 tert-Butylbenzene	[17.4] µg/L	EPA 524.2	10088605	Acceptable	
4535 2-Chlorotoluene	[11.5] µg/L	EPA 524.2	10088605	Acceptable	-0.141
4540 4-Chlorotoluene	[51.2] µg/L	EPA 524.2	10088605	Acceptable	-0.0683
4595 Dibromomethane	[12.6] µg/L	EPA 524.2	10088605	Acceptable	0.702
4660 1,3-Dichloropropane	[26.5] µg/L	EPA 524.2	10088605	Acceptable	-0.480
4665 2,2-Dichloropropane	[28.5] µg/L	EPA 524.2	10088605	Acceptable	0.851
4670 1,1-Dichloropropene	[<0.50] µg/L	EPA 524.2	10088605	Acceptable	
4835 Hexachlorobutadiene	[16.6] µg/L	EPA 524.2	10088605	Acceptable	0.840
4900 Isopropylbenzene	[45.1] µg/L	EPA 524.2	10088605	Acceptable	-0.337
4910 4-Isopropyltoluene	[27.9] µg/L	EPA 524.2	10088605	Acceptable	1.15
5090 n-Propylbenzene	[38.2] µg/L	EPA 524.2	10088605	Acceptable	0.571
5105 1,1,1,2-Tetrachloroethane	[27.6] µg/L	EPA 524.2	10088605	Acceptable	1.19
5150 1,2,3-Trichlorobenzene	[36.4] µg/L	EPA 524.2	10088605	Acceptable	0.269
5180 1,2,3-Trichloropropane	[16.1] µg/L	EPA 524.2	10088605	Acceptable	0.474
5210 1,2,4-Trimethylbenzene	[42.9] µg/L	EPA 524.2	10088605	Acceptable	-0.989
5215 1,3,5-Trimethylbenzene	[46.2] µg/L	EPA 524.2	10088605	Acceptable	0.594

Summary for Method EPA 524.2

Analytes Evaluated 20

Acceptable 20

Acceptance Percentage 100.0%

Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
4385 Bromobenzene	µg/L	18.7	18.5	18.7	1.72	14.8 - 22.2	
4390 Bromochloromethane	µg/L	35.6	38.2	35.6	3.23	30.6 - 45.8	
4435 n-Butylbenzene	µg/L	36.7	37.8	36.7	5.00	30.2 - 45.4	
4440 sec-Butylbenzene	µg/L	23.9	23.9	23.9	3.72	19.1 - 28.7	
4445 tert-Butylbenzene	µg/L	NaN	15.1	15.6	2.88	12.1 - 18.1	
4535 2-Chlorotoluene	µg/L	11.7	11.6	11.7	1.42	6.96 - 16.2	
4540 4-Chlorotoluene	µg/L	51.5	49.9	51.5	4.39	39.9 - 59.9	
4595 Dibromomethane	µg/L	11.8	12.4	11.8	1.14	7.44 - 17.4	
4660 1,3-Dichloropropane	µg/L	27.8	29.2	27.8	2.71	23.4 - 35.0	
4665 2,2-Dichloropropane	µg/L	24.5	27.6	24.5	4.70	13.8 - 41.4	
4670 1,1-Dichloropropene	µg/L		0			0 - 0	
4835 Hexachlorobutadiene	µg/L	14.6	15.7	14.6	2.38	12.6 - 18.8	

PEO-007-3B

Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
4900 Isopropylbenzene	µg/L	47.0	47.4	47.0	5.64	37.9 - 56.9	
4910 4-Isopropyltoluene	µg/L	22.6	24.4	22.6	4.61	13.4 - 31.8	
5090 n-Propylbenzene	µg/L	36.2	37.4	36.2	3.50	29.9 - 44.9	
5105 1,1,1,2-Tetrachloroethane	µg/L	24.0	24.0	24.0	3.03	19.2 - 28.8	
5150 1,2,3-Trichlorobenzene	µg/L	35.3	35.4	35.3	4.09	28.3 - 42.5	
5180 1,2,3-Trichloropropane	µg/L	15.1	15.8	15.1	2.11	12.5 - 19.0	
5210 1,2,4-Trimethylbenzene	µg/L	47.3	48.4	47.3	4.45	37.8 - 56.8	
5215 1,3,5-Trimethylbenzene	µg/L	43.7	45.3	43.7	4.21	36.2 - 54.4	

PEO-007-4

EDB/DBCP

Program: WSCHEM

Evaluation

Analyte	Result Units	Method	Method ID	Evaluation	Z
4570 1,2-Dibromo-3-chloropropane (DBCP)	1.73 µg/L	EPA 504.1	10082607	Acceptable	-0.174
4585 1,2-Dibromoethane (EDB, Ethylene dibromide)	1.26 µg/L	EPA 504.1	10082607	Acceptable	-0.534
5180 1,2,3-Trichloropropane	25.3 µg/L	EPA 504.1	10082607	Acceptable	-2.88

Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
4570 1,2-Dibromo-3-chloropropane (DBCP)	µg/L	1.78	1.78	1.72	0.288	1.07 - 2.49	
4585 1,2-Dibromoethane (EDB, Ethylene dibromide)	µg/L	1.37	1.37	1.36	0.206	0.822 - 1.92	
5180 1,2,3-Trichloropropane	µg/L	29.5	29.5	26.1	1.46	17.7 - 41.3	

PEO-075

Gasoline Additives

Program: WSCHEM

Evaluation

Analyte	Result Units	Method	Method ID	Evaluation	Z
4370 T-amyimethylether (TAME)*	18.2 µg/L	EPA 524.2	10088605	Acceptable	
4450 Carbon disulfide*	<1.00 µg/L	EPA 524.2	10088605	Acceptable	
4770 Ethyl-t-butylether (ETBE)*	18.9 µg/L	EPA 524.2	10088605	Acceptable	
5000 Methyl tert-butyl ether (MTBE)*	<1.00 µg/L	EPA 524.2	10088605	Acceptable	
5090 n-Propylbenzene*	<0.50 µg/L	EPA 524.2	10088605	Acceptable	
5175 Trichlorofluoromethane*	<0.50 µg/L	EPA 524.2	10088605	Acceptable	
5185 Trichlorotrifluoroethane (Freon 113)*	31.2 µg/L	EPA 524.2	10088605	Acceptable	
9375 Di-isopropylether (DIPE)*	43.5 µg/L	EPA 524.2	10088605	Acceptable	

Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
4370 T-amyimethylether (TAME)*	µg/L	19.1	19.1			11.5 - 26.7	
4450 Carbon disulfide*	µg/L		0			0 - 0	
4770 Ethyl-t-butylether (ETBE)*	µg/L	19.1	19.1			11.5 - 26.7	
5000 Methyl tert-butyl ether (MTBE)*	µg/L		0			0 - 0	
5090 n-Propylbenzene*	µg/L		0			0 - 0	
5175 Trichlorofluoromethane*	µg/L		0			0 - 0	
5185 Trichlorotrifluoroethane (Freon 113)*	µg/L	30.2	30.2			18.1 - 42.3	
9375 Di-isopropylether (DIPE)*	µg/L	43.6	43.6			26.2 - 61.0	

PEO-077

Chloral Hydrate

Program: WSCHEM

Evaluation

Analyte	Result Units	Method	Method ID	Evaluation	Z
4460 Chloral hydrate	15.5 µg/L	EPA 551	10094403	Acceptable	-1.12

Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
4460 Chloral hydrate	µg/L	26.6	29.0			6.77 - 46.4	

PEO-097

Diquat/Endothall/Glyphosate/Paraquat

Program: WSCHEM

PEO-097

Evaluation

Analyte	Result Units	Method	Method ID	Evaluation	Z
9411 Glyphosate	649 µg/L	EPA 547	10091802	Acceptable	0.147
7525 Endothall	442 µg/L	EPA 548.1	10092601	Acceptable	0.242
9390 Diquat	13.3 µg/L	EPA 549.1	10093002	Acceptable	-0.885

Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
7525 Endothall	µg/L	411	473			155 - 667	
9390 Diquat	µg/L	21.5	27.8			2.93 - 40.0	
9411 Glyphosate	µg/L	641	646			532 - 750	

PEO-097-1

Paraquat

Lot: 002231
Program: WSCHEM

PEO-097-1

Evaluation

Analyte	Result Units	Method	Method ID	Evaluation	Z
9528 Paraquat	41.1 µg/L	EPA 549.1	10093002	Acceptable	0.165

Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
9528 Paraquat	µg/L	40.0	40.0			20.0 - 60.0	

PEO-098

Organic Disinfection By-Products

Program: WSCHEM

PEO-098

Evaluation

Analyte	Result Units	Method	Method ID	Evaluation	Z
9312 Bromoacetic acid	50.4 µg/L	EPA 552.2	10095600	Acceptable	0.229
9315 Bromochloroacetic acid	14.3 µg/L	EPA 552.2	10095600	Acceptable	
9336 Chloroacetic acid	24.4 µg/L	EPA 552.2	10095600	Acceptable	-1.73
9357 Dibromoacetic acid	42.4 µg/L	EPA 552.2	10095600	Acceptable	-0.266
9360 Dichloroacetic acid	43.0 µg/L	EPA 552.2	10095600	Acceptable	-0.160
9642 Trichloroacetic acid	31.2 µg/L	EPA 552.2	10095600	Acceptable	

Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
9312 Bromoacetic acid	µg/L	48.2	48.2	49.6	9.61	24.1 - 72.3	
9315 Bromochloroacetic acid	µg/L	14.7	14.7	14.7	1.90	7.35 - 22.1	
9336 Chloroacetic acid	µg/L	33.0	33.0	29.6	4.97	16.5 - 49.5	
9357 Dibromoacetic acid	µg/L	45.3	45.3	45.3	10.9	22.7 - 68.0	
9360 Dichloroacetic acid	µg/L	44.1	44.1	42.3	6.89	22.1 - 66.2	
9642 Trichloroacetic acid	µg/L	30.4	30.4	33.7	5.03	15.2 - 45.6	

PEO-230

Tert-butyl Alcohol

Program: WSCHEM

PEO-230

Evaluation

Analyte	Result Units	Method	Method ID	Evaluation	Z
4420 tert-Butyl alcohol*	2.02 µg/L	EPA 524.2	10088605	Acceptable	

Study Summary

Analyte	Units	EPA Mean	Assigned Value	Study Mean	Study Std. Dev.	Acceptance Limits	Warning Limits
4420 tert-Butyl alcohol*	µg/L	2.02	2.02			1.21 - 2.83	

Authorized for release by _____



Certifying Officer - QA/QC Manager

Date 6/8/2005

Questions / Comments?

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WP-123 Final Complete Report

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EPA ID: CA00043
ERA Laboratory Code: 01276-01
Report Issued: 06/07/05
Study Dates: 04/04/05 - 05/19/05

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Warning Limits	Performance Evaluation	Method Description
pH								
0019	pH †	S.U.	9.14	9.14	8.86 - 9.41	8.95 - 9.32	Acceptable	SM 4500 H+ B
Hardness								
0072	Total Suspended Solids (TSS) †	mg/L	89.6	94.7	73.7 - 102	78.4 - 97.6	Acceptable	SM 2540 D
0023	Calcium †	mg/L	27.8	28.1	24.9 - 32.1	26.1 - 30.9	Acceptable	EPA 200.7
0024	Magnesium †	mg/L	33.9	33.6	29.4 - 37.6	30.8 - 36.2	Acceptable	EPA 200.7
1550	Calcium Hardness (CaCO ₃)	mg/L	69.0	70.2	62.2 - 80.1		Acceptable	SM 2340 B
0022	Total Hardness (CaCO ₃) †	mg/L	209	208	190 - 227	196 - 221	Acceptable	SM 2340 B
Demand								
0038	BOD †	mg/L		26.8	13.2 - 40.3	17.7 - 35.8		
0102	CBOD †	mg/L		23.1	10.3 - 35.9	14.6 - 31.7		
0036	COD †	mg/L	44.0	43.0	28.0 - 54.8	32.4 - 50.3	Acceptable	SM 5220 D
0037	TOC †	mg/L	17.2	17.0	14.1 - 19.9	15.1 - 19.0	Acceptable	SM 5310 C
Simple Nutrients								
0031	Ammonia as N †	mg/L	3.15	3.09	2.33 - 3.84	2.58 - 3.59	Acceptable	SM 4500 NH ₃ H
0032	Nitrate as N †	mg/L	21.5	21.4	17.0 - 25.4	18.4 - 24.0	Acceptable	SM 4500 NO ₃ - F
1820	Nitrate + Nitrite as N	mg/L	21.5	21.4	17.0 - 25.4		Acceptable	SM 4500 NO ₃ - F
0033	Ortho-phosphate as P †	mg/L	2.73	2.91	2.48 - 3.37	2.63 - 3.22	Acceptable	EPA 300.0
Complex Nutrients								
0034	Total Kjeldahl Nitrogen †	mg/L	4.28	4.13	2.74 - 5.51	3.20 - 5.05	Acceptable	EPA 351.2
0035	Total phosphorus as P †	mg/L		3.29	2.50 - 3.87	2.73 - 3.64		
Cyanide								
0071	Cyanide, total †	mg/L	0.400	0.299	0.202 - 0.389	0.234 - 0.358	Not Acceptable	EPA 335.3
Total Residual Chlorine								
0098	Total Residual Chlorine †	mg/L	0.710	0.771	0.579 - 0.963	0.643 - 0.899	Acceptable	SM 4500 Cl F

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

† Indicates analytes included in ERA's NIST/NVLAP accreditation. Lab Code 200386-0

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EPA ID: CA00043
ERA Laboratory Code: O1276-01
Report Issued: 06/07/05
Study Dates: 04/04/05 - 05/19/05

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Warning Limits	Performance Evaluation	Method Description
Trace Metals								
0001	Aluminum †	µg/L	423	402	333 - 472	356 - 449	Acceptable	EPA 200.8
0016	Antimony †	µg/L	231	230	153 - 280	175 - 259	Acceptable	EPA 200.8
0002	Arsenic †	µg/L	398	386	322 - 453	344 - 431	Acceptable	EPA 200.8
1015	Barium	µg/L	835	854	731 - 971		Acceptable	EPA 200.8
0003	Beryllium †	µg/L	94.6	95.0	80.4 - 109	85.1 - 104	Acceptable	EPA 200.8
1025	Boron	µg/L	887	898	743 - 1050		Acceptable	EPA 200.7
0004	Cadmium †	µg/L	492	507	433 - 576	456 - 552	Acceptable	EPA 200.8
0006	Chromium †	µg/L	367	376	327 - 426	343 - 409	Acceptable	EPA 200.7
0005	Cobalt †	µg/L	825	777	683 - 870	715 - 839	Acceptable	EPA 200.8
0007	Copper †	µg/L	356	346	313 - 381	324 - 370	Acceptable	EPA 200.8
0008	Iron †	µg/L	352	338	295 - 387	311 - 371	Acceptable	EPA 200.7
0012	Lead †	µg/L	91.2	197	167 - 227	177 - 217	Not Acceptable	EPA 200.8
0010	Manganese †	µg/L	140	140	124 - 155	129 - 150	Acceptable	EPA 200.8
0074	Molybdenum †	µg/L	555	554	476 - 634	502 - 607	Acceptable	EPA 200.8
0011	Nickel †	µg/L	488	469	420 - 526	438 - 509	Acceptable	EPA 200.8
0013	Selenium †	µg/L	738	727	577 - 842	621 - 798	Acceptable	EPA 200.8
0017	Silver †	µg/L	198	198	170 - 227	179 - 217	Acceptable	EPA 200.8
0075	Strontium †	µg/L		249	212 - 286	224 - 273		
0018	Thallium †	µg/L	315	346	278 - 403	298 - 382	Acceptable	EPA 200.8
0014	Vanadium †	µg/L	543	557	500 - 611	519 - 593	Acceptable	EPA 200.7
0015	Zinc †	µg/L	301	274	240 - 312	252 - 300	Check for Error	EPA 200.8
Mercury								
0009	Mercury †	µg/L	23.9	25.2	19.0 - 31.3	21.0 - 29.3	Acceptable	EPA 200.8
Minerals								
0027	Alkalinity as CaCO ₃ †	mg/L	83.4	83.9	75.9 - 91.6	78.5 - 89.0	Acceptable	SM 2320 B
0028	Chloride †	mg/L	70.0	70.2	63.2 - 76.9	65.5 - 74.6	Acceptable	EPA 300.0
0020	Conductivity at 25°C †	µmhos/cm	459	465	428 - 502	440 - 490	Acceptable	SM 2510 B
0029	Fluoride †	mg/L	2.63	2.78	2.42 - 3.10	2.54 - 2.99	Acceptable	SM 4500 F- C
0026	Potassium †	mg/L	25.8	28.3	24.4 - 32.3	25.7 - 31.0	Acceptable	EPA 200.7
0025	Sodium †	mg/L	82.3	82.5	74.5 - 90.3	77.2 - 87.7	Acceptable	EPA 200.7
0030	Sulfate †	mg/L	26.7	27.8	22.1 - 32.8	23.9 - 31.0	Acceptable	EPA 300.0
0021	Total Dissolved Solids at 180°C †	mg/L	355	345	261 - 429	289 - 401	Acceptable	SM 2540 C
1950	Total Solids at 105°C	mg/L	358	366	323 - 404		Acceptable	SM 2540 B
Hexavalent Chromium								
1045	Hexavalent Chromium	µg/L	676	608	495 - 699		Acceptable	EPA 218.6

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

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Jeremy M. Davis
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EPA ID: CA00043
ERA Laboratory Code: 01276-01
Report Issued: 06/07/05
Study Dates: 04/04/05 - 05/19/05

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Warning Limits	Performance Evaluation	Method Description
MicrobE™ (Coliforms)								
2500	Total Coliforms (MF)	CFU/100mL	285	415	72 - 2380		Acceptable	SM9222B
2530	Fecal Coliforms - E.coli (MF)	CFU/100mL	196	150	16 - 1380		Acceptable	SM9222D
2500	Total Coliforms (MPN)	MPN/100mL	500	621	75 - 5160		Acceptable	SM9221B LTB
2530	Fecal Coliforms - E.coli (MPN)	MPN/100mL	500	576	70 - 4740		Acceptable	SM9221E LTB EC

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

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WP-123 Final Complete Report

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EPA ID: CA00043
ERA Laboratory Code: O1276-01
Report Issued: 06/07/05
Study Dates: 04/04/05 - 05/19/05

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Warning Limits	Performance Evaluation	Method Description
Surfactants (MBAS)								
2025	Surfactants (MBAS)	mg/L	0.317	0.324	0.161 - 0.505		Acceptable	SM 5540 C
Bromide								
1540	Bromide	mg/L	3.18	3.16	2.22 - 4.04		Acceptable	EPA 300.0
Nitrite								
1840	Nitrite as N	mg/L	1.60	1.74	1.42 - 2.05		Acceptable	SM 4500 NO3-F
Settleable Solids								
1965	Settleable Solids	mL/L	28.5	30.9	23.5 - 40.8		Acceptable	SM 2540 F
Volatile Solids								
1970	Volatile Solids	mg/L	170	180	129 - 216		Acceptable	SM 2540 E
Silica								
1990	Silica as SiO2	mg/L	159	159	119 - 192		Acceptable	SM 4500 Si D
Sulfide								
2005	Sulfide	mg/L	2.20	2.18	0.658 - 3.47		Acceptable	SM 4500 S2- D
Turbidity								
2055	Turbidity	NTU	3.03	3.18	2.30 - 4.07		Acceptable	SM 2130 B
Color								
1605	Color	Units	35.0	35.0	25.0 - 45.0		Acceptable	SM 2120 B

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Warning Limits	Performance Evaluation	Method Description
Simple Nutrients								
0031	Ammonia as N †	mg/L		3.09	2.33 - 3.84	2.58 - 3.59		
0032	Nitrate as N †	mg/L	21.0	21.4	17.0 - 25.4	18.4 - 24.0	Acceptable	EPA 300.0
1820	Nitrate + Nitrite as N	mg/L		21.4	17.0 - 25.4			
0033	Ortho-phosphate as P †	mg/L		2.91	2.48 - 3.37	2.63 - 3.22		
Total Residual Chlorine								
0098	Total Residual Chlorine †	mg/L	0.700	0.771	0.579 - 0.963	0.643 - 0.899	Acceptable	SM 4500 Cl D

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

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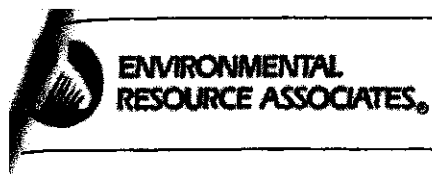
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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Warning Limits	Performance Evaluation	Method Description
Minerals								
0027	Alkalinity as CaCO ₃ †	mg/L		83.9	75.9 - 91.6	78.5 - 89.0		
0028	Chloride †	mg/L		70.2	63.2 - 76.9	65.5 - 74.6		
0020	Conductivity at 25°C †	µmhos/cm		465	428 - 502	440 - 490		
0029	Fluoride †	mg/L	2.58	2.78	2.42 - 3.10	2.54 - 2.99	Acceptable	EPA 300.0
0026	Potassium †	mg/L		28.3	24.4 - 32.3	25.7 - 31.0		
0025	Sodium †	mg/L		82.5	74.5 - 90.3	77.2 - 87.7		
0030	Sulfate †	mg/L		27.8	22.1 - 32.8	23.9 - 31.0		
0021	Total Dissolved Solids at 180°C †	mg/L		345	261 - 429	289 - 401		
1950	Total Solids at 105°C	mg/L		366	323 - 404			

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

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WP-123 Final Complete Report

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EPA ID: CA00043
ERA Laboratory Code: O1276-01
Report Issued: 06/07/05
Study Dates: 04/04/05 - 05/19/05

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Warning Limits	Performance Evaluation	Method Description
Bromide								
1540	Bromide	mg/L	3.19	3.16	2.22 - 4.04		Acceptable	EPA 300.1
Nitrite								
1840	Nitrite as N	mg/L	1.61	1.74	1.42 - 2.05		Acceptable	EPA 300.0

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EPA ID: CA00043
ERA Laboratory Code: O1276-01
Report Issued: 06/16/05
Study Dates: 04/11/05 - 05/26/05

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Metals							
1000	Aluminum	µg/L	1100	1080	973 - 1180	Acceptable	EPA 200.8
0140	Antimony †	µg/L	43.8	41.8	29.3 - 54.3	Acceptable	EPA 200.8
0001	Arsenic †	µg/L	57.3	60.4	52.8 - 67.5	Acceptable	EPA 200.8
0002	Barium †	µg/L	875	890	757 - 1020	Acceptable	EPA 200.8
0141	Beryllium †	µg/L	9.17	8.98	7.63 - 10.3	Acceptable	EPA 200.8
0226	Boron †	µg/L	825	840	783 - 926	Acceptable	EPA 200.7
0003	Cadmium †	µg/L	36.0	37.0	29.6 - 44.4	Acceptable	EPA 200.8
0004	Chromium †	µg/L	40.7	42.0	35.7 - 48.3	Acceptable	EPA 200.7
0091	Copper †	µg/L	278	274	247 - 301	Acceptable	EPA 200.8
1070	Iron	µg/L	1020	1080	993 - 1170	Acceptable	EPA 200.7
0005	Lead †	µg/L	54.9	54.5	38.2 - 70.9	Acceptable	EPA 200.8
0236	Manganese †	µg/L	316	306	284 - 322	Acceptable	EPA 200.8
0237	Molybdenum †	µg/L	28.6	28.8	23.9 - 33.7	Acceptable	EPA 200.8
0142	Nickel †	µg/L	118	115	97.8 - 132	Acceptable	EPA 200.8
0007	Selenium †	µg/L	30.9	32.2	25.8 - 38.6	Acceptable	EPA 200.8
1150	Silver	µg/L	98.8	99.3	89.5 - 109	Acceptable	EPA 200.8
0143	Thallium †	µg/L	8.10	8.79	6.15 - 11.4	Acceptable	EPA 200.8
1185	Vanadium	µg/L	413	430	400 - 457	Acceptable	EPA 200.7
0239	Zinc †	µg/L	1150	1150	1060 - 1230	Acceptable	EPA 200.8
Mercury							
0006	Mercury †	µg/L	3.18	3.24	2.27 - 4.21	Acceptable	EPA 200.8
pH							
0026	pH †	S.U.	7.57	7.55	6.80 - 8.31	Acceptable	SM 4500 H+ B
Inorganics							
1575	Chloride	mg/L	82.5	83.6	78.2 - 88.8	Acceptable	EPA 300.0
1610	Conductivity	µmhos/cm	650	655	619 - 691	Acceptable	SM 2510 B
0010	Fluoride †	mg/L	5.47	4.96	4.46 - 5.46	Not Acceptable	EPA 300.0
0009	Nitrate as N †	mg/L	9.12	9.23	8.31 - 10.2	Acceptable	EPA 300.0
1820	Nitrate + Nitrite as N	mg/L	9.20	9.23	8.31 - 10.2	Acceptable	SM 4500 NO3- F
1125	Potassium	mg/L	34.8	36.0	32.8 - 39.3	Acceptable	EPA 200.7
0145	Sulfate †	mg/L	78.4	79.4	71.5 - 87.1	Acceptable	EPA 300.0
0024	Total Dissolved Solids at 180°C †	mg/L	423	414	265 - 563	Acceptable	SM 2540 C
Alkalinity & Sodium							
0027	Alkalinity (as CaCO3) †	mg/L	41.4	39.6	37.6 - 44.7	Acceptable	SM 2320 B
0029	Sodium †	mg/L	18.7	18.2	16.9 - 20.1	Acceptable	EPA 200.7

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

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WS-105 Final Complete Report

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EPA ID: CA00043
ERA Laboratory Code: O1276-01
Report Issued: 06/16/05
Study Dates: 04/11/05 - 05/26/05

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Turbidity							
0023	Turbidity †	NTU	2.10	2.17	1.86 - 2.71	Acceptable	SM 2130 B
Residual Chlorine							
0022	Free residual chlorine †	mg/L	2.11	2.09	1.75 - 2.43	Acceptable	SM 4500 Cl F
1940	Total residual chlorine	mg/L	2.17	2.19	1.86 - 2.51	Acceptable	SM 4500 Cl F
Nitrite							
0092	Nitrite as N †	mg/L	1.57	1.70	1.45 - 1.96	Acceptable	EPA 300.0
Nutrients							
0261	ortho-Phosphate as P †	mg/L	1.27	1.25	1.17 - 1.32	Acceptable	EPA 300.0
Cyanide							
0146	Cyanide †	mg/L	0.179	0.149	0.112 - 0.186	Acceptable	EPA 335.3
Total Organic Carbon							
0263	Total organic carbon †	mg/L	3.73	3.55	3.18 - 4.11	Acceptable	SM 5310 C
Chlorite							
0195	Chlorite †	µg/L	399	365	258 - 540	Acceptable	EPA 300.1
Bromide / Bromate / Chlorate							
0260	Bromide †	µg/L	437	429	369 - 496	Acceptable	EPA 300.1
0193	Bromate †	µg/L	17.0	14.5	3.02 - 28.6	Acceptable	EPA 300.1
0194	Chlorate †	µg/L	102	95.2	76.9 - 113	Acceptable	EPA 300.1
Hardness							
1755	Total Hardness as CaCO ₃	mg/L	217	223	203 - 249	Acceptable	SM 2340 B
0025	Calcium Hardness as CaCO ₃ †	mg/L	161	167	157 - 179	Acceptable	SM 2340 B
1035	Calcium	mg/L	64.4	67.0	60.7 - 75.1	Acceptable	EPA 200.7
1085	Magnesium	mg/L	13.7	13.6	12.3 - 14.8	Acceptable	EPA 200.7
Standard Plate Count							
2555	Standard Plate Count	CFU/mL	486	415	286 - 600	Acceptable	SM 9215 B SPC

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Report Issued: 06/16/05
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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
MicrobE™ (Coliforms)							
0254	Sample 1 Total Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221B LTB
0255	Sample 1 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0254	Sample 2 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B LTB
0255	Sample 2 Fecal Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221E LTB EC
0254	Sample 3 Total Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221B LTB
0255	Sample 3 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0254	Sample 4 Total Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221B LTB
0255	Sample 4 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0254	Sample 5 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B LTB
0255	Sample 5 Fecal Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221E LTB EC
0254	Sample 6 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B LTB
0255	Sample 6 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0254	Sample 7 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B LTB
0255	Sample 7 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0254	Sample 8 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B LTB
0255	Sample 8 Fecal Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221E LTB EC
0254	Sample 9 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9221B LTB
0255	Sample 9 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC
0254	Sample 10 Total Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221B LTB
0255	Sample 10 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9221E LTB EC

Total Coliform Evaluation : Acceptable
Fecal Coliform Evaluation : Acceptable

Definitions:

- **Assigned Value:** 'Presence' indicates organisms of the coliform group are present in the sample, 'Absence' indicates organisms of the coliform group are not present in the sample as defined by standard water testing methods.
- **Fecal Coliform organism** - Escherichia coli, Samples 2, 5 and 8 ATCC Strain #: 35421
- **Total Coliform organism** - Enterobacter cloacae, Samples 6, 7 and 9 ATCC Strain #: 35030
- **Negative Coliform organism** - Proteus mirabilis, Samples 1 and 10 ATCC Strain #: 25933
- **Blank** - Samples 3 and 4

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

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Report Issued: 06/16/05
Study Dates: 04/11/05 - 05/26/05

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Corrosivity							
1620	Corrosivity	S.I. @ 20°C	0.867	1.01	0.610 - 1.41	Acceptable	SM 2330 B
MBAS							
2025	MBAS	mg/L	0.192	0.202	0.152 - 0.268	Acceptable	SM 5540 C
Silica							
1990	Silica as SiO ₂	mg/L	24.0	24.1	20.5 - 27.7	Acceptable	SM 4500 Si D
Perchlorate							
1895	Perchlorate	µg/L	7.80	7.49	6.18 - 8.24	Acceptable	EPA 314
UV 254 Absorbance / DOC							
2060	UV 254 Absorbance	cm-1	0.049	0.0516	0.0325 - 0.0724	Acceptable	SM 5910 B
1710	Dissolved Organic Carbon (DOC)	mg/L	3.61	3.49	2.90 - 4.10	Acceptable	SM 5310 C
Chromium (VI)							
1045	Chromium (VI)	µg/L	33.6	26.8	24.1 - 29.5	Not Acceptable	EPA 218.6
Vanadium							
1185	Vanadium	µg/L	12.6	12.6	11.3 - 13.9	Acceptable	EPA 200.7

analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

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WS-105 Final Complete Report

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EPA ID: CA00043
ERA Laboratory Code: 01276-01
Report Issued: 06/16/05
Study Dates: 04/11/05 - 05/26/05

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
pH							
0026	pH †	S.U.	7.56	7.55	6.80 - 8.31	Acceptable	SM4500H+B AUTO
Inorganics							
1575	Chloride	mg/L		83.6	78.2 - 88.8		
1610	Conductivity	µmhos/cm		655	619 - 691		
0010	Fluoride †	mg/L	4.73	4.96	4.46 - 5.46	Acceptable	SM 4500 F- C
0009	Nitrate as N †	mg/L	9.20	9.23	8.31 - 10.2	Acceptable	SM 4500 NO3- F
1820	Nitrate + Nitrite as N	mg/L		9.23	8.31 - 10.2		
1125	Potassium	mg/L		36.0	32.8 - 39.3		
0145	Sulfate †	mg/L		79.4	71.5 - 87.1		
0024	Total Dissolved Solids at 180°C †	mg/L		414	265 - 563		
Residual Chlorine							
0022	Free residual chlorine †	mg/L	1.80	2.09	1.75 - 2.43	Acceptable	SM 4500 Cl D
1940	Total residual chlorine	mg/L	2.00	2.19	1.86 - 2.51	Acceptable	SM 4500 Cl D
Nitrite							
0092	Nitrite as N †	mg/L	1.59	1.70	1.45 - 1.96	Acceptable	SM 4500 NO3-F
Bromide / Bromate / Chlorate							
0260	Bromide †	µg/L	425	429	369 - 496	Acceptable	EPA 300.0
0193	Bromate †	µg/L		14.5	3.02 - 28.6		
0194	Chlorate †	µg/L		95.2	76.9 - 113		

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

† Indicates analytes included in ERA's NIST/NVLAP accreditation. Lab Code 200386-0

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EPA ID: CA00043
ERA Laboratory Code: 01276-01
Report Issued: 06/16/05
Study Dates: 04/11/05 - 05/26/05

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
MicroE™ (Coliforms)							
0254	Sample 1 Total Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	Sample 1 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Sample 2 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	Sample 2 Fecal Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Sample 3 Total Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	Sample 3 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Sample 4 Total Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	Sample 4 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Sample 5 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	Sample 5 Fecal Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Sample 6 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	Sample 6 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Sample 7 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	Sample 7 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Sample 8 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	Sample 8 Fecal Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0254	Sample 9 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9223 COLILERT
0255	Sample 9 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0254	Sample 10 Total Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT
0255	Sample 10 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9223 COLILERT

Total Coliform Evaluation : Acceptable
Fecal Coliform Evaluation : Acceptable

Definitions:

- **Assigned Value:** 'Presence' indicates organisms of the coliform group are present in the sample, 'Absence' indicates organisms of the coliform group are not present in the sample as defined by standard water testing methods.
- **Fecal Coliform organism** - Escherichia coli, Samples 2, 5 and 8 ATCC Strain #: 35421
- **Total Coliform organism** - Enterobacter cloacae, Samples 6, 7 and 9 ATCC Strain #: 35030
- **Negative Coliform organism** - Proteus mirabilis, Samples 1 and 10 ATCC Strain #: 25933
- **Blank** - Samples 3 and 4

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

† Indicates analytes included in ERA's NIST/NVLAP accreditation. Lab Code 200386-0

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EPA ID: CA00043
ERA Laboratory Code: O1276-01
Report Issued: 06/16/05
Study Dates: 04/11/05 - 05/26/05

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Microbe™ (Coliforms)							
0254	Sample 1 Total Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222B
0255	Sample 1 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D
0254	Sample 2 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B
0255	Sample 2 Fecal Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222D
0254	Sample 3 Total Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222B
0255	Sample 3 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D
0254	Sample 4 Total Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222B
0255	Sample 4 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D
0254	Sample 5 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B
0255	Sample 5 Fecal Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222D
0254	Sample 6 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B
0255	Sample 6 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D
0254	Sample 7 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B
0255	Sample 7 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D
0254	Sample 8 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B
0255	Sample 8 Fecal Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222D
0254	Sample 9 Total Coliforms †	CFU/100mL	Presence	Presence	Presence	Acceptable	SM9222B
0255	Sample 9 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D
0254	Sample 10 Total Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222B
0255	Sample 10 Fecal Coliforms †	CFU/100mL	Absence	Absence	Absence	Acceptable	SM9222D

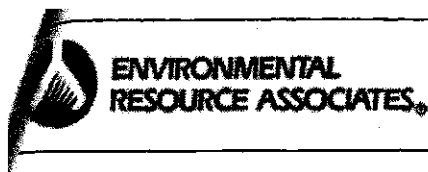
Total Coliform Evaluation : Acceptable
Fecal Coliform Evaluation : Acceptable

Definitions:

- **Assigned Value:** 'Presence' indicates organisms of the coliform group are present in the sample, 'Absence' indicates organisms of the coliform group are not present in the sample as defined by standard water testing methods.
- **Fecal Coliform organism** - Escherichia coli, Samples 2, 5 and 8 ATCC Strain #: 35421
- **Total Coliform organism** - Enterobacter cloacae, Samples 6, 7 and 9 ATCC Strain #: 35030
- **Negative Coliform organism** - Proteus mirabilis, Samples 1 and 10 ATCC Strain #: 25933
- **Blank** - Samples 3 and 4

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

† Indicates analytes included in ERA's NIST/NVLAP accreditation. Lab Code 200366-0



WP-126 Final Complete Report

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EPA ID: CA00043
ERA Laboratory Code: 01276-01
Report Issued: 09/09/05
Study Dates: 07/05/05 - 08/19/05

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Warning Limits	Performance Evaluation	Method Description
Trace Metals								
0001	Aluminum †	µg/L		1150	931 - 1360	1000 - 1290		
0016	Antimony †	µg/L		829	588 - 995	656 - 927		
0002	Arsenic †	µg/L		495	415 - 580	442 - 553		
1015	Barium	µg/L		207	179 - 233			
0003	Beryllium †	µg/L		128	108 - 145	114 - 139		
1025	Boron	µg/L		950	785 - 1110			
0004	Cadmium †	µg/L		318	271 - 362	286 - 347		
0006	Chromium †	µg/L		361	313 - 409	329 - 393		
0005	Cobalt †	µg/L		853	750 - 955	785 - 921		
0007	Copper †	µg/L		756	680 - 832	711 - 805		
0008	Iron †	µg/L		285	248 - 327	261 - 314		
0012	Lead †	µg/L	710	700	612 - 785	641 - 756	Acceptable	EPA 200.8
0010	Manganese †	µg/L		339	303 - 377	315 - 364		
0074	Molybdenum †	µg/L		154	126 - 180	135 - 171		
0011	Nickel †	µg/L		1960	1760 - 2180	1850 - 2120		
0013	Selenium †	µg/L		1370	1090 - 1580	1170 - 1500		
0017	Silver †	µg/L		541	464 - 620	490 - 594		
0075	Strontium †	µg/L		92.8	78.4 - 107	83.2 - 102		
0018	Thallium †	µg/L		624	508 - 745	548 - 706		
0014	Vanadium †	µg/L		707	619 - 791	648 - 762		
0015	Zinc †	µg/L		1220	1050 - 1400	1110 - 1340		

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

† Indicates analytes included in ERA's NIST/NVLAP accreditation. Lab Code 200386-0

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EPA ID: CA00043
ERA Laboratory Code: O1276-01
Report Issued: 09/09/05
Study Dates: 07/05/05 - 08/19/05

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Warning Limits	Performance Evaluation	Method Description
Cyanide								
0071	Cyanide, total †	mg/L	0.284	0.279	0.135 - 0.430	0.184 - 0.381	Acceptable	EPA 335.3

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

† Indicates analytes included in ERA's NIST/NVLAP accreditation. Lab Code 200386-0



ENVIRONMENTAL
RESOURCE ASSOCIATES®

WS-108 Final Complete Report

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EPA ID: CA00043
ERA Laboratory Code: O1276-01
Report Issued: 09/15/05
Study Dates: 07/11/05 - 08/25/05

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Chromium (VI)							
1045	Chromium (VI)	µg/L	45.1	44.2	39.7 - 48.6	Acceptable	EPA 218.6

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

† Indicates analytes included in ERA's NIST/NVLAP accreditation. Lab Code 200386-0

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EPA ID: CA00043
ERA Laboratory Code: O1276-01
Report Issued: 09/15/05
Study Dates: 07/11/05 - 08/25/05

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Inorganics							
1575	Chloride	mg/L		7.97	6.28 - 9.82		
1610	Conductivity	µmhos/cm		331	298 - 364		
0010	Fluoride †	mg/L	1.55	1.58	1.42 - 1.74	Acceptable	EPA 300.0
0009	Nitrate as N †	mg/L		7.90	7.11 - 8.69		
1820	Nitrate + Nitrite as N	mg/L		7.90	7.11 - 8.69		
1125	Potassium	mg/L		25.3	21.8 - 28.9		
0145	Sulfate †	mg/L		60.3	52.4 - 67.7		
0024	Total Dissolved Solids at 180°C †	mg/L		249	165 - 333		

† All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

† Indicates analytes included in ERA's NIST/NVLAP accreditation. Lab Code 200386-0

SECTION 4

EQUIPMENT, CALIBRATION, AND MAINTENANCE

A great deal of trust is given to the performance and outcome of modern day instrumentation, and within a laboratory this is particularly true. Orange County Water District's Advanced Water Quality Assurance Laboratory houses some of the most technologically advanced instruments within the field of water analysis. In order for these instruments to continually perform and provide precise and accurate data, we require highly trained and skilled personnel to operate these instruments. Proper calibration and maintenance of these instruments are of primary importance to the overall quality of the laboratory. Yearly service agreements on major instruments are maintained to ensure continued peak instrument performances.

Instruments and ancillary equipment which requires routine standardization, calibration, and maintenance work include the following:

<u>EQUIPMENT</u>	<u>MAKE</u>	<u>MODEL</u>	<u>NO. OF UNITS</u>
Organics			
Gas Chromatographs	Varian	CP3800	4
GC/MS/MS	Varian	GC/MS-4000	3
GC/MS/MS	Varian	GC-450/MS-240	2
GC/MS	Varian	CP-3800/Saturn 2000	6
HPLC	Waters	Alliance e2695	1
HPLC (LC/MS)	Waters	Alliance e2695	1
MS (LC/MS)	Waters	Micromass ZQ	1
LC/MS/MS	Applied BioSystems	4000 Q- Trap	1
Chromatography Data Workstation	Various	Various	17
Purge and Trap	Tekmar	LSC 3100	2
Purge and Trap	Tekmar	Stratum	3
P/T Autosamplers	Varian	Archon	5
Sample Extract Concentrator	Zymark	Turb Vap II	7
Solid Phase Extraction System	Horizon	4790	2
Solid Phase Extraction System	Dionex	AutoTrace	4
Balance	Sartorius	Analytical	1
Balance	Sartorius	Sartorius Basic	2

<u>EQUIPMENT</u>	<u>MAKE</u>	<u>MODEL</u>	<u>NO. OF UNITS</u>
Inorganics/Microbiology			
ICP - OES	Perkin Elmer	Optima 4300DV	1
ICP/MS	Perkin Elmer	ELAN DRC-II	1
Nebulizer	CETAC	U-5000AT	1
Flow Injection Analyzer	LACHAT	QuickChem 8000	1
FIA AutoSampler	LACHAT	ASX-500	1
FIA AutoSampler	LACHAT	ASX-510	1
Ion Chromatograph	DIONEX	DX600	1
Ion Chromatograph	DIONEX	DX500	1
Ion Chromatograph	DIONEX	ICS-3000	2
TOC Analyzer	G.E.	900	1
TOC Analyzer	G.E.	5310C	1
UV/VIS Spectrometer	Varian	Cary 50	1
Bacti Analysis System	IDEXX	Quanti Tray	1
Autoclave	Steris	SV-120	2
Incubator	Precision/Sci	GLM	1
Const. Temp Water Bath	Thermo	2862	1
Const. Temp. Water Bath	LabLine	Aquabath	1
Const. Temp. Water Bath	LabLine	Imperial IV	1
Block Digester	Env. Express	Auto Block	1
Sonicator	Branson		1
Specific Ion Meter/ pH	Orion	EA 920	1
EC Meter	Orion	162A	1
Turbidimeter	Hach	2100AN	1
Balance	Sartorius	BP300S	1
Balance	Sartorius	CP3202S	1
Balance	Sartorius	CP225D	1
Balance	Sartorius	CP324S	1
Balance	Sartorius	BP150	1
Microscope	Olympus	BH-2	1
Microscope	Bausch & Lomb	Binocular	1
Incubator	Lab-Line	Orbit Enviro Shaker	1
Drying Ovens	Yamato	DVS600	2
Vacuum Pump	KNF Neuberger	UN726.3TTP	1
Alkalinity Autotitrator	Mettler/Toledo	T90	1
pH Meter	Thermo	Orion 5 Star	1
COD Heating Block	Hach	COD Reactor	1
Hot Plate/Stirrer	Fisher	Isotemp	4
Hot Plate/Stirrer	Fisher	Fisher Stirring	2
Hot Plate/Stirrer	VWR	Hot Plate	1
Stirrer	Thermolyne	7200	2
Heating Block	Lachat	Micro Dist	1
Electronic Pipettor	Rainin	EDP models	4
Block Digester	SEAL	BD50S	1
Block Digester (Metals)	Thomas Cain	DEENA	1
Centrifuge	Thermo	ST40	1
Milli-Q DI Polisher	Millipore	Gradient A10	3
Flow Injection Analyzer	Lachat	QuickChem 8500	1

Miscellaneous

Sample Storage Refrigerators	REVCO, etc.	17
Refrigerators/Freezers	Various	6
Laboratory Workstations	Various PC units	37
LIMS Software	Telecation, Inc.	ASPEN

Qualified chemists and technicians perform instrument calibration and routine maintenance tasks. Instrument or equipment operating manuals and maintenance logbooks are kept with the instruments. Logbooks contain calibration/maintenance/service information, dates of the service, performance conditions, and initials of the service personnel.

As part of the preventative maintenance program, service agreements and maintenance contracts have always been arranged with instrument manufacturers or special service companies. Tables 4-1 and 4-2 summarize the current status of main laboratory instrument service and maintenance.

INCUBATOR AND WATER BATH

Microbiological analysis requires close attention to the accuracy of its temperature readings. The coliform incubator must be maintained at a temperature of $35 \pm 0.5^{\circ}\text{C}$. Check and record temperature twice daily (morning and afternoon) on the shelf areas in use. A glass thermometer with bulb and stem immersed in glycerine tube is placed in the shelf to measure its temperature. A continuous 24-hour recording thermograph is placed inside the incubator to monitoring the temperature as well (for overnight temperature fluctuations). Fecal coliform water bath must be maintained at a temperature of $44.5 \pm 0.2^{\circ}\text{C}$. A calibrated thermometer immersed in the water bath is used for temperature read-out. Temperature of the water bath is recorded daily. Table 4-3 is a sample of main laboratory's incubator and water bath temperature log sheet. Media preparation dates and pH of the media are recorded in the same table.

AUTOCLAVE

Temperature of the autoclave is recorded each time an item is sterilized. Heat-indicating tapes is also used to identify supplies and materials that have been sterilized. Table 4-4 is a sample of main laboratory's autoclave usage record sheet.

Minimum amount of time for autoclaving materials at 121°C are listed below.

<u>Item</u>	<u>Time (minutes)</u>
Membrane filters & pads	10
Carbohydrate containing media	12-15
Contaminated test materials	30
Membrane filter assemblies	15
Sample collection bottles	15
Individual glassware	15
Dilution water blank	15
Rinse water, 0.5 to 1 liter	30
Rinse water in excess of 1 liter	adjust for vol. Check for sterility

THERMOMETER

Check accuracy of thermometers semiannually against a certified National Institute of Standards and Technology thermometer. Use thermometers graduated to increments of 0.1°. Record temperature check data in a quality control log. Examples of thermometer check sheet are provided in Figures 4-5, 4-6, and 4-7.

pH METER

Standardize pH meter with at least two standard buffers (pH 4.0, 7.0, or 10.0) and compensate for temperature before each series of tests. Date pH buffers solutions when opened and check monthly against another pH meter.

BALANCE

Maintain balances in dry and clean condition. Inspect weights with each use and check weights monthly against certified weights. Sartorius qualified personnel service laboratory balances annually through calibrations and performance testing.

REFRIGERATOR AND FREEZER

The temperature of refrigerator is maintained at 4°C or under. Refrigerators are cleaned routinely. Materials are dated when stored. Outdated materials are discarded on a regular basis. Materials are dated when stored in the freezer, and discarded when outdated.

REAGENT-GRADE WATER QUALITY ASSURANCE

Test for bacteriological quality of reagent water (aka water suitability test) - the test based on the growth of *Enterobacter Aerogenes* in a chemically defined minimal growth medium is performed annually. Laboratory reagent water is tested for the following constituents:

<u>TEST</u>	<u>FREQUENCY</u>
Conductivity	Continuously
TOC	Monthly
Heavy Metals	Annually
Nitrogens	Monthly
Total Cl ₂	Monthly
Heterotrophic Plate Count	Monthly

EPA CHECKLIST

OCWD's laboratory has specific instruments that are required to perform methods for which certification has been approved by the ELAP. Those instruments must meet the specifications in the federal EPA checklist entitle "Required Equipment and Instrument for Inorganic, Organic, and Microbiological Contaminants". An EPA checklist of the district's main laboratory is given below.

Instrument	Number of Units	Manufacturer Service Contract	Maintained In-House
GC – specific detector (GCs)	4	Yes	-
GC/Mass Spectrometers (GC/MS)	11	Yes	-
HPLCs	1	Yes	-
LC/MS	1	Yes	-
LC/MS/MS	1	Yes	-
ICP-OES	1	Yes	-
ICP/MS	1	Yes	-
UV/VIS Spectrometer	1	No	Yes
TOC Analyzers	2	Yes	-
Flow Injection Analyzer (FIA)	2	Yes	-
Automatic Titrator	1	No	Yes
Turbidimeter	1	No	Yes
pH Meter	2	No	Yes
Specific Ion Meter	1	No	Yes
Conductivity Meter	1	No	Yes
Analytical Balances	4	Yes	-
Top Loading Balances	4	Yes	-
Microscope	3	No	Yes
Centrifuge	2	No	Yes
Recording Thermograph	2	No	Yes
Bacti Incubator, 35°C	1	No	Yes
Bacti Waterbath, 44.5°C	1	No	Yes
Autoclave	1	No	Yes
Certified Thermometer	4	No	Yes
Dry Heat Sterilizer, 180°C	1	No	Yes
Quebec Colony Counter	1	No	Yes
Glass Drying Oven	4	No	Yes
Muffle Furnace	1	No	Yes
Microwave Digester	1	No	Yes
Vacuum Evaporator	1	No	Yes
Sample Refrigerators	17	No	Yes
Freezers/Refrigerators	8	No	Yes
Water Baths	6	No	Yes
Deionized Water System	1	Yes	
Ultrasonic Cleaner	2	No	Yes
Turbo Vap Concentrator	4	No	Yes
Instrument Computer Data Stations	25	No	Yes
PC LIMS Terminals	37	Yes	-

Table 4-1

SECTION 5

QUALITY CONTROL, METHOD DETECTION LIMITS (MDL) AND REPORTABLE DETECTION LIMITS (RDL)

Quality control practices, MDLs and RDLs are essential parts of the laboratory's performance. These quality control requirements are specified in the laboratory SOPs in Sections 7 and 8. These requirements follow designated reference within EPA methodology, for each specific method.

METHOD DETECTION LIMIT AND REPORTING DETECTION LIMIT

The Method Detection Limit (MDL) is defined as the minimum concentration of a substance that can be identified, measured, and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing analyte.

The MDL is achieved in OCWD's laboratory by the chemists by adding a constituent to reagent water, or to the matrix of interest, to make a concentration near the estimated MDL. Analyze seven portions of this solution (or the number specified by the method) and calculate the standard deviation (S).

$$S = [\sum(x - \bar{x})^2 / n - 1]^{1/2}, \quad \begin{array}{l} \bar{x} \text{ is the average or mean of the measurement.} \\ n = 7 \end{array}$$

From a table of the onesided t distribution select the value of t for $7 - 1 = 6$ degrees of freedom and at the 99% level; this value is 3.14. The product 3.14 times S is the desired MDL.

The Reporting Detection Limit (RDL) is established for all reportable parameters. RDL is used in the final reports. If the target analyte is not detected or detected below the RDL, is reported as N.D. (not detected) and be followed by the RDL. At OCWD's laboratory, the term "Trace" is used for analyte detected at 50% or greater, up to 99%, of the RDL.

OCWD's laboratory Reporting Detection Limits (RDLs) for both inorganic and organic compounds are included in the following pages.

ORANGE COUNTY WATER DISTRICT

ORGANIC LABORATORY METHOD/TARGET LIST

REVISED August 2008

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sample hold time - 14 days	TestID	TestName	State				
40 ml clear glass vial			RDL	Trace	MCL	NL	DLR Units
	EDB	1,2-Dibromoethane	0.01		0.05		0.02 ug/L
	DBCP	1,2-Dibromo-3-chloropropane	0.01		0.2		0.01 ug/L
	123TCP	1,2,3-Trichloropropane	0.01				0.005 ug/L

QA/QC information for EPA METHOD 504.1

5 point calibration - 0.01, 0.05, 0.10, 0.20, 0.50ppb
 0.10 ppb calibration check - LFB low- 0.01 high- 0.10ppb
 0.10 ppb spike

sample preservation:

3 mg of sodium thiosulfate/ 40ml sample
 extract analysis holding time - 24 hours

EPA Method 505 (Rev 2.1)

Method Retired - 12/1/06

sample hold time - 14 days	TestID	TestName	State				
40 ml clear glass vial			RDL	Trace	MCL	NL	DLR Units
	HGCPD	Hexachlorocyclopentadiene	0.5		50		1 ug/L
	LINDNE	HCH-gamma (Lindane)	0.1		0.2		0.2 ug/L
	CLTNIL	Chlorothalonil	5				5 ug/L
	ALACHL	Alachlor	0.5		2		1 ug/L
	ALDRIN	Aldrin	0.03			0.002	0.075 ug/L
	HEPTA	Heptachlor	0.01		0.01		0.01 ug/L
	HEPEPX	Heptachlor epoxide	0.01		0.01		0.01 ug/L
	CIDANE	Chlordane	0.1		0.1		0.1 ug/L
	DIELDR	Dieldrin	0.02				0.02 ug/L
	ENDRIN	Endrin	0.1		2		0.1 ug/L
	TOXA	Toxaphene mixture	1		3		1 ug/L
	METHOX	Methoxychlor	1		30		10 ug/L

sample preservation:

3 mg of sodium thiosulfate/ 40ml sample

ORANGE COUNTY WATER DISTRICT

ORGANIC LABORATORY METHOD/TARGET LIST

REVISED: August 2008

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EPA Method 504 (Rev. 1)

sample hold time - 14 days

40 ml clear glass vial

TestID TestName

EDB 1,2-Dibromoethane

DBCP 1,2-Dibromo-3-chloropropane

123TCP 1,2,3-Trichloropropane

5 point calibration: 0.01, 0.05, 0.10, 0.20, 0.50ppb

0.10 ppb calibration check - LFB low-0.01 high-0.10ppb

0.10 ppb spike

OWOC Information for EPA METHOD 504

sample preservation:

3 mg of sodium thiosulfate/ 40ml sample

extract analysis holding time - 24 hours

RDL	Trace	MCL	State		Units
			NL	DLR	
0.01		0.05			0.02 ug/L
0.01		0.2			0.01 ug/L
0.01					0.005 ug/L

EPA Method 505 (Rev. 2)

sample hold time - 14 days

40 ml clear glass vial

TestID TestName

HCIPD Hexachlorocyclopentadiene

LINDNE HCH gamma (Lindane)

CLTME Chlorfenthion

ALACHL Alachlor

ALDRIN Aldrin

HEPTA Heptachlor

HEPEPX Heptachlor epoxide

CICANE Chlordane

DIELDR Dieldrin

ENDRIN Endrin

TOXA Toxaphene mixture

METHOX Methoxychlor

RDL	Trace	MCL	State		Units
			NL	DLR	
0.5					1 ug/L
0.1					0.2 ug/L
5					5 ug/L
0.5					1 ug/L
0.03			0.002		0.075 ug/L
0.01					0.01 ug/L
0.01					0.01 ug/L
0.1					0.1 ug/L
0.02					0.02 ug/L
0.1					0.1 ug/L
1					1 ug/L
1					10 ug/L

3 mg of sodium thiosulfate/ 40ml sample

EPA Method 506 (Rev. 1.1)				State			
sample extraction hold time - 14 days	TestID	TestName		RDL	TraceL	MCL	Units
extract - analysis hold time - 14 days	DMP	Dimethyl phthalate		2			5 ug/L
2.5 liter amber glass bottle	DEP	Diethyl phthalate		2			5 ug/L
	DnBP	D-n-butylphthalate		2			5 ug/L
	BSP	Bis(2-benzyl) phthalate		2			10 ug/L
	DEHA	Bis(2-ethylhexyl) adipate		2			5 ug/L
	DEHP	Bis(2-ethylhexyl) phthalate		2			5 ug/L
	DnOP	D-n-octyl phthalate		2			5 ug/L
QA/QC information for EPA METHOD 506							
sample preservation: (dechlorination)	5 point calibration - 1.0, 2.0, 5.0, 7.5, 10ppb						
150 mg of sodium thiosulfate/ 2.5L sample	LFB low- 2.0ppb LFB high- 5.0ppb						
	5.0ppb spike						

EPA Method 507 (Rev. 2.1)				State			
sample extraction hold time - 14 days	TestID	TestName		RDL	TraceL	MCL	Units
extract - analysis hold time - 14 days	MOLINT	Molinate		0.5		20	2 ug/L
2.5 liter amber glass bottle	PROPCL	Propachlor		0.5		90	0.5 ug/L
	DMTH	Dimethoate		5		140	10 ug/L
	SIMAZ	Simazine		0.1	4		1 ug/L
	PROMTN	Prometon		0.1			2 ug/L
	ATRAZ	Atrazine		0.1	1		0.5 ug/L
	PROPAP	Propazine		0.1			ug/L
	DIAZI	Diazinon		0.1		14	0.25 ug/L
	CAFFEI	Caffeine		0.3			ug/L
	MTRBZN	Metribuzin		0.2			ug/L
	MPARA	methyl-Parathion		0.5		30	ug/L
	ALACHL	Alachlor		0.05	2		1 ug/L
	PROMET	Prometryn		0.1			2 ug/L
	BROMAC	Bromacil		0.5			10 ug/L
	THIO	Thiobencarb		0.5	70/1		1 ug/L
	MALATH	Malathion		10		160	ug/L
	METOCL	Metolachlor		0.8			ug/L
	PARA	Parathion		0.5		30	0.02 ug/L
	BUTACL	Butachlor		0.38			0.38 ug/L

ORGANIC

NORFLR	Norflurazon	0.5	ug/L
EPTC	EPTC	0.1	ug/L
TRBACL	Terbacil	0.1	ug/L
ETHION	Ethion	0.1	ug/L

QA/QC information for EPA METHOD 507

sample preservation: (dechlorination) 5 point calibration: 0.10, 0.25, 0.50, 1.00, 2.00ppb

200 mg of sodium thiosulfate/ 2.5L sample

LFB low- 0.25ppb LFB high- 1.00ppb

1.0ppb spike

NTOL 2-Nitro-Toluene (internal standard) (1.0 ppb)

NXYL 2-Nitro-m-Xylene (surrogate standard)

EPA Method 508 (rev 8.1)

sample extraction hold time - 7 days

extract - analysis hold time - 14 days

2.5 liter amber glass bottle

TestID	TestName	State			
		RDL	Trace	MCL	Units
HCICPD	Hexachlorocyclopentadiene	0.5		50	1 ug/L
ETRDZL	Etridiazole	0.05			ug/L
CLNEB	Chloroneb	0.4			ug/L
PROPCL	Propachlor	0.5		90	0.5 ug/L
TRFLRN	Trifluralin	0.05			ug/L
BHCa	HCH-alpha(Alpha-BHC)	0.02		0.7	0.01 ug/L
HEXCLB	Hexachlorobenzene	0.5		1	0.5 ug/L
BHCb	HCH-beta(Beta-BHC)	0.02		0.3	0.05 ug/L
LINDNE	HCH-gamma (Lindane)	0.1		0.2	0.2 ug/L
BHCd	HCH-delta(Delta-BHC)	0.02			0.05 ug/L
CLTNIL	Chlorothalonil	5			5 ug/L
HEPTA	Heptachlor	0.01		0.01	0.01 ug/L
ALACHL	Alachlor	0.5		2	1 ug/L
ALDRIN	Aldrin	0.03		0.002	0.075 ug/L
CIPYRI	Chlorpyrifos	0.1			1 ug/L
DCPA	DCPA-Dacthal	0.05			0.1 ug/L
HEPEPX	Heptachlor epoxide	0.01		0.01	0.01 ug/L
CLDG	Chlordane-gamma	0.01			ug/L
ENDOI	Endosulfan I	0.05			0.02 ug/L
CLDA	Chlordane-alpha	0.01			ug/L

ORGANIC

DDE	4,4'-DDE	0.01		0.01 ug/L
DIELDR	Dieldrin	0.02	0.002	0.02 ug/L
ENDRIN	Endrin	0.03	2	0.1 ug/L
ENDOII	Endosulfan II	0.01		0.01 ug/L
CLBZLA	Chlorobenzilate	0.05		ug/L
DDD	4,4'-DDD	0.01		0.02 ug/L
ENDOSL	Endosulfan sulfate	0.05		0.05 ug/L
DDT	4,4'-DDT	0.01		0.02 ug/L
METHOX	Methoxychlor	1	30	10 ug/L
PMTHRN	Permethrin-(total of cis/trans)	0.1		ug/L
PCB16	PCB-1016	0.5	0.5	0.5 ug/L
PCB21	PCB-1221	0.5	0.5	0.5 ug/L
PCB32	PCB-1232	0.5	0.5	0.5 ug/L
PCB42	PCB-1242	0.5	0.5	0.5 ug/L
PCB48	PCB-1248	0.5	0.5	0.5 ug/L
PCB54	PCB-1254	0.5	0.5	0.5 ug/L
PCB60	PCB-1260	0.5	0.5	0.5 ug/L
TOXA	Toxaphene mixture	1	3	1 ug/L
CIDANE	Chlordane	0.1	0.1	0.1 ug/L
ENDR-A	Endrin Aldehyde	0.1		0.05 ug/L
ENDR-K	Endrin Ketone	0.1		ug/L
CAPTAN	Captan	0.01		0.1 ug/L
TRTION	Trithion	0.01		ug/L

QA/QC information for EPA METHOD 503

sample preservation: (dechlorination)

200 mg of sodium thiosulfate/ 2.5L sample

5 point calibration: 0.01, 0.05, 0.10, 0.15, 0.20ppb

LFB low- 0.01ppb LFB high- 0.10ppb

0.10ppb spike

PCNB8 Penta-chloro-nitrobenzene (internal standard)

DCBP8 4,4-DichloroBiphenyl (surrogate standard)

EPA Method 510

TestID TestName
CH03 Chloroborn

State

RDL MaxLML ML DLR Units
0.5 1 ug/L

ORGANIC_

CHBrCl	Bromodichloromethane	0.5	1 ug/L
CHBr2C	Dibromochloromethane	0.5	1 ug/L
CHBr3	Bromoform	0.5	1 ug/L
THMs	Total THMs	100	0.5 ug/L

EPA Method 515.4 (Rev 1.0)		State			
TestID	TestName	RDL	Trace	MCL	Units
DALAPN	Dalapon	1	200		10 ug/L
DICAMB	Dicamba	0.081			1.5 ug/L
24D	2,4-D	0.5	70		10 ug/L
PCP	Pentachlorophenol (PCP)	0.1	1		0.2 ug/L
245TP	2,4,5-TP (Silvex)	0.5	50		50 ug/L
DINOSB	Dinoseb	0.5	7		2 ug/L
BENTAZ	Bentazon	1	18		2 ug/L
PICLOR	Picloram	0.5	500		1 ug/L
DCPA	total DCPA - Dacthal acid metabolites	0.1			ug/L
ACIFEN	Acifluorfen	0.5			ug/L

sample preservation: (dechlorination)
 200 mg of sodium thiosulfate/ 2.5L sample
 5 point calibration: 0.10, 0.50, 1.0, 1.5, 2.0ppb
 LFB low- 0.5ppb LFB high- 1.0ppb
 1.0ppb spike

D8OB 4,4-Dibromooctafluorobiphenyl (internal standard)
 DCPAA 2,4-Dichlorophenylacetic acid (surrogate standard)

EPA Method 521 (Nitrosamines)		State			
TestID	TestName	RDL	Trace	MCL	Units
NDMA	N-Nitrosodimethylamine	2		10	2 ng/L
NMEA	N-Nitrosomethylethylamine	2			ng/L
NDEA	N-Nitrosodiethylamine	2		10	2 ng/L
NDPA	N-Nitrosodi-n-propylamine	2		10	ng/L
NPYR	N-Nitrosopyrrolidine	2			ng/L

ORGANIC

NPIP	N-Nitrosopiperidine	2	ng/L
NDBA	N-Nitrosodi-n-butylamine	2	ng/L
NMOR	N-Nitrosomorpholine	2	ng/L

QA/QC information for EPA method 821 (Nitrosamines)

sample preservation:

80-100 mg/L sodium thiosulfate per L of sample

6 ppt calibration - 2.0, 5.0, 10.0, 25.0, 50.0 ppt

LFB low- 2.0 ppt LFB mid- 25.0 ppt LFB high- 40 ppt Spike- 25.0 ppt

2 ppt & 25 ppt calibration check

IS	NDPA-d14	- 25.0 ppt
SS	NDMA-d6	- 25.0 ppt

821 FP (Formation Potential Nitrosamines)

sample extraction hold time - 14 days

extract - analysis hold time - 14 days

4 Liter amber glass bottle

extra bottle for dup, spike, and spike dup e:

Must Pre-Schedule with Lab

TestID	TestName	RDL	Trace	MCL	NL	DLR	Units
NDMA	N-Nitrosodimethylamine	2			10		2 ng/L
NMEA	N-Nitrosomethylethylamine	2					ng/L
NDEA	N-Nitrosodiethylamine	2			10		2 ng/L
NDPA	N-Nitrosodi-n-propylamine	2			10		ng/L
NPYR	N-Nitrosopyrrolidine	2					ng/L
NPIP	N-Nitrosopiperidine	2					ng/L
NDBA	N-Nitrosodi-n-butylamine	2					ng/L
NMOR	N-Nitrosomorpholine	2					ng/L

QA/QC information for 821 FP (Formation Potential Nitrosamines)

sample preservation:

6 ppt calibration - 2.0, 5.0, 10.0, 25.0, 50.0 ppt

LFB low- 2.0 ppt LFB high- 25.0 ppt Spike- 25.0 ppt

2 ppt & 25 ppt calibration check

IS	NDPA-d14	- 25.0 ppt
SS	NDMA-d6	- 25.0 ppt

EPA Method 824.2 (Rev. 4.1)

sample hold time - 14 days

40 ml amber glass vial - (4 vials/site)

TestID	TestName	State			
		BDL	Trace	MCL	Units
CC12F2	Dichlorodifluoromethane	0.5	0.25	1,000	1 ug/L
CH3Cl	Chloromethane	0.5	0.25		0.5 ug/L
VNYLCL	Vinyl chloride	0.5	0.25	0.5	0.5 ug/L
CH3Br	Bromomethane	0.5	0.25		0.5 ug/L
CIETHA	Chloroethane	0.5	0.25		0.5 ug/L
CC13F	Trichlorofluoromethane	0.5	0.25	150	5 ug/L
11DCE	1,1-Dichloroethene	0.5	0.25	5	0.5 ug/L
Cl3F3E	Trichlorotrifluoroethane (Freon 113)	0.5	0.25	1200	10 ug/L
CH2Cl2	Methylene Chloride	0.5	0.25	5	0.5 ug/L
112DCE	trans-1,2 Dichloroethene	0.5	0.25	10	0.5 ug/L
11DCA	1,1-Dichloroethane	0.5	0.25	5	0.5 ug/L
22DCP	2,2-Dichloropropane	0.5	0.25		0.5 ug/L
c12DCE	cis-1,2-Dichloroethene	0.5	0.25	6	0.5 ug/L
CH2BrC	Bromochloromethane	0.5	0.25		0.5 ug/L
CHCl3	Chloroform	0.5	0.25		1 ug/L
111TCA	1,1,1-Trichloroethane	0.5	0.25	200	0.5 ug/L
CCl4	Carbon tetrachloride	0.5	0.25	0.5	0.5 ug/L
11DCP	1,1-Dichloropropene	0.5	0.25		0.5 ug/L
BENZ	Benzene	0.5	0.25	1	0.5 ug/L
12DCA	1,2-Dichloroethane	0.5	0.25	0.5	0.5 ug/L
TCE	Trichloroethene	0.5	0.25	5	0.5 ug/L
12DCP	1,2-Dichloropropane	0.5	0.25	5	0.5 ug/L
CH2Br2	Dibromomethane	0.5	0.25		0.5 ug/L
CHBrCl	Bromodichloromethane	0.5	0.25		1 ug/L
TOLU	Toluene	0.5	0.25	150	0.5 ug/L
113DCP	trans-1,3-Dichloropropene	0.5	0.25	0.5 *	0.5 ug/L
112TCA	1,1,2-Trichloroethane	0.5	0.25	5	0.5 ug/L
PCE	Tetrachloroethene	0.5	0.25	5	0.5 ug/L
13DCP	1,3-Dichloropropane	0.5	0.25		0.5 ug/L
CHBr2C	Dibromochloromethane	0.5	0.25		1 ug/L
EDB	1,2-Dibromoethane	0.5	0.25	0.05	0.5 ug/L
ClBENZ	Chlorobenzene	0.5	0.25	70	0.5 ug/L
1112PC	1,1,1,2-Tetrachloroethane	0.5	0.25		0.5 ug/L
EtBENZ	Ethylbenzene	0.5	0.25	300	0.5 ug/L

ORGANIC

mp-XYL	m,p-Xylene	0.5	0.25		0.5 ug/L
o-XYL	o-Xylene	0.5	0.25		0.5 ug/L
STYR	Styrene	0.5	0.25	100	0.5 ug/L
CHBr3	Bromoform	0.5	0.25		1 ug/L
ISPBENZ	Isopropylbenzene	0.5	0.25	770	0.5 ug/L
BRBENZ	Bromobenzene	0.5	0.25		0.5 ug/L
123TCP	1,2,3-Trichloropropane	0.5	0.25		0.5 ug/L
1122PC	1,1,2,2-Tetrachloroethane	0.5	0.25	1	0.5 ug/L
PRPBENZ	Propylbenzene	0.5	0.25	260	0.5 ug/L
2CLTOL	2-Chlorotoluene	0.5	0.25	140	0.5 ug/L
123TCB	1,2,3-Trichlorobenzene	0.5	0.25		0.5 ug/L
124TCB	1,2,4-Trichlorobenzene	0.5	0.25	5	0.5 ug/L
124TMB	1,2,4-Trimethylbenzene	0.5	0.25	330	0.5 ug/L
12DCB	1,2-Dichlorobenzene	0.5	0.25	600 130 (10)	0.5 ug/L
135TMB	1,3,5-Trimethylbenzene	0.5	0.25	330	0.5 ug/L
13DCB	1,3-Dichlorobenzene	0.5	0.25	130 (10)	0.5 ug/L
14DCB	1,4-Dichlorobenzene	0.5	0.25	5	0.5 ug/L
4CLTOL	4-Chlorotoluene	0.5	0.25	140	0.5 ug/L
4IPTOL	4-Isopropyltoluene	0.5	0.25		0.5 ug/L
c13DCP	cis-1,3-Dichloropropene	0.5	0.25	0.5 *	0.5 ug/L
DBCP	1,2-Dibromo-3-chloropropane	0.5	0.25	0.2	0.5 ug/L
HCIBut	Hexachlorobutadiene	0.5	0.25		0.5 ug/L
NAP	Naphthalene	0.5	0.25	17	0.5 ug/L
nBBENZ	n-Butylbenzene	0.5	0.25	260	0.5 ug/L
sBBENZ	sec-Butylbenzene	0.5	0.25	260	0.5 ug/L
tBBENZ	tert-Butylbenzene	0.5	0.25	260	0.5 ug/L
MTBE	Methyl-tert-butyl ether	0.5	0.25	260	0.5 ug/L
TTHMs	Total THMs	0.2		13/5	3 ug/L
TOTALX	Total Xylenes (m,p,o)	0.5	0.25	80	0.5 ug/L
MEK	Methyl ethyl ketone (MEK)	0.5	0.25	1750	0.5 ug/L
MIBK	Methyl isobutyl ketone (MIBK)	5	2.5		5 ug/L
B2CLEE	bis (2-Chloroethyl) Ether	5	2.5	120	5 ug/L
ETBE	Ethyl tert-butyl ether	5	2.5		5 ug/L
TAME	Tert-amyl methyl ether	1			3 ug/L
DIPE	Di-isopropyl ether	1			3 ug/L
TBA	Tert-butyl alcohol	2		12	2 ug/L
NBENZ	Nitrobenzene	5			ug/L
CS2	Carbon Disulfide	0.5		160	0.5 ug/L

ORGANIC

ACETON	Acetone	10	ug/L
2HEXON	2-Hexanone (MnBK)	10	ug/L
ACROLN	Acrolein	10	ug/L
ACRNTR	Acrylonitrile	10	ug/L
VNYLAC	Vinylacetate	10	ug/L

QA/QC Information for EPA METHOD 524

sample preservation: 16 point calibration - 0.5, 2.0, 5.0, 10.0, 20.0, 30.0ppb

2 drops of 1+1 HCl (in the field)

if chlorinated - 25 mg ascorbic acid to each vial

2.0 ppb calibration check

2.0ppb spike

IS

Fluorobenzene

surrogate 1

BFB

surrogate 2 1,2-dichlorobenzene-d4

TBA target 5 point calibration - 2.0, 5.0, 10.0, 20.0, 40.0ppb

* total value for 1,3 dichloropropene isomers

EPA Method 525.2 (Rev 2.0)

sample extraction hold time - 14 days **

extract - analysis hold time - 30 days

2.5 liter amber glass bottle

** - unless specific targets requested

TestID	TestName	State			Units
		RDL	Trace	MCL	
IPHOR	Isophorone	0.1			10 ug/L
DCLVOS	Dichlorvos	0.1			ug/L
HCICPD	Hexachlorocyclopentadiene	0.1		50	1 ug/L
EPTC	EPTC	0.1			ug/L
MVNPHS	Mevinphos	1			ug/L
BTYATE	Butylate	0.1			ug/L
VRNLTE	Vernolate	0.1			ug/L
DMP	Dimethyl phthalate	2.0			5 ug/L
ETRDZL	Ethidazole	0.1			ug/L
26DNT	2,6-Dinitrotoluene	0.1			5 ug/L
ACENAP	Acenaphthylene	0.1			5 ug/L
PBUATE	Pebulate	0.1			ug/L
CBP	2-Chlorobiphenyl	0.1			ug/L
CLNEB	Chloraneb	0.1			ug/L

ORGANIC

24DNT	2,4-Dinitrotoluene	0.1			5 ug/L
MOLINT	Molinate	0.1	20		2 ug/L
DEP	Diethyl phthalate	2.0			5 ug/L
FLUOR	Fluorene	0.1			ug/L
PROPCL	Propachlor	0.1	90		0.5 ug/L
ETHPRP	Ethoprop	0.1			ug/L
CYCATE	Cycloate	0.1			ug/L
CPRPHM	Chlorpropham	0.1			ug/L
TRFLRN	Trifluralin	0.1			ug/L
BHCa	HCH-alpha(Alpha-BHC)	0.1			0.01 ug/L
DCBP	2,3-Dichlorobiphenyl	0.1			ug/L
HEXGLB	Hexachlorobenzene	0.1	1		0.5 ug/L
SIMAZ	Simazine	0.1	4		1 ug/L
BHCb	HCH-beta(Beta-BHC)	0.1			0.05 ug/L
ATRAZ	Atrazine	0.1	1		0.5 ug/L
PROPAZ	Propazine	0.1			ug/L
PCP	Pentachlorophenol (PCP)	1.0	1		0.2 ug/L
LINDNE	HCH-gamma (Lindane)	0.1	0.2		0.2 ug/L
HEXZON	Hexazinone	0.1			ug/L
PROAMD	Pronamide	0.1			ug/L
PHENAN	Phenanthrene	0.1			5 ug/L
CLTNIL	Chlorothalonil	0.1			5 ug/L
MPRXON	Methyl Paraaxon	1			ug/L
ANTHRA	Anthracene	0.1			5 ug/L
BHCd	HCH-delta(Delta-BHC)	0.1			0.05 ug/L
TCBP	2,4,5-Trichlorobiphenyl	0.1			ug/L
TRBACL	Terbacil	0.1			ug/L
ALACHL	Alachlor	0.1	2		1 ug/L
SIMETY	Simetryn	1			ug/L
HEPTA	Heptachlor	0.1	0.01		0.01 ug/L
AMERYN	Ametryn	0.1			ug/L
PROMET	Prometryn	0.1			2 ug/L
TRBURN	Terbutryn	0.1			ug/L
BROMAC	Bromacil	0.1			10 ug/L
DnBP	Di-n-butylphthalate	2.0			5 ug/L
TECBP	2,2',4,4'-Tetrachlorobiphenyl	0.1			ug/L
METOCL	Metolachlor	0.1			ug/L
ALDRIN	Aldrin	0.1			0.075 ug/L

ORGANIC_

CIPYRI	Chlorpyrifos	0.1	1 ug/L
DCPA	DCPA-Dacthal	0.1	ug/L
TRDMFN	Tridemeton	1	ug/L
DPHNMD	Diphenamid	0.1	ug/L
MGK264	MGK 264 - isomer b	0.1	ug/L
HEPEPX	Heptachlor epoxide	0.1	0.01 ug/L
PCBP	2,2',3',4,6-Pentachlorobiphenyl	0.1	ug/L
CLDG	Gamma-chlordane	0.1	ug/L
STRFOS	Stirofos	2.0	ug/L
BUTACL	Butachlor	0.1	ug/L
PYRENE	Pyrene	0.1	5 ug/L
NPRMDE	Napropamide	0.1	ug/L
ENDOI	Endosulfan I	0.1	0.02 ug/L
CLDA	Alpha-chlordane	0.1	ug/L
l-NONA	Trans nonachlor	0.1	ug/L
DDE	4,4'-DDE	0.1	0.01 ug/L
DIELDR	Dieldrin	0.1	0.02 ug/L
HXCBP	2,2',4,4',5,5'-Hexachlorobiphenyl	0.1	ug/L
ENDRIN	Endrin	0.1	0.1 ug/L
CLBZLA	Chlorobenzilate	0.1	ug/L
ENDOII	Endosulfan II	0.1	0.01 ug/L
DDD	4,4'-DDD	0.1	0.02 ug/L
ENDR-A	Endrin Aldehyde	0.1	0.05 ug/L
NORFLR	Norflurazon	1	ug/L
ENDOSL	Endosulfan Sulfate	0.1	0.05 ug/L
BBP	Butylbenzyl phthalate	2.0	10 ug/L
DDT	4,4'-DDT	0.1	0.02 ug/L
DEHA	Bis (2-ethylhexyl) adipate	2.0	5 ug/L
HCBP	2,2',3',3',4,4',5'-Heptachlorobiphenyl	0.1	ug/L
BaANTH	Benzo(a)anthracene	0.1	10 ug/L
OCBP	2,2',3',3',4,5',6',6'-Octachlorobiphenyl	0.1	ug/L
CHRYIS	Chrysene	0.1	5 ug/L
METHOX	Methoxychlor	0.1	10 ug/L
DEHP	Bis(2-ethylhexyl) phthalate	0.1	5 ug/L
FNAIML	Fenarimol	2.0	3 ug/L
PMTHRN	Permethrin-(total of cis/trans)	1	ug/L
BbFLUR	Benzo(b)fluoranthene	0.1	10 ug/L
BkFLUR	Benzo(k)fluoranthene	0.1	10 ug/L

ORGANIC

BaPYRE	Benzo(a)pyrene	0.1	0.2	0.1 ug/L
FLRDNE	Fluoridone	2.0		ug/L
INDPYR	Indeno(1,2,3-cd)pyrene	0.1		10 ug/L
DBaHAN	Dibenzo(a,h)anthracene	0.1		5 ug/L
BghiPR	Benzo(g,h,i)perylene	0.1		10 ug/L
TBTURN	Tebuthiuron	2.0		ug/L
TRCZOL	Tricyclazole	2.0		ug/L
DnOP	Di-n-octylphthalate	2.0		5 ug/L
ACETOC	Acetochlor	0.1		ug/L
THIO	Thiobencarb	0.1	70/1	1 ug/L
BDE47	2,2',4,4'-Tetrabromodiphenyl ether	0.1		ug/L
BDE99	2,2',4,4',5-Pentabromodiphenyl ether	0.1		ug/L
BDE100	2,2',4,4',6-Pentabromodiphenyl ether	0.1		ug/L
BDE153	2,2',4,4',5,5'-Hexabromodiphenyl ether	0.1		ug/L
BDE28	2,4,4'-Tribromodiphenyl ether	0.1		ug/L
BDE183	2,2',3,4,4',5,6-Heptabromodiphenyl ether	0.1		ug/L
BDE154	2,2',4,4',5,6'-Hexabromodiphenyl ether	0.1		ug/L

QA/QC INFORMATION FOR EPA METHOD 525

sample preservation: (dechlorination)

40-50 mg of sodium sulfite per liter of sample

adjust pH to <2 with 6N HCl

8-point calibration: 0.10, 0.50, 1.00, 2.00, 5.00, 10.00ppb

LFB low- 0.10ppb LFB high- 1.00ppb

1.0ppb spike

IS1	Acenaphthene-d10
IS2	Chrysene-d12
IS3	Phenanthrene-d10
SS1	1,3-Dimethyl-2-nitrobenzene
SS2	Pyrene-d10
SS3	Triphenylphosphate
SS4	Perylene-d12

EPA Method 525 (rev 10)

sample hold time - 14 days

TestID TestName

State

RDL TraceL MCL NL DLR Units

ORGANIC

Extract analysis hold time - 28 days at 0C	ACETOC	Acetochlor	0.5	ug/L
2.5 L amber glass bottle	CYZINE	Cyanazine	0.5	150 ug/L
extra bottle for dup and spike	DIAZI	Diazinon	0.5	ug/L
	24DCPH	2,4-Dichlorophenol	0.5	5 ug/L
	12DPH	1,2-Diphenylhydrazine	0.5	ug/L
	DSULTN	Disulfoton	0.5	100 ug/L
	FONOF	Fonofos	0.5	ug/L
	NBENZ	Nitrobenzene	0.5	ug/L
	PROMTN	Prometon	0.5	ug/L
	TRBUFS	Terbufos	0.5	ug/L
	246TCP	2,4,6-Trichlorophenol	0.5	ug/L

QA/QC information for EPA METHOD 826

sample preservation:

prior to shipment

L-Ascorbic Acid, 0.10 g/L

Trisodium EDTA, 0.35 g/L

Diazolidinyl Urea, 1.0 g/L

Tris HCl 7.28 g/L

Tris Base 0.488 g/L

6 point calibration - 0.5, 1.0, 2.0, 4.0, 8.0, 10.0 ppb

LFB low- 0.5ppb LFB high- 4.0ppb

4.0ppb spike

I1	Acenaphthene-d10
I2	Phenanthrene-d10
I3	Chrysene-d12
S1	1,3-Dimethyl-2-nitrobenzene
S2	Triphenylphosphate

EPA method 827 (PBDEs)

sample extraction hold time - 14 days

extract - analysis hold time - 28 days

2.5 liter amber glass bottle

extra bottle for dup, spike, and spike dup ex BROMAC

TestID	TestName	RDL	Trace	MCL	NL	DLR	Units
ATRAZ	Atrazine	0.1			1		0.5 ug/L
BIFNTH	Bifenthrin	0.1					ug/L
BROMAC	Bromacil	0.1					10 ug/L
CIPYRI	Chlorpyrifos	0.1					1 ug/L
DMTH	Dimethoate	0.1					ug/L
ESBIOL	Esbiol	0.5					ug/L
ESFENV	Esfenvalerate	0.5					ug/L

ORGANIC

FENVLR	Fenvalerate	0.5	ug/L
245HBB	Hexabromobiphenyl	0.25	ug/L
BDE153	2,2',4,4',5,5'-Hexabromodiphenyl ether	0.1	ug/L
HEXZON	Hexazinone	0.1	ug/L
KEPONE	Kepone	1.0	ug/L
MALATH	Malathion	0.1	ug/L
MIREX	Mirex	0.5	ug/L
NORFLR	Norflurazon	0.1	ug/L
NITROF	Nitrofen	0.1	ug/L
OXYCHL	Oxychlorfane	0.5	ug/L
PARA	Parathion	0.1	0.02 ug/L
BDE99	2,2',4,4',5-pentabromodiphenyl ether	0.1	ug/L
BDE100	2,2',4,4',6-pentabromodiphenyl ether	0.1	ug/L
PROMET	Prometryn	0.1	2 ug/L
PROPAP	Propazine	0.1	ug/L
TERSUL	Terbufos Sulfone	0.1	ug/L
BDE47	2,2',4,4'-Tetrabromodiphenyl ether	0.1	ug/L
THIO	Thiobencarb	0.1	1 ug/L
VINCZL	Vinclozolin	0.5	ug/L

QA/QC information for EPA method 827 (Selected Pesticides & Flame Retardants)

sample preservation:
 Ethylene diamine tetra acetic acid
 trisodium salt - 0.35 g/L
 potassium dihydrogen
 citrate - 9.4 g/L
 L-ascorbic - 0.10 g/L

5 point calibration: 0.1, 0.5, 1.0, 2.0, 5.0, 10.0 ppb
 LFB low- 0.1 ppb LFB high- 2.0 ppb Spike- 2.0 ppb
 0.25 ppb & 5.0 ppb calibration check

IS1 Aceaphthene-d10
 IS2 Phenanthrene-d10
 IS3 Chrysene-d12
 SS1 1,3-Dimethyl-2-Nitrobenzene
 SS2 Triphenyl Phosphate
 SS3 Perylene-d12

ORGANIC

EPA Method 528 (Rev 10)

sample hold time - 14 days
2.5 L amber glass bottle
extract holding time 30 days at 0C
extra bottle for dup and spike

TestID	TestName	RD L	Trace	MCL	N L	DLR	Units
PHENOL	Phenol	1					ug/L
2CIPNL	2-Chlorophenol	1					5 ug/L
oCRESL	2-Methylphenol (o-cresol)	1					ug/L
2NPNL	2-Nitrophenol	1					5 ug/L
24DMP	2,4-Dimethylphenol	1					5 ug/L
24DCPH	2,4-Dichlorophenol	1					5 ug/L
43CMP	4-Chloro-3-methylphenol	1					ug/L
246TCP	2,4,6-Trichlorophenol	1					5 ug/L
24DNP	2,4-Dinitrophenol	5					5 ug/L
4NPNL	4-Nitrophenol	1					5 ug/L
2MDNP	2-Methyl-4,6-Dinitrophenol	1					5 ug/L
PCP	Pentachlorophenol	1			1		0.2 ug/L

QA/QC Information for EPA METHOD 528

sample preservation:
adjust pH to <2 with 6N HCl
100-125 mg of sodium sulfite/ 2.5 L sample
3 point calibration: 1.0, 2.0, 3.0, 5.0, 6.0ppb
LFB low- 1.0ppb LFB high- 5.0ppb
1.0ppb spike

EPA method 529 (Explosives)

sample extraction hold time - 14 days
extract - analysis hold time - 30 days
2.5 liter amber glass bottle
extra bottle for dup, spike & spike dup - eac 35DNA

TestID	TestName	RD L	Trace	MCL	N L	DLR	Units
2ADNT	2-Amino-4,6-dinitrotoluene	0.1					ug/L
4ADNT	4-Amino-2,6-dinitrotoluene	0.1					ug/L
35DNA	3,5-Dinitroaniline	0.1					ug/L
13DNB	1,3-Dinitrobenzene	0.1					ug/L
24DNT	2,4-Dinitrotoluene	0.1					5 ug/L
26DNT	2,6-Dinitrotoluene	0.1					5 ug/L
RDX	Hexahydro-1,3,5-trinitro-1,3,5-Triazine (RDX)	0.1			0.3		ug/L
NBENZ	Nitrobenzene	0.1					ug/L
2NTOLU	2-Nitrotoluene	0.1					ug/L
3NTOLU	3-Nitrotoluene	0.1					ug/L
4NTOLU	4-Nitrotoluene	0.1					ug/L
135TNB	1,3,5-Trinitrobenzene	0.1					ug/L

ORGANIC

TETRYL	2,4,6-Trinitrophenylmethylnitramine (Tetryl)	0.1	ug/L
246TNT	2,4,6-Trinitrotoluene (TNT)	0.1	1 ug/L

QA/QC information for EPA method 529 (Explosives)

sample preservation:
 Copper Sulfate Pentahydrate - 0.5 g/L
 Tris (Hydroxymethyl) Amino methane - 0.3 g/L
 Tri (hydroxymethyl) amino methane hydrochloride - 4.7 g/L
 pH - between pH 5 & 7

OCWD/JUCMR2 LFB low- 0.1 ppb/ 0.5 ppb LFB 1 & 2: 2.0 ppb & 4.0 ppb Spike- 2.0 ppb - High Spike - 4.0 ppb
 0.1, 0.5, & 2.5 ppb calibration check

IS1 3,4-Dinitrotoluene
 SS1 1,3,5-trimethyl-2-nitrobenzene
 SS2 1,2,4-trimethyl-5-nitrobenzene
 SS3 nitrobenzene-d5

EPA Method 591.1 (Rev 3.1)

sample hold time - 28 days
 250ml amber glass bottle
 extra bottle for dup and spike

TestID	TestName	RDL	Trace	MCL	NL	DLR	Units
ALDISX	Aldicarb sulfoxide	2					3 ug/L
ALDISN	Aldicarb sulfone	2					4 ug/L
OXAMYL	Oxamyl	2		50			20 ug/L
MTHOMY	Methomyl	1					2 ug/L
HYDCFR	3-Hydroxycarbofuran	2					3 ug/L
ALDI	Aldicarb	1					3 ug/L
BAYGON	Baygon	1			90		ug/L
CARBOF	Carbofuran	1		13			5 ug/L
CARBAR	Carbaryl	2			60		5 ug/L
NPTHOL	1-Naphthol	5					ug/L
MTHCRB	Methiocarb	4					ug/L

QA/QC information for EPA method 591

sample preservation:
 7.5 mls of Mono Chloroacetic Acid
 Buffer solution / 250 mls of sample
 20 mg of sodium thiosulfate/ 250ml sample

5 point calibration - 1.0, 2.0, 5.0, 10.0, 20.0ppb
 LFB low- 2.0ppb LFB high- 10.0ppb
 10.0ppb spike

EPA Method 532 (Rev 10)

Samples must be extracted within 14 days

Extract holding time: 21 days

2.5L amber glass bottle

extra bottle for dup and spike

TestID	TestName	State			Units
		RDL	Trace	MCL	
DFLBNZ	Diflufenzuron	1.0			ug/L
DIURON	Diuron	1.0			ug/L
FLMTRN	Fluometuron	1.0			ug/L
LINURN	Linuron	1.0			ug/L
PRPANL	Propanil	1.0			ug/L
SIDURN	Siduron	1.0			ug/L
TBTURN	Tebuthiuron	1.0			ug/L
THDURN	Thidiazuron	1.0			ug/L

QA/QC information for EPA Method 532

sample preservation:

1.25 grams cupric sulfate

& 12.5 grams Trizma crystals

5 point calibration: 0.5, 1.0, 2.0, 10.0, 20.0ppb

LFB low- 1.0ppb LFB high- 10.0ppb

Low spike - 1.0 ppb

High spike - 10.0 ppb

EPA method 535		State	
sample extraction hold time - 14 days	TestID	TestName	Units
extract - analysis hold time - 28 days	ACTESA	Acetochlor ethane sulfonic acid (ESA)	ug/L
1-Liter amber glass bottle	ACTOA	Acetochlor oxanilic acid (OA)	ug/L
extra bottle for dup, spike, & spike dup - ea	ALAESA	Alachlor ethane sulfonic acid (ESA)	ug/L
	ALAOA	Alachlor oxanilic acid (OA)	ug/L
	DMAESA	Dimethenamid ethane sulfonic acid (ESA)	ug/L
	DMAOA	Dimethenamid oxanilic acid (OA)	ug/L
	FLFESA	Flufenacet ethane sulfonic acid (ESA)	ug/L
	FLFOA	Flufenacet oxanilic acid (OA)	ug/L
	MTAESA	Metolachlor ethane sulfonic acid (ESA)	ug/L
	MTAOA	Metolachlor oxanilic acid (OA)	ug/L
	PRPESA	Propachlor ethane sulfonic acid (ESA)	ug/L
	PRPOA	Propachlor oxanilic acid (OA)	ug/L

sample preservation:
Ammonium Chloride - 100 mg/L

IS1	Butachlor ESA
SS1	Dimethachlor ESA

EPA Method 547 (Rev. 12-2000)		TestID	TestName	RDL	Tracer	MCL	NL	DLE	Units	State
sample hold time - 18 months if frozen		GLYPHO	Glyphosate	25	760				25 ug/L	
250ml plastic bottle										
extra bottle for dup and spike										
QA/QC information for EPA METHOD 547										
		5 point calibration		20.0	50.0	100.0	150.0	200.0ppb		
		LFB low- 20.0ppb		LFB high- 100.0ppb						
sample preservation:										
25 mg of sodium thiosulfate /250 mls of sample										
100.0ppb spike										

EPA Method 548.1 (Rev. 10)

sample extraction hold time - 7 days
 extract - analysis hold time - 14 days
 extra bottle for dup and spike

40 ml amber glass vial (QA/QC information for EPA METHOD 548.1)

sample preservation:

100 mg of sodium thiosulfate /liter of sample
 only if residual chlorine is present

all samples are diluted 1:10

5 point calibration: 2.0, 5.0, 10.0, 25.0, 50.0ppb

LFB low- 4.0ppb LFB high- 10.0ppb
 10.0ppb spike

ACNAPD Acenaphthene-d10 Internal Standard

State				
RDL	TraceL	MCL	NL	DLR Units
45		100		45 ug/L

EPA Method 549.2 (Rev. 10)

sample extraction hold time - 7 days
 extract - analysis hold time - 21 days
 1 liter brown plastic bottle
 extra bottle for dup and spike

sample preservation:

100 mg of sodium thiosulfate /liter of sample
 if bio active adjust pH <2 with sulfuric acid

QA/QC information for EPA METHOD 549.1

5 point calibration: 2.0, 4.0, 8.0, 12.0, 16.0ppb

LFB low- 4.0ppb LFB high- 8.0ppb
 8.0ppb spike

State				
RDL	TraceL	MCL	NL	DLR Units
4		20	20	4 ug/L
4				20 ug/L

EPA Method 550.1

sample extraction hold time - 7 days
 extract - analysis hold time - 40 days
 4 liter amber glass bottle

TestID TestName
 NAP Naphthalene
 ACENAP Acenaphthylene
 ACNAPE Acenaphthene
 FLUOR Fluorene
 PHENAN Phenanthrene

**
 &
 **
 @
 #

State				
RDL	TraceL	MCL	NL	DLR Units
0.5			17	0.5 ug/L
1				5 ug/L
0.5				5 ug/L
0.1				ug/L
0.1				5 ug/L

ORGANIC

ANTHRA	Anthracene	#	0.1	5 ug/L
FLANTH	Fluoranthene	@	0.1	5 ug/L
PYRENE	Pyrene	#	0.1	5 ug/L
BaANTH	Benzo(a)anthracene	#	0.1	10 ug/L
CHRY	Chrysene	#	0.1	5 ug/L
BbFLUR	Benzo(b)fluoranthene	@	0.1	10 ug/L
BkFLUR	Benzo(k)fluoranthene	#	0.1	10 ug/L
BaPYRE	Benzo(a)pyrene	#	0.1	0.1 ug/L
DBAHAN	Dibenzo(a,h)anthracene	@	0.1	5 ug/L
BghiPR	Benzo(g,h,i)perylene	@	0.1	10 ug/L
INDPYR	Indeno(1,2,3-cd)pyrene	#	0.1	10 ug/L

Calculation for EPA METHOD 500

5 point calibration - for targets 0.05, 0.10, 0.15, 0.20, 0.25ppb
 5 point calibration - for targets 0.1, 0.20, 0.30, 0.40, 0.50ppb
 5 point calibration - for targets 0.5, 1.0, 1.5, 2.0, 2.5ppb
 5 point calibration - for targets 1.0, 2.0, 3.0, 4.0, 5.0ppb

LFB low- # - 0.10ppb @ - 0.20ppb ** - 1.0ppb & - 2.0ppb
 LFB high & Spike- # - 0.20ppb @ - 0.40ppb ** - 2.0ppb & - 4.0ppb

EPA Method 551.1 (Rev. 1.0)

sample analysis hold time - 14 days
 extract - analysis hold time - 14 days
 60ml clear glass vial
 extra bottle for dup and spike

TestID	TestName	RDL	Tracel	MCL	NL	DLR	Units	State
CHCI3	Chloroform	0.1	*				1 ug/L	
CHYDR	Chlorohydrate	0.1					ug/L	
111TCA	1,1,1-Trichloroethane	0.1		200			0.5 ug/L	
CCI4	Carbon tetrachloride	0.1		0.5			ug/L	
TCAN	Trichloroacetoneitrile	0.1					ug/L	
DCAN	Dichloroacetoneitrile	0.1					ug/L	
TCE	Trichloroethylene	0.1					ug/L	
CHBrCl	Bromodichloromethane	0.1	*		5		0.5 ug/L	
CHBr2C	Dibromochloromethane	0.1	*				1 ug/L	
BCAN	Bromochloroacetoneitrile	0.1					1 ug/L	
EDB	1,2-Dibromoethane	0.1		0.05			ug/L	
111TCP	111-Trichloropropanone	0.1					0.02 ug/L	
PCE	Tetrachloroethylene	0.1			5		ug/L	
CHBr3	Bromoform	0.1	*				0.5 ug/L	

ORGANIC

DBAN	Dibromoacetonitrile	0.1			ug/L
DBCP	1,2-Dibromo-3-chloropropane	0.1	0.2		0.01 ug/L
11DC2P	11-Dichloro-2-propanone	0.1			ug/L
CIPICR	Chloropicrin	0.1	37		1 ug/L
TTHMs	Total THMs	0.1	80		ug/L

QA/QC information for EPA METHOD 551

3 point calibration: 0.1 0.2 0.4 0.8 1.0ppb

sample preservation:
2.5 g of Phosphate buffer
with ammonium chloride / 250mls of sample

BFBIS	Bromofluorobenzene - Internal Standard
DFBPIS	Decafluorobiphenyl - Internal Standard

EPA Method 551A

sample analysis hold time - 14 days
extract - analysis hold time - 14 days
60ml clear glass vial
extra bottle for dup and spike

State				
RDL	Trace	MCL	NL	DLR
0.1				ug/L

QA/QC information for EPA METHOD 551A

5 point calibration: 0.1 0.2 0.4 0.8 1.0ppb

sample preservation:
2.5 g of Phosphate buffer with
Sodium Sulfite for Chloral Hydrate / 250mls of sample

BFBIS	Bromofluorobenzene - Internal Standard
DFBPSS	Decafluorobiphenyl - Surrogate Standard

EPA Method 552.2 (Rev. 10/06)

sample extraction hold time - 14 days**
extract - analysis hold time - 7 days
250ml amber glass bottle

State				
RDL	Trace	MCL	NL	DLR
1				2 ug/L
1				1 ug/L
1				1 ug/L
1		200		10 ug/L

** - 7 days if stored @ 4C

ORGANIC

14 days if stored at -10C or less

TCAA	Trichloroacetic Acid	1	1 ug/L
DBAA	Dibromoacetic Acid	1	1 ug/L
BCAA	Bromochloroacetic Acid	1	ug/L
BDCAA	Bromodichloroacetic Acid	1	1 ug/L
CDBAA	Chlorodibromoacetic Acid	1	2 ug/L
TBAA	Tribromoacetic Acid	1	4 ug/L

QA/QC information for EPA METHOD 552

5 point calibration: 1.0, 2.0, 5.0, 10.0, 20.0ppb

LFB low- 5.0ppb LFB high- 10.0ppb

10.0ppb spike

1,2,3-Trichloropropane - Internal Standard

2,3-Dibromopropionic acid - Surrogate Standard

sample preservation:
25 mg of Ammonium Chloride / 250mls of sample

123TCP

23DBPA

EPA Method 556 (Rev. 1.0)

sample extraction hold time - 7 days

extract - analysis hold time - 14 days

40ml amber glass vial

store samples & extracts @ 4C until analysis

TestID	TestName	State			Units
		RDL	Trace	MCL	
FORALD	Formaldehyde	20			ug/L
ACEALD	Acetaldehyde	20			ug/L
PROPANL	Propanal	20			ug/L
BUTANL	Butanal	20			ug/L
PENTNL	Pentanal	20			ug/L
HEXNAL	Hexanal	20			ug/L
HEPNAL	Heptanal	20			ug/L
OCTNAL	Octanal	20			ug/L
NONNAL	Nonanal	20			ug/L
DECNAL	Decanal	20			ug/L
CYCHXN	Cyclohexanone	20			ug/L
CRTALD	Crotonaldehyde	20			ug/L
BENALD	Benzaldehyde	20			ug/L
GLYOXL	Glyoxal	20			ug/L
MGLYOX	Methyl Glyoxal	20			ug/L

QA/QC information for EPA METHOD 556

5 point calibration: 10.0, 20.0, 40.0, 60.0, 80.0 ppb

ORGANIC

sample preservation:
 15 mg of Copper Sulfate Pentahydrate
 15 mg of Ammonium Chloride

123TCP LFB low- 20.0 ppb LFB high- 40.0 ppb
 40.0 ppb spike
 23DBPA 1,2,3-Trichloropropane - Internal Standard
 2,3 Dibromopropionic acid - Surrogate Standard

EPA Method 632 (Rev. 1)

TestID	TestName	State	RDL	Trace	MCL	NL	DLR	Units
DIURON	Diuron		1					1 ug/L

5 point calibration: 0.5, 1.0, 2.0, 4.0, 6.0ppb
 LFB low- 0.5ppb LFB high- 1.0ppb
 1.0ppb spike

QA/QC information for EPA METHOD 632

1,4-Dioxane

sample hold time - 14 days
 40 ml amber glass vials (4 vials/site)
 spike - 250 ml X2

TestID	TestName	State	RDL	Trace	MCL	NL	DLR	Units
14DIOX	1,4-Dioxane		1			3		3 ug/L
EDB	1,2-Dibromoethane		0.005		0.05			0.02 ug/L
DBCP	1,2-Dibromo-3-chloropropane		0.01		0.2			0.01 ug/L
123TCP	1,2,3-Trichloropropane		0.005			0.005		0.005 ug/L
2CIEVE	2-Chloroethylvinyl ether		0.1					ug/L

sample preservation:
 no preservation

QA/QC information for 1,4-Dioxane METHOD

5 point calibration: 1.0, 2.0, 5.0, 10.0, 20.0, 50.0ppb (0.0010%)
 RDL Check 1.0 ppb
 2.0 ppb calibration check and spike level

IS-FBENZ Internal Standard - Fluorobenzene

ORGANIC

NDMA - low		TestName		State	
sample extraction hold time - 14 days	TestID	TestName	RDL	TracEL MCL	Units
extract - analysis hold time - 14 days	NDMA	n-Nitrosodimethylamine	2	10	ng/L
2.5 liter amber glass bottle					

QA/QC information for NDMA METHOD

6 point calibration - 2.0, 5.0, 10.0, 25.0, 50.0, 100.0 ppt

LFB low- 2.0ppt LFB high- 25.0ppt

25.0ppt calibration check and spike level

extra bottle for dup and spike

NDMA-d6 deuterated n-Nitrosodimethylamine - at 12.5 ppt

sample preservation:

40 mg of ascorbic acid/Liter of sample

Hormones: Endocrine Disrupting Chemicals (EDCs)

sample extraction hold time - 14 days		TestName		State	
extract - analysis hold time - 28 days	TestID	TestName	RDL	TracEL MCL	Units
2.5 L amber glass bottle	ESTRON	Estrone	10		ng/L
extra bottle for dup and spike	EPITES	Epitestosterone (cis-testosterone)	10		ng/L
	TESTOR	Testosterone (trans-)	10		ng/L
	ESTRIO	Estriol	10		ng/L
	aESTRA	17a-Estradiol	10		ng/L
	bESTRA	17b-Estradiol	10		ng/L
	aETEST	17a-ethynylestradiol	10		ng/L
	PRGSTR	Progesterone	10		ng/L
	DESTBL	Diethylstilbestrol	10		ng/L

sample preservation:

no preservation

QA/QC information for EDCs METHOD

5 point calibration - 5, 10, 20, 50 & 100 ppt

LFB low- 10 ppt LFB high- 50 ppt Spike - 50 ppt

10 ppt & 50 ppt calibration check

IS1 Bisphenol-A d16

ORGANIC

SS1 2,3,5,6-tetrafluoro-4-(pentafluorophenyl) phenol (TFPFPP) - Surrogate Standard

Pharmaceuticals (LC/MS/MS)

sample extraction hold time - 14 days
extract - analysis hold time - 14 days
2.5 liter amber glass bottle
extra bottle for dup and spike

TestID	TestName	State			
		RDL	Trace	MCL	Units
CAFFEI	Caffeine	3			ng/L
CBMAZP	Carbamazepine	1			ng/L
IBPRFN	Ibuprofen	1			ng/L
GMFIBZ	Gemfibrozil	1			ng/L
CPFLXC	Ciprofloxacin	10			ng/L
TRICLN	Triclosan	1			ng/L
AZTMCN	Azithromycin	1			ng/L
ACTMNP	Acetaminophen	10			ng/L
DEET	N,N-diethyl-m-toluamide	1			ng/L
PRIMDN	Primidone	1			ng/L
SULTHZ	Sulfamethoxazole	1			ng/L

QADOC information for Pharmaceuticals Method

sample preservation: (dechlorination)
40-50 mg of sodium sulfite/ L sample
adjust pH to <2 with 6N HCl

5 ppt calibration: 1, 5, 10, 20, 50, 8, 70 ppt

LFB low- 1 ppt LFB high- 10 ppt Spike - 10 ppt
1 ppt & 10 ppt calibration check

Phenols (LC/MS)

sample extraction hold time - 14 days
extract - analysis hold time - 14 days
2.5 liter amber glass bottle
extra bottle for dup and spike

TestID	TestName	State			
		RDL	Trace	MCL	Units
NONYPH	4-Nonylphenol	1			ug/L
4ntOCP	4-n-Octylphenol & 4-tert-Octylphenol	2			ug/L
BisPHA	Bisphenol A	1			ug/L
PCP	Pentachlorophenol	1		1	0.2 ug/L
246TCP	2,4,6-Trichlorophenol	1			5 ug/L
PHNYPH	4-Phenylphenol (4-Hydroxybiphenyl)	1			ug/L
TBBISA	Tetrabromobisphenol A	1			ug/L

ORGANIC

ug/L

10

total - Nonylphenol ethoxylates

NONYE

QC information for Phenols

sample preservation:

adjust pH to <2 with 6N HCl

100-125 mg of sodium sulfite/ 2.5 L sample

5 point calibration: 1.0, 2.0, 5.0, 10.0, 20.0 ppb

LFB low- 1.0 ppb LFB high- 10.0 ppb Spike- 10 ppb

1 ppb & 10 ppb calibration check

IS1

Bisphenol-A d16

SS1

4-(4-Bromophenyl)phenol

ORANGE COUNTY WATER DISTRICT**INORGANIC LABORATORY METHOD / ANALYTE LIST****Conductivity (EC)****Method 2510B**

1 Liter Plastic Bottle

Minimum Sample Required - 100 mL

Sample Holding Time - 28 Days

Preservation - Refrigerate at 4°C

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
EC	Electrical Conductivity	umho/cm	1	1	1280	1600

Total Dissolved Solids (TDS)**Method 2540C**

250 mL Plastic Bottle

Minimum Sample Required - 250 mL

Sample Holding Time - 7 Days

Preservation - Refrigerate at 4°C

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
TDS	Total Dissolved Solids	mg/L	1	5	800	1500

pH**Method 4500H+B**

1 Liter Plastic Bottle

Minimum Sample Required - 100 mL

Sample Hold Time - ANALYZE ASAP

Preservation - NONE

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
pH	pH	pH	NA	NA	8.5	NA

Alkali Metals and Alkaline Earths**Method X200.7**

500 mL Metals-Free Plastic Bottle

Minimum Sample Required - 250 mL

Sample Holding Time - 6 Months

Preservation - Done in Laboratory

Acidity with HNO₃ to pH <2

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
Na	Sodium	mg/L	0.1	NA	NA	NA
K	Potassium	mg/L	0.1	NA	NA	NA
Ca	Calcium	mg/L	0.1	NA	NA	NA
Mg	Magnesium	mg/L	0.1	NA	NA	NA

Boron**Method X200.7**

500 mL Metals-Free Plastic Bottle

Minimum Sample Required - 250 mL

Sample Holding Time - 6 Months

Preservation - Done in Laboratory

Acidity with HNO₃ to pH <2

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
B	Boron	mg/L	0.1	0.1	1	NA

Trace Metals (200.7)**Method X200.7**

500 mL Metals-Free Plastic Bottle

Minimum Sample Required - 250 mL

Sample Holding Time - 6 Months

***For samples NOT requiring filtering
use bottle containing acid preservative
otherwise preservation done in lab

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
Ag	Silver	ug/L	1	10	40	100
Cr	Chromium	ug/L	1	10	40	50
Fe	Iron	ug/L	1	100	240	300
V	Vanadium	ug/L	1	3	50	NA

(secondary MK)

(secondary MK)

Total Hardness as CaCO₃ (200.7)**Method X200.7**

500 mL Metals-Free Plastic Bottle

Minimum Sample Required - 250 mL

Sample Holding Time - 250 mL

Preservation - Done in Laboratory

Acidity with HNO₃ to pH <2

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
TOTHRD	Total Hardness as CaCO ₃	mg/L	1	NA	NA	NA

Trace Metals (200.8)**Method X200.8**

500 mL Metals-Free Plastic Bottle ***

Minimum Sample Required - 250 mL

Sample Holding Time - 6 Months

*** Mercury - 28 Days

For samples NOT requiring filtering, use bottle containing acid preservative; otherwise, preservation done in lab.

Test		Units	RDL	DLR	NL	MCL	
Test ID	Name						
Al	Aluminum	ug/L	1	50	800	1000	200 ug/L seco
As	Arsenic	ug/L	1	2	8	10	
Ba	Barium	ug/L	1	100	800	1000	
Be	Beryllium	ug/L	0.5	1	3.2	4	
Cd	Cadmium	ug/L	1	1	4	5	
Co	Cobalt	ug/L	1	NA	NA	NA	
Cu	Copper	ug/L	1	50	800	1000	(secondary MCL)
Hg	Mercury	ug/L	0.1	1	1.6	2	
Mn	Manganese	ug/L	1	20	40	50	
Ni	Nickel	ug/L	1	10	80	100	
Pb	Lead	ug/L	1	5	40	50	15 ug/L regula
Sb	Antimony	ug/L	0.5	6	4.8	6	
Se	Selenium	ug/L	1	5	40	50	
Tl	Thallium	ug/L	0.5	1	1.6	2	
Zn	Zinc	ug/L	1	50	4000	5000	(secondary MCL)

Hexavalent Chromium**Method X1-218.6**

125 mL Metals-Free Plastic Bottle

Minimum Sample Required - 125 mL

Sample Holding Time - 24 Hours

Preservation - Refrigerate at 4°C

Lab will filter and adjust pH to 9.5

Test		Units	RDL	DLR	NL	MCL
Test ID	Name					
CrVI	Hexavalent Chromium	ug/L	0.2	1	0.9	5

Ammonia Nitrogen (NH3-N)**Method 4500NH3H**

1 Liter Plastic Bottle

Minimum Sample Required - 100 mL

Sample Holding Time - 28 Days

Preservation - Add H2SO4 to pH < 2; refrigerate at 4°C

Test		Units	RDL	DLR	NL	MCL
Test ID	Name					
NH3-N	Ammonia Nitrogen	mg/L	0.1	NA	8	10

Nitrogen**Method X1-351.2**

1 Liter Plastic Bottle

Minimum Sample Required - 200 mL

Sample Holding Time - 28 Days

Preservation - Add H2SO4 to pH < 2; Refrigerate at 4°C

Test		Units	RDL	DLR	NL	MCL
Test ID	Name					
Org-N	Organic Nitrogen	mg/L	0.1	NA	8	10
TKN	Total Kjeldahl Nitrogen	mg/L	0.2	NA	8	10

Nitrate / Nitrite Nitrogen**Method 4500NO3F**

1 Liter Plastic Bottle

Minimum Sample Required - 100 mL

Holding Time and Preservation

NO3 (Chlorinated) - 48 Hrs at 4°C

NO3 (Nonchlor) - 14 Days; H2SO4 to pH < 2 and refrigerate at 4°C

NO2 - 48 Hrs at 4°C

Test		Units	RDL	DLR	NL	MCL
Test ID	Name					
NO3-N	Nitrate Nitrogen	mg/L	0.1	0.4	8	10
NO3	Nitrate	mg/L	0.4	2	40.5	45
NO3NO2-N	Nitrate + Nitrite Nitrogen	mg/L	0.1	0.4	8	10
NO2-N	Nitrite Nitrogen	mg/L	0.002	0.4	0.5	1

Alkalinity**Method 2320B**

1 Liter Plastic Bottle

Minimum Sample Required - 200 mL

Holding Time - 14 Days for Total Alk

Phenolphthalein Alk - Analyze ASAP

Preservation - Refrigerate at 4°C

Test		Units	RDL	DLR	NL	MCL
Test ID	Name					
ALKPHE	Phenolphthalein Alkalinity	mg/L	1	NA	NA	NA
TOTALK	Total Alkalinity	mg/L	1	NA	NA	NA
OH	Hydroxide (as OH)	mg/L	0.3	NA	NA	NA
OHCa	Hydroxide (as CaCO3)	mg/L	1	NA	NA	NA
CO3	Carbonate (as CO3)	mg/L	0.6	NA	NA	NA
CO3Ca	Carbonate (as CaCO3)	mg/L	1	NA	NA	NA
HCO3	Bicarbonate (as HCO3)	mg/L	1.2	NA	NA	NA
HCO3Ca	Bicarbonate (as CaCO3)	mg/L	1	NA	NA	NA

Total Hardness as CaCO₃ (2340C)**Method 2340C**

1 Liter Plastic Bottle

Minimum Sample Required - 250 mL

Sample Holding Time - 6 Months

Preservation - Add HNO₃ to pH <2

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
TOTHRD	Total Hardness as CaCO ₃	mg/L	1	NA	NA	NA

Anions by IC**Method X1-300.0**

1 Liter Plastic Bottle

Minimum Sample Required - 100 mL

Sample Holding Time -

28 Days for F⁻, Cl⁻, Br⁻ and SO₄²⁻14 Days for NO₂-N (Chlorinated)48 Hrs for NO₂-N, NO₃-N (NonCl₂)48 Hrs for PO₄-P

Preservation - Refrigerate at 4 °C

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
F	Fluoride	mg/L	0.1	0.1	0.8	2
Cl	Chloride	mg/L	0.5	0.5	400	500
NO ₂ -N	Nitrite Nitrogen	mg/L	0.4	0.4	0.9	1
Br	Bromide	mg/L	0.1	NA	NA	NA
NO ₃ -N	Nitrate Nitrogen	mg/L	0.1	0.4	8	10
PO ₄ -P	Orthophosphate	mg/L	0.1	NA	NA	NA
SO ₄	Sulfate	mg/L	0.5	0.5	400	600

ortho-Phosphate by FIA**Method 365.1**

1 Liter Plastic Bottle

Minimum Sample Required - 100 mL

Sample Holding Time - 48 Hrs

Preservation - Refrigerate at 4 °C

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
PO ₄ -P	Orthophosphate	mg/L	0.01	NA	NA	NA

Fluoride by Ion-Selective Electrode**Method 4500F-C**

1 Liter Plastic Bottle

Minimum Sample Required - 100 mL

Sample Holding Time - 28 Days

Preservation - None Required

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
F	Fluoride	mg/L	0.1	0.1	0.8	1.6

Perchlorate (ClO₄)**Method X1-314.0**

500 mL Wide-mouth Amber Glass Bottle

Minimum Sample Required - 100 mL

Sample Holding Time - 28 Days

Preservation - None Required

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
ClO ₄	Perchlorate	ug/L	2.5	2.5	4	6

Inorganic Disinfection By-Products**Method X1-300.1**

500 mL Wide-mouth Amber Plastic Bottle

Minimum Sample Required - 100 mL

Sample Holding Time - 28 Days

Except Chlorite - 14 Days

Preservation - 50 mg/L EDA and

Refrigerate at 4 °C

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
Br	Bromide	ug/L	10	NA	NA	NA
BrO ₃	Bromate	ug/L	5	5	NA	10
ClO ₂	Chlorite	ug/L	10	20	NA	1000
ClO ₃	Chlorate	ug/L	10	20	800	NA

Dissolved Sulfide**Method 4500S2-D**

300 mL BOD Bottle

Minimum Sample Required - 300 mL

Sample Holding Time - 7 Days

Preservation - 12 Drops 2N Zinc

Acetate, NaOH to pH >9, Refrigerate

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
DISSUL	Dissolved Sulfide	mg/L	0.1	NA	NA	NA

Silica**Method 4500SiO₂ C**

1 Liter Plastic Bottle

Minimum Sample Required - 250 mL

Sample Holding Time - 28 Days

Preservation - Refrigerate at 4 C

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
SiO ₂	Silica	mg/L	1	NA	NA	NA

Chemical Oxygen Demand (COD)**Method 5220D**

1 Liter Plastic Bottle

Minimum Sample Required - 250 mL

Sample Holding Time - 28 Days

Preservation - Add H₂SO₄ to pH < 2

Refrigerate at 4 C

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
CODFIL	Filtered COD	mg/L	1	NA	NA	NA
CODUNF	Unfiltered COD	mg/L	1	NA	NA	NA

Total Organic Carbon (TOC/DOC)**Method 5310C**

200 mL Amber Glass Bottle

Minimum Sample Required - 250 mL

Sample Holding Time - 28 Days

Preservation - Add H₃PO₄ to pH < 2

Refrigerate at 4 C

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
TOC	Total Organic Carbon	mg/L	0.05	0.3	NA	NA
DOC	Dissolved Organic Carbon	mg/L	0.05	NA	NA	NA

UV%T and UVAB**Method 5910B**

1 Liter Plastic Bottle

Minimum Sample Required - 100 mL

Sample Holding Time - 48 Hours

Preservation - Refrigerate at 4 C

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
UV%T	UV%T @ 254 nm	%	0.1	NA	NA	NA
UV%T-228	UV%T @ 228 nm	%	0.1	NA	NA	NA
UVAB	UV Abs @ 254 nm	Abs	0	NA	NA	NA

MBAS**Method 5540C**

1 Gallon Plastic Bottle

Minimum Sample Required - 1000 mL

Sample Holding Time - 48 Hours

Preservation - Refrigerate at 4 C

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
MBAS	Methylene Blue Actv Sub	mg/L	0.02	0.02	0.4	0.5

Color**Method 2120B**

1 Liter Plastic Bottle

Minimum Sample Required - 250 mL

Sample Holding Time - 48 Hours

Preservation - Refrigerate at 4 C

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
APCOLR	Color (Unfiltered)	UNITS	3	3	12	15
TRCOLR	Color (Filtered)	UNITS	3	3	12	15

Odor**Method 2150B**

1 Liter Glass Bottle with

Teflon-lined Screw Cap

Minimum Sample Required - 1 L

Sample Holding Time - ASAP/24 Hrs

Preservation - Refrigerate at 4 C

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
ODOR	Threshold Odor Number	TON	0	1	2.4	3
ODORHI	Odor Range High	TON	0	1	2.4	3
ODORLO	Odor Range Low	TON	0	1	2.4	3

Turbidity**Method 2130B**

1 Liter Plastic Bottle

Minimum Sample Required - 200 mL

Sample Holding Time - 48 Hours

Preservation - Store in Dark, Refrigerate

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
TURB	Turbidity	NTU	0.1	NA	4	5

Cyanide**Method X1-335.4**

2 Liter Brown Plastic Bottle

Minimum Sample Required - 1000 mL

Sample Holding Time - 14 Days

Preservation - Add NaOH to pH >12

Sample Chlorinated, add 1 mL 0.014M

Sodium Arsenite per mg/L Cl₂ per

1000 mL sample. Store in dark at 4°C

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
CN	Cyanide	ug/L	5	100	120	150

Suspended Solids**Method 2540D**

1 Liter Plastic Bottle

Minimum Sample Required - 500 mL

Sample Holding Time - 7 Days

Preservation - Refrigerate at 4°C

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
SUSSOL	Suspended Solids	mg/L	1	NA	NA	NA

Settleable Solids**Method 2540F**

1 Gallon Plastic Bottle

Minimum Sample Required - 1000 mL

Sample Holding Time - 7 Days

Preservation - Refrigerate at 4°C

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
SETSOL	Settleable Solids	mL/L	0.1	NA	NA	NA

Free / Total Chlorine Residual**Method 4500CLF / 4500CLD**

1 Liter Plastic Bottle

Minimum Sample Required - 1000 mL

Sample Holding Time - Analyze ASAP

Preservation - None

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
FRCL2	Free Chlorine Residual	mg/L	0.1	NA	NA	NA
TOTCL2	Total Chlorine Residual	mg/L	0.1	NA	NA	NA
FRCL2A	Free Cl ₂ -Amperometric	mg/L	0.1	NA	NA	NA
TOTCLA	Total Cl ₂ -Amperometric	mg/L	0.1	NA	NA	NA

Total / Fecal Coliform (MPN)**Method 9221B / 9221E**

20 mL Disposable Plastic Bottle

except GA/C - use 500 mL

Sterile

Containing Na₂S₂O₃

Minimum Sample Required - 50 mL

Sample Holding Time -

Drinking Water Compliance - 30 Hrs

Non-potable Compliance - 2 Hours

All Others - 24 Hours

Preservation - Refrigerate at 4°C

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
TCOLIM	Total Coliform (MPN)	MPN/100mL	2	2	2	4
FCOLIM	Fecal Coliform (MPN)	MPN/100mL	2	2	2	NA

Total / Fecal Coliform (MF)**Method 9222B / 9222D**

Same as above

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
TCOLIF	Total Coliform (MF)	CFU/100mL	1	1	1	4
FCOLIF	Fecal Coliform (MF)	CFU/100mL	1	1	1	NA

Enzyme Substrate Test (Colilert)**Method 9223B**

Same as above

<u>Test</u>		<u>Units</u>	<u>RDL</u>	<u>DLR</u>	<u>NL</u>	<u>MCL</u>
<u>Test ID</u>	<u>Name</u>					
TCOLIC	Total Coliform (Colilert PA)	P/A	NA	NA	NA	NA
TCOLIQ	Total Coliform (Quantitray MPN/100mL)		1	1	1	4
FCOLIC	Fecal Coliform (Colilert PA)	P/A	NA	NA	NA	NA
FCOLIQ	Fecal Coliform (Quantitray MPN/100mL)		1	1	1	4
ECOLIC	E. Coli (Colilert P/A)	P/A	NA	NA	NA	NA
ECOLIQ	E. Coli (Quantitray)	MPN/100mL	1	1	1	4

Heterotrophic Plate Count

Methods 9215B / 9215C

Same as above

Test		Units	RDL	DLB	NL	MCL
Test ID	Name					
HPCPP	HPC (Pour Plate)	CFU/mL	1	NA	NA	NA
HPCSP	HPC (Spread Plate)	CFU/mL	2	NA	NA	NA

Hydrogen Peroxide

H2O2 (Potassium Titanium Oxalate Method)

300 mL BOD bottle

Minimum Sample Required - 300 mL

Sample Holding Time - 24 Hours

Preservation - 1 mL Aluminum Chloride
and 1 mL NaOH, shake to flocc.

Refrigerate at 4°C

Test		Units	RDL	DLB	NL	MCL
Test ID	Name					
H2O2	Hydrogen Peroxide	mg/L	0.1	NA	NA	NA

Sample Collection Bottles For Selected WQ Test Series**TITLE22N**

150 mL Plastic Cup w/ Snap Cap

GENLVLIW

1 Liter Plastic Bottle

500 mL Metals-Free Plastic Bottle w/o acid

250 mL Amber Glass TOC Bottle

250 mL Plastic Bottle for TDS

OCR-I

1 Gallon Plastic Bottle

500 mL Metals-Free Plastic Bottle w/o acid

250 mL Amber Glass TOC Bottle

250 mL Plastic Bottle for TDS

TRCELVI

1 Liter Plastic Bottle

500 mL Metals-Free Plastic Bottle w/o acid

250 mL Amber Glass TOC Bottle

250 mL Plastic Bottle for TDS

GENLVLIV

1 Liter Plastic Bottle

500 mL Metals-Free Plastic Bottle w/o acid

250 mL Amber Glass TOC Bottle

250 mL Plastic Bottle for TDS

Q15MG

1 Gallon Plastic Bottle

250 mL Amber Glass TOC Bottle

500 mL Wide-Mouth Plastic Bottle (Bact)

250 mL Plastic Bottle for TDS

NDMAINRG

1 Liter Plastic Bottle

250 mL Amber Glass TOC Bottle

Q23SG

1 Liter Plastic Bottle

250 mL Amber Glass TOC Bottle

250 mL Plastic Bottle for TDS

TITLE 22

1 Gallon Plastic Bottle
500 mL Metals-Free Plastic Bottle with acid
250 mL Amber Glass TOC Bottle
1 Liter Glass Bottle (Odor)
250 mL Plastic Bottle for TDS

OCR-I

1 Gallon Plastic Bottle
500 mL Metals-Free Plastic Bottle w/o acid
250 mL Amber Glass TOC Bottle
250 mL Plastic Bottle for TDS

GAWELLMG

1 Liter Plastic Bottle
500 mL Metals-Free Plastic Bottle w/o acid
500 mL Wide-Mouth Plastic Bottle (Bact)
250 mL Plastic Bottle for TDS

GENLVI

1 Liter Plastic Bottle
500 mL Metals-Free Plastic Bottle w/o acid
250 mL Amber Glass TOC Bottle
250 mL Plastic Bottle for TDS

Q14QG

1 Liter Plastic Bottle
500 mL Metals-Free Plastic Bottle with acid
500 mL Metals-Free Bottle w/o acid (Mn-Dis)
250 mL Amber Glass Bottle (TOC)
250 mL Plastic Bottle (TDS)

Q15QG

1 Gallon Plastic Bottle
500 mL Wide-mouth Amber Plastic Bottle (IDBP)
2 Liter Brown Plastic Bottle with NaOH (Cyanide)
500 mL Metals-Free Plastic Bottle with acid
500 mL Metals-Free Bottle w/o acid (Mn-Dis)
250 mL Amber Glass TOC Bottle
125 mL Metals-Free Plastic Bottle (CrVI)
500 mL Sterile Wide-Mouth Plastic Bottle (Bact)
1 Liter Glass Bottle (Odor)
250 mL Wide-Mouth Amber Glass Bottle (ClO₄)
250 mL Plastic Bottle for TDS

PRADO-MG

1 Gallon Plastic Bottle
500 mL Metals-Free Plastic Bottle w/o acid
250 mL Amber Glass TOC Bottle
250 mL Plastic Bottle for TDS

UCMR

500 mL Metals-Free Plastic Bottle with acid
125 mL Metals-Free Plastic Bottle (CrVI)

ACCEPTANCE CRITERIA

Information obtained from applying the spiked samples can be used to construct control charts, recovery studies, and establish the method detection limits and linear calibration ranges. The statistical evaluation of the data generated by the analysis of quality control samples is used to establish the acceptance criteria for each method.

In analyzing the organic/inorganic chemicals, EPA generally has set the minimum guidelines for acceptance criteria as being the **95 percent prediction interval** of each tested analyte. OCWD's laboratory uses **true value (TV)** in the acceptance criteria and has set stringent limits in using EPA methods for testing the analytes.

COMPARISON OF OCWD ACCEPTANCE LIMITS vs FEDERAL ACCEPTANCE LIMITS

<u>ACCEPTANCE LIMITS</u>		
<u>ANALYTE</u>	<u>OCWD</u>	<u>EPA</u>
Antimony	TV \pm 20%	TV \pm 30%
Barium	TV \pm 15%	TV \pm 15%
Beryllium	TV \pm 10%	TV \pm 15%
Cadmium	TV \pm 20%	TV \pm 20%
Chromium	TV \pm 15%	TV \pm 15%
Lead	TV \pm 10%	TV \pm 30%
Copper	TV \pm 10%	TV \pm 10%
Mercury	TV \pm 20%	TV \pm 30%
Nickel	TV \pm 15%	TV \pm 15%
Selenium	TV \pm 10%	TV \pm 20%
Thallium	TV \pm 20%	TV \pm 30%
Alkali Metals	TV \pm 10%	N/A
Nitrate	TV \pm 10%	TV \pm 10%
Nitrite	TV \pm 10%	TV \pm 15%
Total Cyanide	TV \pm 20%	TV \pm 25%
Fluoride	TV \pm 10%	TV \pm 10%
Alachlor	TV \pm 20%	TV \pm 45%
Atrazine	TV \pm 20%	TV \pm 45%
Chlordane	TV \pm 20%	TV \pm 45%
Endrin	TV \pm 20%	TV \pm 30%
Heptachlor	TV \pm 20%	TV \pm 45%
Heptachlor Epoxide	TV \pm 20%	TV \pm 45%
Lindane	TV \pm 20%	TV \pm 45%
Methoxychlor	TV \pm 20%	TV \pm 45%
Toxaphene	TV \pm 20%	TV \pm 45%

Carbofuran	TV ±20%	TV ±45%
2,4-D	TV ±30%	TV ±50%
2,4,5-TP (Silvex)	TV ±30%	TV ±50%
Pentachlorophenyl	TV ±30%	TV ±50%
Decachlorobiphenyl	TV ±30%	TV ±100%
THMs	TV ±20%	TV ±20%
DBCP	TV ±30%	TV ±40%
EDB	TV ±30%	TV ±40%
Vinyl Chloride	TV ±40%	TV ±40%
All other regulated VOCs	TV ±20%	TV ±40%

CHECKING CORRECTNESS OF ANALYSIS

Several procedures are used in the laboratory for checking the correctness of analytical results of inorganic analysis.

* **Anion - Cation Balance**

When major anions - Cl, SO₄, Alkalinity, Nitrate, Phosphate, and major cations - Sodium, Potassium, Calcium, Magnesium are known to a sample, then to check for correctness, the anion and cation sums, calculated as milliequivalents per liter, must balance because all potable waters are electrically neutral. The percentage difference is defined as follows:

$$\% \text{ difference} = 100 \frac{\Sigma \text{ cations} - \Sigma \text{ anions}}{\Sigma \text{ cations} + \Sigma \text{ anions}}$$

The criteria for acceptance are as follows:

Anion Sum (meq/L)	Acceptable % Difference
0-3.0	±0.2 meq/L
3.0-10.0	±2%
10.0-80.0	±2-5%

* **Measured EC and Ion Sums**

The sums of meq/L of both anion or cation should be 1/100 of the measured EC value. If either of the two sums does not meet this criterion, the sum is suspected, and samples reanalyzed. The acceptable criteria are as follows:

$$\text{Anion (or cation) sum, meq/L} = (0.9 \text{ to } 1.1) \text{ EC}/100$$

* **Measured TDS to EC Ratio**

This is often used for quick check of a routine source water, e.g. reverse osmosis feed or effluent water, when a certain ratio is expected to assure treatment process is operating normally.

Other procedures, such as measured TDS vs. calculated TDS or measured EC vs. calculated EC, etc., are used for QC checks whenever needed.

* **Duplicates**

Duplicate measurements on an analyte must be reproducible and agreeable within 95% of each other.

6. SAMPLING AND SAMPLE CUSTODY PROCEDURES

SECTION 6

SAMPLING AND SAMPLE CUSTODY PROCEDURES

SAMPLING OBJECTIVE

Analytical results are as meaningful as the integrity of the samples that are analyzed. Representative samples must be collected so the data for any aliquot can be related to a well-defined pollution source. General precautions include obtaining samples that meet the requirements of the sampling program and handling them in such a way that they do not deteriorate or become contaminated before they reach the laboratory. The Laboratory, in order to meet this objective, has established sampling protocols and provided sampling materials for use by all sampling programs throughout the Orange County Water District.

GENERAL SAMPLING PRECAUTIONS

General sampling procedures are outlined as follows:

- * Before filling, rinse the sample bottle two or three times with the water being collected, unless the bottle contains a preservative or dechlorinating agent, which is defined by EPA or Standard Methods protocols.
- * Make a record of every sample collected and identify every bottle. Record sufficient information to provide positive sample identification at a later date, including the name of the sample collector, date, hour, and exact location, water temperature, and any other data that may be needed for correlation, such as weather condition, water level, stream flow, post-sampling handling, etc.
- * Collect samples from wells only after the well has been pumped sufficiently to ensure that the samples represent the groundwater source.
- * Collect samples from distribution systems after flushing lines sufficiently to ensure the sample is representative of the supply.
- * When collecting samples from a river or stream, take an "integrated" sample from top to bottom in the middle of the stream or from side to side at mid-depth in such a way that the samples are integrated according to flow.

For most analyses, samples should be preserved at the sampling site to maintain integrity and to minimize changes, such as biodegradation and volatilization. Keep samples as cool as possible without freezing during collection and transporting. If at all possible, analyses should be performed soon after receipt of the samples at the laboratory. If immediate analysis is not possible, storage at 4°C is recommended for most samples. Refer to "Standard Methods for the Examination of Water and Wastewater," 20th Edition, for detail guidelines.

SAMPLE COLLECTION, CONTAINERS, AND PRESERVATION FOR INORGANIC CONTAMINANTS

Contaminant	Preservative	Container ¹	Maximum Holding Time
Alkalinity	Cool, 4°C	P or G	14 days
Arsenic	Conc HNO ₃ to pH < 2	P or G	6 months
Asbestos	Cool 4°C ²	P or G	
Barium	Conc HNO ₃ to pH < 2	P or G	6 months
Cadmium	Conc HNO ₃ to pH < 2	P or G	6 months
Calcium	Conc HNO ₃ to pH < 2	P or G	6 months
Chloride	None	P or G	28 days
Chromium	Conc HNO ₃ to pH < 2	P or G	6 months
Copper	Conc HNO ₃ to pH < 2	P or G	6 months
Fluoride	None	P	28 days
Free Chlorine			
Residual	None	P or G	Analyze immediately ³
Lead	Conc HNO ₃ to pH < 2	P or G	6 months
Mercury	Conc HNO ₃ to pH < 2	P or G	28 days
Nitrate			
Chlorinated	Cool 4°C	P or G	28 days
Non-chlorinated	Conc H ₂ SO ₄	P or G	14 days ⁴
Nitrite	Cool 4°C	P or G	48 hours
pH	None	P or G	Analyze immediately ³
Selenium	Conc HNO ₃ to pH < 2	P or G	6 months
Silver	Conc HNO ₃ to pH < 2	P or G	6 months
Sodium	Conc HNO ₃ to pH < 2	P or G	6 months
Sulfate	Cool 4°C	P or G	28 days
Temperature	None	P or G	Analyze immediately ³
Total dissolved			
Residue	Cool 4°C	P or G	7 days
Turbidity	Cool 4°C	P or G	48 hours

¹. P = plastic, hard or soft; G = glass, hard or soft.

². These samples should never be frozen.

³. "Analyze immediately" generally means within 15 minutes of sample collection.

⁴. Ion chromatographic methods using conductivity as the detector cannot be used.

SAMPLE COLLECTION, CONTAINERS, AND PRESERVATION FOR ORGANIC CONTAMINANTS

Contaminant	Preservative	Container¹	Maximum Holding Time
Chlorinated Hydrocarbons	Refrigerate at 4°C as soon as possible after collection	Glass with foil or Teflon-lined cap	14 days
Chlorophenoxys	Refrigerate at 4°C as soon as possible after collection	Glass with foil or Teflon-lined cap	7 days
TTHMs	Ascorbic acid and 6N HCl	Glass with Teflon-lined septum	14 days
VOCs	HCl to pH < 2, cool 4°C septum	Glass with Teflon-lined	14 days

SAMPLE COLLECTION, HANDLING, AND PRESERVATION OF BACTI SAMPLES

Samples must be representative of the water system. Sampling taps, wellheads, or streams for sampling must be free of aerators, strainers, hose attachments, mixing type of faucets, purification devices, or excessive agitation. Both glass or plastic containers can be used for bacti sampling. For tap water and well samples, maintain a steady water flow for at least 2 minutes to clear the service line before sampling. Collect at least a 100 mL sample volume, allowing at least a half-inch of air space to facilitate mixing of sample by shaking.

Bottles that contain dechlorinating agent or preservatives should not be rinsed with the sample, and do not fill the bottle to overflow.

Sample collectors who deliver samples directly to the lab should ice samples immediately after sample collection.

Holding/travel time between sampling and analysis is not to exceed 30 hours. If lab is required by state regulation to analyze samples after 30 hours and up to 48 hours, the lab is to indicate that the data may be invalid because of excessive delay before sample processing. No samples received after 48 hours are to be analyzed for compliance. All samples received in the laboratory are to be analyzed in the day of receipt.

SAMPLE COLLECTION, PRESERVATION, AND CONTAINERS FOR ODOR SAMPLES

Odor samples must be collected in glass bottles with glass or Teflon-lined closures. Plastic containers are not reliable for odor samples and must not be used. Most tap waters and some waste waters are chlorinated. It is often desirable to determine the odor of the chlorinated sample as well as of the same sample after removal of chlorine. Dechlorination is achieved using sodium thiosulfate in exact stoichiometric quantity. It is important to check a blank to which a similar amount of dechlorinating agent has been added to determine if any odor has been imparted. Such odor usually disappears upon standing if excess reagent has not been added. Odor tests should be completed as soon as possible after collection of the sample. If storage is necessary, collect at least 1000 mL of sample in a bottle filled to the top. Refrigerate, making sure no extraneous odors can be drawn into the samples as the water cools.

PROCEDURAL EXCEPTION

The OCWD's Laboratory routinely receives field samples that are collected for dissolved metals analysis, but are not filtered on site followed by acidification, nor immediately filtered after collection. Due to the limited field sample collection facility, these samples are brought to the lab, then filtered in the lab following EPA recommended procedures.

All laboratory staff, however, are trained in sample collection and experienced in obtaining representative aliquots from all types of samples and matrices. This ensures the accuracy and precision of data obtained from all matrix spike studies.

CHAIN-OF-CUSTODY PROCEDURES

GENERAL

All water and wastewater sampling should document and implement a chain of possession and custody of any sample collected, whether or not the resulting data are to be used in enforcement cases. Such procedures insure that the samples are collected, transferred, stored, analyzed, and destroyed only by authorized personnel.

The primary objective of the chain-of-custody procedures is to create an accurate written record that can be used to trace the possession of the sample from the moment of its collection through its introduction into evidence. A sample is in custody if it is in any one of the following states:

1. in actual physical possession,
2. in view, after being in physical possession,
3. in physical possession & locked up so that no one can tamper with it,
4. or in a secured area, restricted to authorized personnel.

TRANSFER OF CUSTODY AND SHIPMENT

1. Samples must be accompanied by a chain-of-custody record that includes the collectors' signatures, station number, station location, date, time, type of sample, number of containers, and analyses required. When turning over possession of samples, the transferor and transferee must sign the record sheet and indicate the date and time.
2. The laboratory person assigned to receive the samples (custodian) acknowledges receipt by signing in the appropriate column of the form.
3. Samples must be carefully packed and the shipping containers padlocked for shipping to the receiving laboratory.
4. Chain-of-custody records must accompany packages to show identification of the contents.
5. Upon arrival, the samples must be placed in a designated area so that no one can tamper with them.

LABORATORY CUSTODY PROCEDURES

1. The laboratory sets aside a clean, dry, isolated room with sufficient refrigerator space that can be securely locked from the outside for sample storage.
2. Samples are handled by the minimum possible number of persons.

3. Incoming samples are received by the laboratory custodian who will indicate receipt by signing the chain-of-custody record sheet and retaining the sheet as a permanent record. Sample couriers shall sign jointly with the laboratory custodian.
4. The custodian insures that samples for organic chemical analyses are properly stored and maintained at 4°C.
5. Laboratory personnel are responsible for the care and custody of a sample once it is handed to them and should be prepared to testify that the sample was in their possession and view or secured in the laboratory at all times from the moment it was received from the custodian until the tests were run.
6. Once the sample analyses are completed, the unused portion of the sample, together with identifying labels and other documentation, must be properly disposed of by authorized laboratory personnel.

CUSTODY AND DISPOSAL OF LABORATORY WASTE

The laboratory QA program controls sample treatment and final disposition of receipt at the laboratory. After all analyses are completed and reports are sent, a spent sample is disposed properly by authorized lab personnel. The laboratory disposes of non-organic aqueous samples into sinks, which are connected to neutralization tanks. Neutralization tanks are maintained yearly.

Laboratory has set aside a waste storage room adjacent to the laboratory for proper storing of chemical and solvent wastes. 50-gallon size drums with tight fitting lids are used to store vials, which contain pesticide/herbicide standards or sample concentrates. These solutions and solvent wastes are recorded on manifests. Waste chloroform solvents are stored in brown glass bottles. All lab waste chemicals are removed by a California-licensed hazardous waste transport company. EPA ID number issued to OCWD's lab: CAD010680114. Revenue and Taxation code: #HAHQ36015667.

EXAMPLES OF CHAIN OF CUSTODY SHEET

Examples of Orange County Water District laboratory chain of custody sheets are provided in Appendix H.

**7. STANDARD
OPERATING PROCEDURES
ORGANIC**

SECTION 7

STANDARD OPERATING PROCEDURES – ORGANIC

The standard operating procedures (SOP's) used within OCWD's laboratory are presented in this chapter. EPA method codes and Standard Methods manual codes are both referred to in the SOP's. SOP's cover specific descriptions of actual laboratory conditions, instrumentation, **analytical procedures, calibration procedures and frequency, internal quality control checks, precision and accuracy assessment, acceptance criteria, data reduction, validation and reporting, preventive maintenance, and corrective action.**

The Standard Operating Procedures for organic methods included in Section 7 are as follows:

Method 524.2	Method 515.4	Method 528
Method 525.2	Method 531.2	Method 526
Method 548.1	Method 547	SRL – TCP method
Method 521	Method 549.2	1,4-Dioxane
Method 527	Method 550.1	NDMA
Method 506	Method 551.1	Hormones
Method 507	Method 552.2	Phenols
Method 508	Method 532	Pharmaceuticals
Method 529	Method 535	Method 556

Software Procedures

Brief descriptions of the definitions used in the SOP's are given below. Revision of SOP's is an ongoing process in the laboratory in order to keep the contents up to date.

DEFINITIONS

- ** INTERNAL STANDARD** – A pure analyte(s) added to a solution in a known amount(s) and used to measure the relative responses of other method analytes and surrogates that are components of the same solution. The internal standard must be an analyte that is not a sample component.
- ** SURROGATE ANALYZE** – A pure analyte(s), which is extremely unlikely to be found in any sample, which is added to a sample aliquot in known amount(s) before extraction and is measured with the same procedures used to measure other samples components. The purpose of a surrogate analyte is to monitor method performance with each sample.

- ** **LABORATORY DUPLICATES (LD1 AND LD2)** – Two sample aliquot taken in the analytical laboratory and analyzed separately with identical procedures, but not with sample collection, preservation, or storage procedures.
- ** **FIELD DUPLICATES (FD1 AND FD2)** – Two separate samples are collected at the same time, placed under identical circumstances, and treated exactly the same throughout field and laboratory procedures. Analyses of FD1 and FD2 give measure of the precision associated with sample collections, preservation and storage, as well as with laboratory procedures.
- ** **LABORATORY REAGENT BLANK (LRB)** – An aliquot of reagent water that is treated exactly as a sample – including exposure to all glassware, equipment, solvents, reagents, internal standards, and surrogates that are used with other samples. The LRB is used to determine if method analytes or other interferences are present in the laboratory environment, the reagents, or the apparatus.
- ** **FIELD REAGENT BLANK (FRB)** – reagent water placed in a sample container in the laboratory and treated as a sample in all respects, including exposure to sampling site conditions, storage, preservation and all analytical procedures. The purpose of the FRB is to determine if method analytes or other interferences are present in the field environment.
- ** **LABORATORY PERFORMANCE CHECK SOLUTION (LPC)** – A solution of method analytes, surrogate compounds, and internal standards used to evaluate the performance of the instrument system with respect to a defined set of method criteria.
- ** **LABORATORY FORTIFIED BLANK (LFB)** – An aliquot of reagent water to which known quantities of the method analytes are added in the laboratory. The LFB is analyzed exactly like a sample, and its purpose is to determine whether the methodology is in control, and whether the laboratory is capable of making accurate and precise measurements at the required method detection limit.
- ** **LABORATORY FORTIFIED SAMPLE MATRIX (LFM)** – An aliquot of an environmental sample to which known quantities of the method analytes are added in the laboratory. The LFM is analyzed exactly like a sample, and its purpose is to determine whether the sample matrix contributes bias to the analytical results. The background concentrations of the analytes in the sample matrix must be determined in a separate aliquot and measured values in the LFM corrected for background concentrations.
- ** **STOCK STANDARD SOLUTION** – A concentrated solution containing a single certified standard that is a method analyte, or a concentrated solution of a single analyte prepared in the laboratory with an assayed reference compound. Stock standard solutions are used to prepare primary dilution standards.
- ** **PRIMARY DILUTION STANDARD SOLUTION** – A solution of several analytes prepared in the laboratory from stock standard solutions and diluted as needed to prepare calibration solutions and other needed analyte solutions.

- ** CALIBRATION STANDARDS (CAL)** – A solution prepared from the primary dilution standard solution and stock standard solutions of the internal standards and surrogate analytes. The CAL solutions are used to calibrate the instrument response with respect to analyte concentration.
- ** QUALITY CONTROL SAMPLE (QCS)** – A sample matrix containing method analytes or a solution of method analytes in a water miscible solvent, which is used to fortify reagent water or environmental samples. The QCS is obtained from a source external to the laboratory and is used to check laboratory performance with externally prepared test materials.

**Please See the Standard Operating
Procedures Binder**

**8. STANDARD
OPERATING PROCEDURES
INORGANIC**

SECTION 8

STANDARD OPERATING PROCEDURES INORGANIC AND MICROBIOLOGY

INORGANIC METHODS

Standard Operating Procedures for inorganic methods included in Section 8 are as follows:

TAB NAME – SOP NAME

pH-ALK-EC Auto Mettler

ALK-MAN1 - Alkalinity, Total and Phenolphthalein (Manual Methods)

Amperometric Chlorine – (AMPCL2-Auto-Mettler)

Autoclave—Steris SV-120

Centrifuge-Sorvall ST40

CN by FIA – Cyanide by FIA, CN STD prep, FIA-CN(macro), FIA-CN-Micro-DIST

COD-Reactor Digestion

Color

DEENA-Automated Digester – metals digestion

FIA-CN

FIA-Orth-P

Dis/Tot S²⁻ – Dissolved Sulfide/Total Sulfide Methylene Blue Colorimetric Method
(Photometric Method)

EC – Electrical Conductivity (manual method)

Fluoride – by Probe (FLRDPRBE)

Hydrogen Peroxide Titanium Analysis Method

Iodine-ICP-MS

ICP Metals – Trace Elements by Inductively Coupled Plasma-Optical Emission Spectroscopy

ICP Metals – Trace Elements by Inductively Coupled Plasma-Mass Spectroscopy-DRCII

Inorg. DBP – Inorganic Disinfection Byproducts (Dionex-ICS3000IC)

Ion Chrom. – Ion Chromatography IC-ANIONS, IC-CRVI, IC-IDBP, IC-Perchlorate

Lime CaO – Analysis of Lime Samples

MBAS – Methylene Blue Active Substances (MBAS) [Surfactants]

NH₃ by FIA – Ammonia (as nitrogen) by FIA (FIA-NH₃)

NO₃/NO₂ by FIA – Nitrate/Nitrite (as nitrogen) by FIA (FIA-NO₃+NO₂)

ODOR1

Org-N/TKN by FIA – Organic-N and Total Kjeldahl Nitrogen by FIA(FIA-Organic-N)

Perchlorate – Perchlorate (Dionex ICS-3000 IC)

pH1 (manual)

Res. CL₂ - Residual Chlorine (Cl₂)

Set. Solid – Settleable Solids (Volumetric Method – SETTSL1)

Silica – Silica (Molybdosilicate Method) (Silica Cary)

“Suitability” Test

Sulfide1

Sus. Sol – Suspended Solids

TDS – Total Dissolved Solids (TDS) also known as Total Filterable Residue

TOC-Sievers - TOC/DOC-Low Level – Total and Dissolved Organic Carbon G.E. Model 5310C

TOC-Sievers - TOC/DOC-High - Low Level – Dissolved Organic Carbon - G.E. Model 900

TON – Threshold Odor Testing

Tot. Hrd – Hardness, Total (mg/l as CaCO₃)

Turbidity SOP

UVAB Cary

MICROBIOLOGY

Coli MPN – Coliforms by Multiple Tube Fermentation Technique (MULTI-FM.TUB)

F. Coli. – Fecal Coliform Analysis (Membrane Filter Method) (MF-FECAL)

HPC – Heterotrophic Plate Count (Pour Plate Method) (HETRO.PLC)

Quanti Tray – Total and E. Coli Analysis by Quanti Tray Method

Tol. Coli. – Total Coliform Analysis (Membrane Filter Method) (MF-TOTAL)

**Please See the Standard Operating
Procedures Binder**

SECTION 9

STANDARD OPERATING PROCEDURES MISCELLANEOUS

ORANGE COUNTY WATER DISTRICT STANDARD OPERATING PROCEDURE

INORGANIC LABORATORY TECHNICIAN PROCEDURES

File Name: M:\SOP\INORGNIC\LABAIDE2.SOP.doc
Revision: 6

Effective Date: 2/7/2008
Supersedes: 5 (4/10/2006)

1. BACTI LAB

1.1 BACTI SAMPLE BOTTLE PREPARATION

- 1.1.1 Thoroughly clean and rinse polypropylene bottles, giving a final rinse with deionized water.
- 1.1.2 Aseptically add 2.0 mL $\text{Na}_2\text{S}_2\text{O}_3$ / Disodium EDTA solution to each 500 mL bottle (use 1.0 mL for 250 mL bottle).
 - 1.1.2.1 Prepare $\text{Na}_2\text{S}_2\text{O}_3$ / Disodium EDTA solution by weighing out. 45.0 g sodium thiosulfate and 93.75 g Disodium EDTA Dihydrate. Dissolve in a 2000 mL beaker filled with about 800 mL DI water (use a magnetic stir/hot plate with heat set on 2 to facilitate dissolving, which takes several hours). After dissolving, adjust pH to 6.5 with 6 N sodium hydroxide. Transfer solution to a 1000 mL volumetric flask and dilute to mark with DI water. Then transfer to two 1 L reagent bottles and autoclave for 30 minutes. After cooling, label with date and store in refrigerator.
- 1.1.3 Loosely cap all bottles. Put a piece of autoclave sterilization indicating tape on each bottle, preferably over the cap to act as a verification seal, and place bottles on metal autoclave tray.
- 1.1.4 Autoclave bottles for 30 minutes at 121C.
- 1.1.5 After autoclave cycle has finished, remove bottles and allow to cool. Then tighten caps and write date on each bottle. Put bottles on shelf or in plastic bags.

1.1.6 Check sterility of at least one bottle from autoclaved batch by aseptically adding 25 mL sterile tryptic soy broth, incubating at 35 +/- 0.5C for 24 hours and then checking for absence of growth (turbidity). If growth occurs, ALL sample bottles from the batch must be discarded and subjected to the entire preparation process again. Usually the chemist on the bacti schedule will check for turbidity and make a note of the sterility check in the autoclave logbook.

1.1.6.1 Prepare tryptic soy broth according to manufacturer's directions:

Weigh out 30 g dry powder to make 1 L of broth. Stir with gentle heating to dissolve. Sterilize in autoclave for 15 minutes at 121C. Check pH and record in media logbook. Store in refrigerator for no longer than 3 months. Discard if broth becomes turbid.

1.2 BUFFERED DILUTION WATER PREPARATION

1.2.1 Fill a 4 L Erlenmeyer flask with about 3900 mL DI water. Using a 20 mL volumetric pipet, add 20 mL of magnesium chloride stock solution to the flask. Using a 5 mL volumetric pipet, add 5 mL of stock phosphate buffer solution to the flask. Then dilute to 4 L with DI water. Place magnetic stir bar into flask and stir for several minutes.

1.2.1.1 Stock phosphate buffer solution. Dissolve 34.0 g potassium dihydrogen phosphate, KH_2PO_4 , in about 500 mL DI water and adjust pH to 7.2 +/- 0.5 with 1 N sodium hydroxide. Then dilute to 1 L with DI water. Sterilize by autoclaving for 30 minutes at 121C. Store in refrigerator for up to 3 months and discard if solution becomes cloudy or turbid.

1.2.1.2 Stock magnesium chloride solution. Dissolve 81.1 g magnesium chloride, $\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$, in DI water and dilute to 1 L. Sterilize by autoclaving for 30 minutes at 121C. Store in refrigerator for up to 3 months and discard if solution becomes cloudy or turbid.

1.2.1.3 Dispense into appropriate sized bottles. For dilutions, dispense about 102 mL into each dilution bottle to allow for 99 +/- 2.0 mL after sterilization.

Autoclave dilution bottles for 15 minutes. For sterile rinse water, use 1 L bottles and autoclave for 30 minutes.

1.2.2 Each batch of buffered dilution water/rinse water must be checked for sterility. Add a clean, empty dilution bottle to the batch to be sterilized. After autoclaving, allow to cool. Then, aseptically add 50 mL sterile, double strength tryptic soy broth and 50 mL of dilution water to be tested that has been cooled. Incubate at 35 +/- 0.5C for 24 hours, then check for absence of turbidity. If there is turbidity, ALL dilution water from the suspect batch must be discarded. Usually the chemist assigned to the bacti schedule will check for turbidity and make a note of the sterility check in the autoclave logbook.

1.2.2.1 Prepare double strength tryptic soy broth as mentioned in 1.1.6.1, except doubling the amount of dry powder used.

1.2.3 Notify the supervisor so pH and conductivity can be checked whenever a new batch of dilution water is to be prepared.

1.3 BACTI GLASSWARE WASHING

1.3.1 Use DI water for the final rinse.

1.3.2 Visually inspect all glassware for chips, cracks, etc. and discard any that are unsatisfactory. Also inspect caps to ensure inert liners are intact.

1.3.3 Batches of dry glassware are to be spot-checked for pH reaction to ensure there is no alkaline or acidic residue. Add a few drops of 0.04% bromothymol blue indicator and observe the color reaction. Should be blue-green for neutral pH. Until further notice, report the results for each batch of cleaned and tested glassware in the autoclave logbook.

1.3.3.1 To prepare 0.04% bromothymol blue indicator, add 16 mL of 0.01N sodium hydroxide solution to 0.1 g bromothymol blue and dilute to 250 mL with DI water.

1.4 BACTI REFRIGERATORS

- 1.4.1 Check temperature once per day and record in logbook. Should read between 1 – 5 +/- 1C. Annually, notify the bacti chemist to calibrate the thermometer against a NIST-certified thermometer and attach a label to the refrigerator thermometer listing any correction factor.

2. GENERAL

- 2.1 Keep plastic pans full of detergent solution; change solution as needed to keep clean (once/day to once/week)
- 2.2 **Chemist responsibilities** are: Pour out solutions from used glassware, rinse once with tap water, and submerge in pan so that glassware is completely filled with detergent solution.
- 2.3 Segregate all trace metal glassware, including pipets; each load should have its own detergent solution pan, for example, with no other labware mixed in.
- 2.4 Wash all glassware, behind the white line only, and dry in oven, related stands, or pegs. Glassware also includes Kjeldahl flasks, MBAS flasks, Cyanide flasks, and red flasks from odor tests.
- 2.5 Make sure all labware is dry before putting it away.
- 2.6 Check paper towel dispensers daily and stock if not completely full.
- 2.7 Wipe down sink everyday and other countertops when needed. Sinks should be kept clean and free from soap residue.
- 2.8 Make HYDROCHLORIC ACID when needed(10% solution). See DIRECTIONS FOR SOLVENT PREPARATION.
- 2.9 Make ETHANOL/ACETONE when needed(50-50 solution). See DIRECTIONS FOR SOLVENT PREPARATION. Do not store or have total working volumes of flammable liquids in the glassware processing area in excess of 1 gallon. All solvents should be stored in the appropriate flammable storage areas – removed to make up smaller working volumes (250 ml squeeze solvent rinse bottles) – and then returned. Total number of solvent rinse bottles must be under the 3.78 Liter limit at all times.
- 2.10 Clean hoods as needed or at least once a week. Use only DI H₂O when cleaning the cyanide hood. Do not use a solvent. When cleaning any hood, be sure to have the exhaust on at all times.

- 2.11 Rinse autoclave once a day.
- 2.12 **Chemist responsibility:** Clean up his/her workstation and any area that he/she uses.
- 2.13 Change sink mats as needed.
- 2.14 Empty "waste containers" daily.
- 2.15 Fill DI water bottles daily.
- 2.16 File data for the Inorganic section(check Supervisor's "TO BE FILED" box.
- 2.17 Dust all shelves when needed (At least 4 times a year.)
- 2.18 Dispose of broken glassware boxes and replace when needed.
- 2.19 Any other duties that you think are needed.
- 2.20 If there is absolutely nothing to do, then ask one of the chemists for something to do.
- 2.21 Be responsible for assigned duties on the Lab Safety Checklist.

3. MBAS / SURFACTANTS

- 3.1 **Chemist responsibilities:** Assemble clean sep. funnels; dump solution out of and rinse used sep. funnels with water.
- 3.2 Lab tech responsibilities: Disassemble used rinsed sep. funnels; soak in detergent solution overnight; wash & dry sep. funnels and parts; return clean apparatus to drawers.

[illegible]

Weekend Procedures

(revised 8 October 2009)

1. **(Room 122):** First thing upon arrival, check incubator and water bath thermometers; record time and temperature(s) in logbook. Do not record the LED digital temperature reading.
2. **(Sample Receiving Room):** Log in samples
 - a. Check incoming samples against Operations sample log; write time received on Lab chain of custody and sign it.
 - b. Mark C for composite or G for grab on sample labels as appropriate.
 - c. **Load samples on cart for transport to lab.**
3. **(Room 122):** pH—analyze GA-HPEP grab (if present) using manual pH meter (follow pH SOP).
4. Bacti
 - a. Take out the samples from the incubator and water bath that were inoculated on previous days, read them, and record in the logbook. Transfer from any new positive Lauryl Tryptose Broth tubes to BGB and EC Medium tubes and incubate as appropriate. **DO NOT throw tubes that have finished the 48-hour incubation in biohazard bag; leave in racks. DO NOT USE AUTOCLAVE ON WEEKENDS.**
 - b. Inoculate FPW and GA-C (if present) grab samples into MPN tubes and place in incubator, following Total Coliform MPN SOP. **Be sure to inoculate a set of tubes from each of the two FPW bottles; save the screw-cap bottle for washing.**
5. **(Room 124): Go through door by autoclave and turn left.** Go to hood and preserve Q-1, FPW composites and ROF, ROP grabs for TOC using 250 mL clean brown glass bottles. Add 0.3 mL conc. H_3PO_4 to pH < 2 to each, then store in **Room 124** refrigerator.
6. **(Room 125):** Place Q-1, ROP, and GA-HPEP (if present) Daily Composite, and FPW and GA-HPEP (if present) Daily Grab samples in the **glass-door chromatography refrigerator by the west wall.**
7. **(Room 122):** Just before leaving, check incubator and water bath thermometers again; record time and temperature(s) in logbook. Do not record the LED digital temperature reading.
8. Call Jeremy Davis at 714-478-4130 (cell phone) to notify him that you have worked today. **If no answer, leave a voicemail, but in case of emergency, call 714-444-2244 also, if there was no answer at the cell number.**

ZoBell's Solution

To make 4 L:

5.6320 g Potassium ferrocyanide, $\text{K}_4\text{Fe}(\text{CN})_6 \cdot 3\text{H}_2\text{O}$

4.3900 g Potassium ferricyanide, $\text{K}_3\text{Fe}(\text{CN})_6$

29.8220 g Potassium Chloride, KCL

Dilute to 4 L with DI water and Mix well.

To make 2 L:

2.8160 g Potassium ferrocyanide, $\text{K}_4\text{Fe}(\text{CN})_6 \cdot 3\text{H}_2\text{O}$

2.1950 g Potassium ferricyanide, $\text{K}_3\text{Fe}(\text{CN})_6$

14.9110 g Potassium Chloride, KCL

Dilute to 2 L with DI water and Mix well.

To make 1 L:

1.4080 g Potassium ferrocyanide, $\text{K}_4\text{Fe}(\text{CN})_6 \cdot 3\text{H}_2\text{O}$

1.0975 g Potassium ferricyanide, $\text{K}_3\text{Fe}(\text{CN})_6$

7.4555 g Potassium Chloride, KCL

Dilute to 1 L with DI water and Mix well.

9/8/2005

FC

SECTION 10

STANDARD OPERATING PROCEDURES – ASPEN

ASPEN PROCEDURES

Standard Operating Procedures for Aspen included in Section 10 are as follows:

- ALN E-Mail Procedure
- Organic Data Transfer
- Manual Data Entry
- Inorganic Data Entry – Baird ICP
- Inorganic Data Entry – FIA
- Inorganic Ion Balance
- Inorganic Supervisor Approval
- Organic Supervisor Approval
- Inorganic Backlog Report
- WRMS file Generation and Transfer – Inorganic and Organic Data
- WRMS File Generation and Transfer – Field Data

STANDARD OPERATING PROCEDURE

WRMS File Generation and Transfer- Inorganic and Organic Data

A. Summary of the Procedure

This SOP describes the procedure used to generate and transfer WRMS files for Inorganic and Organic data.

B. Selecting Samples for WRMS file Generation

1. From the Main Menu, click on Print Reports.
2. Click on Certificates of Analysis, click on Ready to Report.
3. Click only the samples that you wish to send to WRMS. For example, the inorganic supervisor only sends the inorganic samples and the organic supervisor only sends the organic samples.
4. Click on Select All to select all samples.
5. Click on Mark Status and click on Mark Report Date and Ready to Archive.

C. WRMS file Generation

1. Exit to the Main Menu, click USER Extension, and click 'Generate WRMS-Inorganic' to generate WRMS files for inorganic samples. Click 'Generate WRMS-Organic' to generate WRMS files for organic samples.
2. Once the report is displayed, click on File, Print to print the report. File this report. This report is necessary because it identifies the Lab# with the WRMS dat file name.
3. The inorganic samples will be on the M:\WRMS\Inorganic directory. The organic samples will be on the M:\WRMS\Organic directory.

D. WRMS Transfer

1. Click the WRMS Application icon, then click the WRMS Main Menu icon.
2. Type in your initials and password.
3. Click on Applications, then Sample Results. The screen will change and you will have new selections at the top of the screen - Data, Lookups, Help, Quit, and Window.
4. Click on Data, then Temporary Results, then Load, then Set Path. Enter the path, for example, M:\WRMS\Field for field data, M:\WRMS\Organic for organic data or M:\WRMS\Inorganic for inorganic data.
5. After the path is entered, the Sample Results, Main Menu screen will be displayed (see step 4).
6. Click on Data, then Temporary Results, then Load, then Execute. This will start the WRMS transfer.

7. Note that this routine will list the files that are being transferred on the screen. All files that are being transferred may not be in view if there are more files than can fit on this screen (about 15).
8. Once the procedure is finished, the Sample Results, Main Menu will appear (see step 4).

SOP PROCEDURE CHANGE

[illegible]

STANDARD OPERATING PROCEDURE

Organic Data Transfer into Aspen

A. Summary of the Procedure

This SOP describes the procedures used to transfer Organic Data into Aspen. PHARMA and 535 instrument files are imported directly into Aspen all other methods use Limslink before importing data into LIMS.

B. Laboratory Numbers and QC Codes

Lab numbers in Aspen are structured using the following procedure. For example, the lab number 96080006-01 describes a sample received in August of 1996 (96 is the year, 08 is the month, 0006 is the sample group, and -01 identifies separate test series). QC codes are typed at the end of the lab number, in the 12th position.

QC Code	Definition	Example
B	Reagent Blank	RB110596000B
C	Front and Back Standards	STF11059600C (Front), STB11059600C (Back)
D	Duplicate	96080006-01D
F	Low LFB	LFL11059600F
U	Low LFB 2	LFL11059600U
L	LFB	LFB11059600L
N	LFB 2	LFB11059600N
S	Spike	96080006-01S
K	Spike Duplicate	96080006-01K
X	Mid Spike	96080006-01X
Z	Mid Spike Duplicate	96080006-01Z
V	"B" Standard	STB01249700V
W	Low Back Standard	STL11059600W
E	Low Check Standard 2	STL11059600E
A	Mid Check Standard	STM11059600A
T	High Check Standard	STT11059600T

C. Creating a LimsLink Text File

1. Save a copy of the instrument data file to the M: drive. Save a copy on the M:\ARCHIVE\ and M:\TRANSFER\ directories. For example, for a 508 analysis, save the instrument file on the M:\ARCHIVE\508 and the M:\TRANSFER\508 directories.
2. For methods PHARMA and 535 skip to section D.
3. Click the LimsLink icon.
4. Click the 'running man' to start creating a Limslink Text file.

5. Choose a method - for example, 508.
6. Create a new worksheet by clicking the New button and enter a description for your worksheet. Use the following format: LV103096, which would describe a worksheet with a run done by Lily and analyzed on 10-30-96.
7. Once the worksheet appears, click the green triangle to retrieve files from the M:\TRANSFER\ sub-directory.
8. After all the data has been sent to the worksheet, click on the Samples pull-down menu, click Report List, and highlight a Report Name. This name will vary by method, for 508, its 508_EZChrom. Finally click Report.
9. LimsLink then creates a text file. Type in a name following this format: M:\TRANSFER\508\LV103096.txt, which would identify a transfer file with the run analyzed by Lily on 10-30-96.
10. Click the red square to stop data import.
11. Click on the Close button.
12. This completes the creation of a LimsLink text file for transfer into Aspen. To exit LimsLink, highlight System and click on Exit or click on the X in the upper right corner.

D. Aspen - Data Import, Data Review, and Peer Review

Data Import from LimsLink text file into Aspen.

1. Exit LimsLink and click the Aspen Icon.
2. Click the Import Data icon and in 'Select File Type', select 'LimsLink Text File'. For PHARMA, select PHARMA_QTRAP and for 535, select 535 in 'Select File Type'.
3. Click the Browse button to find the LimsLink Text file in the M\TRANSFER directory, for example, M:\TRANSFER\508\LV103096.txt.
5. Click the 'Start Import' button.
6. Once the import is complete, click the 'Send to LIMS' button at the bottom of the screen. If you don't wish to send the data to LIMS at this time, click Close to exit to the Main Menu.
7. A pop-up window will appear titled 'Existing Worksheets.' Click the 'Create New WS' button.
8. Another pop-up window will appear titled 'Create New Worksheet for Import Data.' Click on the 'No' button.
9. You will be returned to the Imported Data screen. Click on the 'Append Recs' button.
10. You will see a pop-up window titled 'Append Exceptions to Test and QC files.' Click OK.
11. Once this transfer is complete, you should not see any records on the Imported Data screen.
12. Click Close to exit.

Data Review

13. Click Enter Sample Results from the Aspen Main Menu.
14. Then select By Worksheet.
15. Select a worksheet and click the Continue button.
16. After the 'Enter Test Results' screen loads with the imported data, click the Calculate Results button.
17. Click the 'Print Organic Data Review' button at the bottom of the screen to print the Organic Data Review Report.
18. Click on Back to return to the Main Menu.
19. Place the Organic Data Review Report in the data package and give it to the Reviewing Chemist.

Peer Review

20. The Reviewing Chemist clicks on Enter Sample Results from the Aspen Main Menu.
21. Select 'By Worksheet' and select the appropriate worksheet.
22. Click the Continue button and review the data.
23. Click the Mark Status.
24. Select Mark Tests Approved, and enter the approved date and initials.
25. Click Back to return to the Main Menu

E. Backlog Reports

1. Backlog reports can be viewed or printed from Routine Reports on the Main Menu.
2. Click Routine Reports, then Backlog Reports.
3. Next, select Organic Backlog Report, Organic Volatile Report or Organic Semivolatile Report.

SOP PROCEDURE CHANGE

CHANGE		DATE	INITIAL
B	QC Code for 601/602 "B"	1/24/1997	CG
D-4	Millennium Export Data	1/31/1997	MY
E-17	Data Review Report Print	1/31/1997	CG
E-23 through 29	Quick Approval	2/7/1997	CG
B-8a.	601/602 LimsLink Proc.	2/7/1997	CG/MY
E-28a	Alternative Procedure	3/5/1997	MY
Removed screen captures		10/9/1997	MY
Removed 8.a, 601602 is not used for analysis		6/15/2000	MY
Revised Section C, Maxima is no longer used		6/15/2000	MY
Updated to Aspen		03/07/2005	MY
Deleted Section describing Millennium		11/09/2009	MY
Added new QC Codes		11/09/2009	MY
Revised Section E. Backlog Reports		11/9/2009	MY
Revised Section D. Peer Review		11/9/2009	MY

STANDARD OPERATING PROCEDURE

Manual Data Entry into Aspen

A. Summary of the Procedure

This SOP describes the procedures used for manual data entry into Aspen for the Inorganic Section only. The Organic Section does not enter data manually.

B. Laboratory Numbers and QC Codes

Lab numbers in Aspen are structured using the following procedure. For example, the lab number 96080006-01 describes a sample received in August of 1996 (96 is the year, 08 is the month, 0006 is the sample group, and -01 identifies separate test series). QC codes are typed at the end of the lab number, in the 12th position

QC Code	Definition	Example
B	Reagent Blank	RB110596000B
C	Front and Back Standards	STF11059600C (Front), STB11059600C (Back)
Q	Duplicate	96080006-01Q
F	Low LFB	LFL11059600F
K	Spike Duplicate	96080006-01K
L	LFB	LFB11059600L
S	Spike	96080006-01S
W	Low Back Standard	STL11059600W

C. Data Entry

1. Click Enter Sample Results from the Aspen Main Menu.
2. Select 'Create New Worksheet'
3. At the pop-up menu entitled 'Select a Method for Entering Results', click the 'By Test Group' button. You can also enter data by Test - press the 'By Test' button.
4. In Select TestGroupID, select the method, for example, 2320B, then click OK.
5. If the Lab # is not displayed, select All Testgroups, then click OK. Aspen will display all Lab # for this method, including the samples that already has data.
6. Select the appropriate Lab #s by clicking in the box titled 'Select for Data Entry' to the left of the Lab#. Your initials should appear in this box.
7. Once all the appropriate Lab#s have been selected, click 'Enter Results'.
8. A pop-up window will appear titled 'Form: Assignment Question - Groups.' Click the 'Reassign All Tests' button. This pop-up window will appear only if the samples were previously assigned to another worksheet. If the samples were **not** previously assigned, the pop-up window in step 9 will appear.

9. A pop-up window will appear titled 'Enter Results Options.' Click on 'No' in answer to the question, "Use Custom Data Entry Form for Entering Results?"
10. Enter your data in the Numeric Results column.
11. Click on the 'Calculate Results' button when you are done
12. Click on the 'Mark Status' button and then choose 'Mark Tests Analyzed'.
13. A pop-up window titled 'Confirm Mark All Tests in Worksheet Analyzed' will appear. Click OK.
14. A second pop-up window titled 'Enter Parameter' will appear. Enter the Analysis Date using the format *mm/dd/yy*, then click OK then type in your initials for the Analyzed By and click OK.
15. Finally exit the Enter Results section by clicking on the 'Back' button.

Steps 16 - 23 apply to data that is peer reviewed.

16. Click Print Inorganic Data Review. Sign the Data Review sheet and include it in the data packet sent to the Reviewing Chemist.
17. To review and approve data, click on Enter Sample Results from the Aspen Main Menu.
18. At the pop-up menu entitled 'Select a Method for Entering Results', click 'Review Existing Worksheet' and select the worksheet number for your data (the worksheet number is printed on the Data Review sheet).
19. Review the data.
20. Click on the 'Mark Status' button and then choose 'Mark Tests Approved'.
21. A pop-up window titled 'Confirm Mark All Tests in Worksheet Approved' will appear. Click OK.
22. A second pop-up window titled 'Enter Parameter' will appear. Enter the Approved Date using the format *mm/dd/yy*, then click OK then type in your initials for the Approved By and click OK.
23. Finally exit the Enter Results section by clicking on the 'Back' button.

D. Date Entry: Exceptions

1. Enter data that includes > or <, TNTC, or NA in the Alpha Results column of your worksheet.
2. Click on the Calculate Results button.

SOP PROCEDURE CHANGE

[illegible]

STANDARD OPERATING PROCEDURE

Re-Sampling Request in Aspen

A. Summary of the Procedure

This SOP describes the Re-Sampling Request procedure in Aspen. First the Re-Sampling Request is sent from Aspen via email. Then a worksheet is created for these samples and all tests are marked NA. Chemists also enter comments citing reasons for the re-sample.

B. Sending Resampling Request via email

1. In the worksheet, click on Re-Sampling Request button.
2. All samples in the worksheet will be listed on this page. A list of email recipients is at the top of the screen. For each sample that needs to be re-sampled, check the box "Send to List Above"
3. If an email recipient is not on the list, check the box, "Send to E-Mail Below" and type the email address in the space provided. For example, lyoo@ocwd.com
4. Enter any comments in the Comments box.
5. Select your name in the box titled 'Sending Chemist'
6. Click on the box "Send Checked Request". Only samples that are checked either 'Send to List Above' or 'Send to E-Mail Below' will be sent.
7. Right click on the screen display of the Re-Sampling Request. Then select Print. File the printout of the Re-Sampling request in the Re-Sampling Request binder.

C. Marking Tests NA

1. From the Main Menu, click on Create New Worksheet, then click 'By TestGroup'
2. Select 'All TestGroups', then enter the Testgroup in the box titled 'Select TestGroupID' and click "Filter Testgroup"
3. Select the samples that need to be re-sampled by clicking in the far left box – your initials should appear. Then click 'Enter Results'
4. A box will appear with the question 'Use Custom Data Entry Form for Entering Results?' Answer 'No'.
5. In the worksheet, check the box 'Mark Test NA' located at the bottom of the screen. Then click on 'Calculate Results.' The results for all tests in this worksheet will be NA.
6. Click on the box in the Comments column. A box will appear. Enter comments citing why the sample was re-sampled. For example, Sample failed QA/QC. Then click the 'Update' button
7. Click on 'Mark Status', then select 'Mark Tests Analyzed'. Enter today's date and your initials.
8. Give the data packet to the approving chemist. If there is no data packet, enter today's date as the 'Approved Date', and enter the supervisor's initials for 'Approved By'.

SOP PROCEDURE CHANGE

[illegible]

STANDARD OPERATING PROCEDURE

Action Level Notification Procedure

A. Summary of the Procedure

This SOP describes the Action Level Notification (ALN) procedure within Aspen. ALNs are sent from a worksheet via email.

B. Sending an ALN from a Worksheet

1. Click on button labeled ALN REPORT.
2. All tests that exceed the action level will appear on this screen.
3. Aspen will send an ALN for those tests where an email recipient was selected. If an ALN for a particular test should not be sent, choose 'Select Group.'
4. To view more detail about this sample and test, click on the Lab#. Click on 'Return' to view the list of tests which exceeded the action level.
5. Fill in the data below for each test:

The default entry for a) through c) is NO and will be sent as NO unless changed at this point.

- a) Complete ANALYSIS VERIFIED (check if Yes or leave blank if No).
 - b) Complete ANALYSIS RECHECKED (check if Yes or leave blank if No).
 - c) Complete RESAMPLE? (check if Yes or leave blank if No).
 - d) Complete DRINKING WATER (check if Yes or leave blank if No). The correct data should be entered, however, please check for accuracy.
 - e) Enter comments for this sample as appropriate. These comments will be included in the ALN.
 - f) Complete SENT BY (select your name).
-
9. Click on the 'SEND SELECTED ALNs' button.
 10. All ALNs that were sent are displayed. To make any changes, click on the 'Return to ALN Screen.'
 11. To print all the ALNs, right click on the screen, select Print, then select OK.
 12. Click on 'Return to ALN Screen', then click on 'Close and Return to Aspen'
 13. At the prompt, 'Do you want to close this window?', select Yes.

SOP PROCEDURE CHANGE

CHANGE	DATE	INITIAL
Modified whole SOP to reflect changes in Conifer	10/9/97	MY
Added sections B.16 and C.16	8/25/98	MY
Revised Sections B and C to reflect changes in Conifer	10/16/98	MY
Revised Sections B.11 and C.11 to include email password	6/15/2000	MY
Revised Sections B.13 and C.13 for ALN report	6/15/2000	MY
Revised Section B, deleted Section C. New ALN procedure	5/17/2001	MY/DRC
Reviewed	11/10/2009	MY

STANDARD OPERATING PROCEDURE

WRMS File Generation and Transfer - Field Data

A. Summary of the Procedure

This SOP describes the procedure used to generate and transfer WRMS files for field data.

B. Approve Field Results

1. From the Main Menu, go to Enter Results, By Test Group and Query by Form.
2. In the Test Group ID field, choose Like from the pick list. Another box will appear to the right of the Test Group ID box. Type in the word 'Field'.
3. Click the Select All button at the bottom of the screen.
4. Click the Enter Results button at the bottom of the screen.
5. Click No for Custom Reports.
6. Click the Calculate Results at the bottom of the screen.
7. Click Mark Status, Mark Test Approved and enter your initials.
8. Exit to the Main Menu, click on Review Status, Field Approval, then Cancel to exit.

C. Select Files for WRMS Generation and Transfer

1. From the Main Menu, click on Print Reports.
2. Click Certificates of Analysis, click on Ready to Report.
3. Click Select All if you wish to select all the samples on this screen. If there are Organic and Inorganic files there as well, mark only the Field samples. These are samples where there is a WQ in the Lab Section column.
4. Click Mark Status and click on Mark Report Date and Ready to Archive.
5. Exit to Main Menu.

D. Generate WRMS Files

1. Click USER Extension, and click Generate WRMS files - Field. Click Process WRMS files and QC, OK, OK.
2. Once the report is displayed, click File, Print to print the report. File this report. This report is necessary because it identifies the Lab# with the WRMS dat file name.
3. These files will be in the M:\WRMS\Field directory.

E. Transfer WRMS Files

1. Click the WRMS Application icon, then click the WRMS Main Menu icon.
2. Type in your initials and password.

3. Click Applications, then Sample Results. The screen will change and new selections will be displayed at the top of the screen - Data, Lookups, Help, Quit, and Window.
4. Click Data, then Temporary Results, then Load, then Set Path. Enter the path - M:\WRMS\Field for field data
5. Once the path is entered, the Sample Results, Main Menu screen will be displayed (see step 4).

SOP PROCEDURE CHANGE

[illegible]

ORANGE COUNTY WATER DISTRICT STANDARD OPERATING PROCEDURE

FIA INSTRUMENT INTERFACE (LACHAT)

File Name: M:\SOP\INORGNIC\FIATransfer.doc
Revision: 2

Effective Date: 12/05/05
Supersedes: 2 (11/18/2003)

1. SUMMARY

- 1.1 After analysis is run, data will be reformatted using WinLab software. It will then be manipulated by a macro and saved to a file for transfer into Aspen. Sample data will be saved to a worksheet, while QC information will be saved to the appropriate control chart or QC worksheet; i.e. spikes and CC standards will be saved to control charts, while mdl's will be saved to mdl worksheets. No manual data entry will be necessary, and QC data will always be current and printable at any time.

2. PRE-ANALYSIS PREPARATION IN SAMPLE TRAY FILE

- 2.1 Sample ID's must be complete (11 characters); i.e. 03040545-14, not 545-14 or 03040545, etc.
- 2.2 Sample ID's for sample duplicates must end in "Q"; i.e. 03040545-14Q; **for spikes, use S; for spike duplicates, use K, for MDL standards use M, for rechecks (not to be transferred to Aspen), use R.**
- 2.3 Any samples or standards that do not need to be saved in Aspen must have an ID less than 12 characters long. This rule mainly applies to ERA standards, calibration standards and blanks.
- 2.4 Do not change the calibration, or MDL (as entered in template) and QC standard names, as they are already appropriately entered in the method.

3. CREATING INSTRUMENT FILE

- 3.1 When a run is complete, insert a disk into the disk drive of the computer.
- 3.2 From the menu at the top of the screen, select "Open" and select file to be transferred. Click on "Open". Click on the "Run Properties Icon", located at the bottom left of the monitor screen. Click on the "Run" tab and then click on "Export Data to File".

4. TRANSFERRING DATA TO ASPEN

- 4.1 Insert floppy disk into disk drive of computer. Log onto Aspen and choose "Import Data" from the main menu; the import window will appear.

- 4.2 Select the appropriate FIA File Type (FIA-NO3, FIA-NO2, FIA-NH3, FIA-ORGN, FIA-CN) to open the corresponding FIA Interface file.
- 4.3 Select "File Location," "Browse." Double click on desired file.
- 4.4 Select "Start Import", and the imported data will then appear. Select "Import File," "Continue."
- 4.5 Select "Send to Lims".
- 4.6 When the Forms dialog box appears, select "Create New WS".
- 4.7 All sample data is then sent to a new worksheet, while QC data remains on the screen. Disregard warning message ("Warning! Not all records...").
- 4.8 Select "OK" on dialog box .
- 4.9 The QC data and all other data will now be stored in the appropriate place in Aspen.
- 4.10 Return to the main menu by selecting the "Cancel" button.
- 4.11 Select "Enter Sample Results", then "Review Existing Worksheet"; open the worksheet containing the data just transferred. (It should be the last worksheet in the list.)
- 4.12 Check the data, then select "Calculate Results".
- 4.13 After calculations are complete, select "Print Inorganic Data Review".
- 5.1 Exit Aspen. When exiting the worksheet, a dialog box appears stating, "This worksheet has not been approved. Approve Now?" Select "No".
- 5.2 After the data has been reviewed by another chemist, log onto Aspen and reopen the worksheet containing that data.
- 5.3 Select "Mark Status", then mark tests approved (analysis date and analysts initials are entered automatically with the transfer to Aspen).

Exit Aspen

**CHANGE
INITIALS**

DATE _____

JMD

JMD

PH

STANDARD OPERATING PROCEDURE

QC Data Manual Entry

A. Summary of the Procedure

This SOP describes the manual entry of QC data in Aspen.

B. Assignment of QC Data

1. In your worksheet, click on Lab#.
2. Click the box "Assign New QC".
3. Select the type of QC Sample. For example, a calibration check or a spike.
4. Answer 'Yes' to all subsequent questions.
5. Click 'OK' in answer to the statement 'QC has been assigned'

C. QC Data Entry

6. In your worksheet, click on the button 'View QC'.
7. Change the Lab# for any Calibration Check standards assigned. The Lab# will initially say 'Calib Check'. Change that to CC.....
8. Enter your QC results.
9. Click on the 'Back' button when you are done.

SOP PROCEDURE CHANGE

CHANGE

DATE _____

INITIAL

Wrote procedure

03/06/02

MY

[illegible]

11. DATA REVIEW, TRANSFER AND REPORTING

SECTION 11

SAMPLE ANALYSIS, DATA ENTRY, DATA REVIEW, AND DATA TRANSFER

SAMPLE ANALYSIS

The chemist analyzes the samples using procedures described in EPA methods or in Standard Methods for Water and Wastewater Analysis. Every sample, including QA/QC samples and travel blanks, is assigned a unique identification number (Lab#) during the login process, with which the progress of the sample can be monitored throughout its residence time in the laboratory. Aspen ensures that each sample is appended to the analytical backlog report of each test assigned (see Appendix I). These reports not only proved the chemist with a current listing of sample analyses to be completed, but it also provides the analysis due date required by the EPA protocol. Supervisors and chemists utilized the backlog reports to schedule and prioritize analytical activities within regulatory defined holding times. Backlog reports also provide a list that flags those samples requiring priority handling.

From the backlog report, the chemist selects samples for analysis and writes the Lab# and sample name in a sample run logbook (see Appendix J). The standards used for this analysis are printed on a label and pasted onto the run log. This procedure allows the chemist to identify the standards used for this particular analysis.

The status of any particular sample at any given time is also discernible with the use of the Aspen LIMS system. Each phase of the analytical process, from login, to preparatory tests, to analysis, through a multi-tiered review process and release to the archive (WRMS) is associated with a particular status level in the Aspen database. This system allows the supervisors to be fully aware of each sample's progress at any time via the laboratory's computer network.

DATA ENTRY

The chemist enters all data into Aspen manually or electronically. SOP's are available for all methods of data entry (see Section 10). Manual transfers are done by assigning samples to a worksheet then manually entering the result for each test in this worksheet. Data can also be entered into Aspen electronically through an instrument interface. Several instrument interfaces are available for use by the chemist. Data from the ICP, FIA, IC, and AA instruments can be entered into Aspen using a program called Limslink. This data-parsing program accepts ASCII files from the instrument and parses the data into a format that can be imported into Aspen.

DATA REVIEW AND REPORTING

All results are reviewed by the analyzing chemist and then the reviewing chemist. The analytical chemist typically reviews data before and during the transfer into Aspen. The reviewing chemist typically reviews data after the data is entered into Aspen.

A multi-tier review process ensures data quality, beginning with the Data Quality Assurance, Corrective Action, Quality Control, and Data Review reports (see Appendix K). The analyzing chemist checks for linearity of the calibration curve, whether the calibration curve brackets the sample results, spike recoveries, duplicates, method blanks, control standards, laboratory fortified blanks, and reagent blanks as directed by standard operating procedures (SOP). The analyzing chemist notes the results of the QA/QC sample in these reports. The analyzing chemist then determines whether the results exceed an action level. Aspen assists the chemist in identifying these samples. If an action level is exceeded, the result is verified by reanalyzing the sample. If the result is confirmed, the analyzing chemist sends an action level notification. The analyzing chemist then sends the data package (raw data – printouts from workstations) to the reviewing chemist. The reviewing chemist then checks for linearity of the calibration curve, whether the calibration curve brackets the sample results, spike recoveries, duplicates, method blanks, control standards, laboratory fortified blanks, and reagent blanks as directed by the SOP's. The reviewing chemist also checks for transcription errors and if the proper notifications were sent such as an ALN. The reviewing chemist then signs the Data Quality Assurance Report and gives this data package to the supervising chemist. The supervising chemist reviews the results, the Data Quality Assurance Report, and historical data to assess the validity of the results. If the supervisors approve the data, then it is transferred into WRMS. If the data is not approved by the supervisors, the analysis is repeated or the sample is resampled.

Aspen contains maximum contaminant level (MCL) information for drinking water samples and discharge requirement limits for NPDES permit. Action Level Notification (ALN) reports (see Appendix L) are prepared by chemist and sent through district e-mail system whenever an analytical result exceeds its MCL, or a first time hit, or any criteria to allow special investigation of a situation. ALN reports alert the proper department for immediate re-sample or responses. The chemist can send the ALN directly from Aspen. Aspen is programmed to flag the tests that exceed an action level, and then automatically send this data to an email. The chemist enters the name of the recipient and sends the email.

The supervising chemists' reviews the data in LIMS and validates or rejects the report. If validated, a completed analytical report is generated. The lab director reviews all reports generated from the LIMS systems (see Appendix M).

During the review process, reports are examined to ensure data integrity, consistency of units, reporting limits, and to verify the presences of all QA/QC information.

A detail flow chart depicting the laboratory functions of sample login, sample preparation, analysis, data review and data transfer is provided in this chapter. Data transfer using LIMS as well as data quality control by the LIMS are illustrated in Appendix N.

**12. PERFORMANCE AND
SYSTEM AUDITS**

SECTION 12

PERFORMANCE AND SYSTEM AUDIT

An analytical laboratory's integrity, demanded by the environmental community and the general public alike, is tested continually through programmatic on-site audits.

The primary purpose of laboratory audits is to improve personnel performance. Bench chemists are the most important link in the analytical quality chain; it is their intelligence, training and integrity that solidify data quality. Audit results should be used to eliminate weaknesses and encourage proficiency at all levels of the laboratory and environmental program structure.

A second purpose of auditing is to identify the positive and negative aspects of the laboratory's organizational structures, management practices, and communications network. Audits can identify intra- and inter- departmental discrepancies and uneven proficiency levels throughout the organization. Laboratory audit should strive to clarify organizational discrepancies between the program and the laboratory. Audits may assist facilities or the district, such as ours during reorganization by identifying areas of improvement.

Audits also can help a laboratory improve method, instrument, and project performance, and achieve better data quality and lower cost.

Audit should be viewed as a positive contribution that allows those involved in the program to become informed consumers while simultaneously enabling the laboratory to establish credentials as a reputable supplier.

EXTERNAL AUDIT

A. Audit and Inspection by the California Department of Public Health (CDPH) Environmental Laboratory Accreditation Program – (ELAP)

As a state certified environmental lab, Orange County Water District's Laboratory is visited once every two years by an inspection team from the CDPH-ELAP program. Each visit by an auditor/inspector includes but is not limited to appraisal of the laboratory's adherence to proper protocols -- QA/QC documentation, instrument performance and maintenance documentation, chemicals and supplies check, SOP check, reagents and water sources check, as well as facility and personnel training check. It is one of the functions of CDPH in regard to laboratory audit statewide. CDPH-ELAP has the most comprehensive and most up-to-date resources for such audit information.

B. Inspection by Personnel from the Instrument Manufacturers

Most laboratory instruments have service agreements with the manufacturers. The services include inspection and calibration of the electronic, optical, mechanical, and overall performance of the instruments. This calibration, tuning, etc., by the service engineers assures the reliability and precision of the instrument output. Frequency of visits depends on the agreement initiated between the laboratory and the manufacturer. Usually, the agreement contains two preventive maintenance and unlimited "service on demand" calls.

C. Reference Samples from the CDPH, EPA, RWQCB, or Other Sources

These check samples test performances of lab personnel, check instruments, and validate procedures. OCWD laboratory participates in the CDPH reference sample test program and the Performance Evaluation Samples from EPA (both drinking water and wastewater programs), ERA, and RWQCB.

List of OCWD's Lab reference materials suppliers include:

AccuSTANDARD Inc., New Haven, CT
Chem Service, Inc., West Chester, PA
EM Science, Gibbstown, NJ
Environmental Protection Agency, Cincinnati, OH
Environmental Resource Associates, Arvada, CO
Inorganic Ventures, Inc., Lakewood, NJ
J.T. Baker Inc., Phillipsburg, NJ
NIST, Gaithersburg, MD
Protocol Analytical Supplies, Inc., Lakewood, NJ
QC/3 Associates, Albany, NY
SPEX Industries, Inc., Edison, NJ
Supelco Inc., Bellefonte, PA
Ultra Scientific, Inc., North Kingstown, RI
VHG Labs, Manchester, NH
VWR Scientific, Inc., Philadelphia, PA
RTC, Laramie, WY

Corrective Action Reports and Quality Assurance Reports associated with these reference samples are included in the Appendix.

D. Laboratory Safety Audit by Joint Powers Insurance Authority.

E. Laboratory Structural Audit by Dames & Moore.

INTERNAL

Quality assurance audits and system audits are conducted internally by supervisors, lab total quality management (TQM) facilitators, and even chemists during staff meetings to ensure that all quality control procedures are routinely adhered to.

One quick way to verify that QC work has been enforced is in assuring that all control charts are produced and updated from all laboratory analytical procedures. Supervisors frequently check for the status of control chart provided by the working chemists. A few samples of the laboratory control chart are given in the Appendix.

APPENDICIES

Chemists produce control Charts regularly as part of the routine check to ensure that QC program is functioning well. Examples of PCE, Atrazine, and DDE control charts are provided within appendix A.

Method Detection Limits (MDL), as mentioned in Section 5, is carried out by experienced analysts operating well-calibrated instruments on a **non-routine** basis. Example of laboratory MDL on MTBE is provided.

MDL

Compound: MTBE MDL (PPB): 0.0614

EPA Method: 524 Analysis Date: 10/7/2009 to 10/9/2009

Instrument: SAT4B

Detector: MS

Spike/Standard Level: 0.2 ug/L

t distribution @99% confidence limit= 2.896

n	X	X sq
1	0.2200	0.048400
2	0.2200	0.048400
3	0.2200	0.048400
4	0.2400	0.057600
5	0.2300	0.052900
6	0.2300	0.052900
7	0.1900	0.036100
8	0.1900	0.036100
9	0.1800	0.032400
10		0.000000
Sum	1.920	0.413200

Mean (X) =	0.2133
Mean Squared =	0.0455
Standard Deviation =	0.0212
% RSD=	9.94%

The t Distribution	
Degrees of Freedom (N-1)	99% Confidence Limits
3	4.541
4	3.747
5	3.365
6	3.143
7	2.998
8	2.896
9	2.821
10	2.764

13-Oct-09

APPENDIX A

Quality Control Charts

524

SAT4B

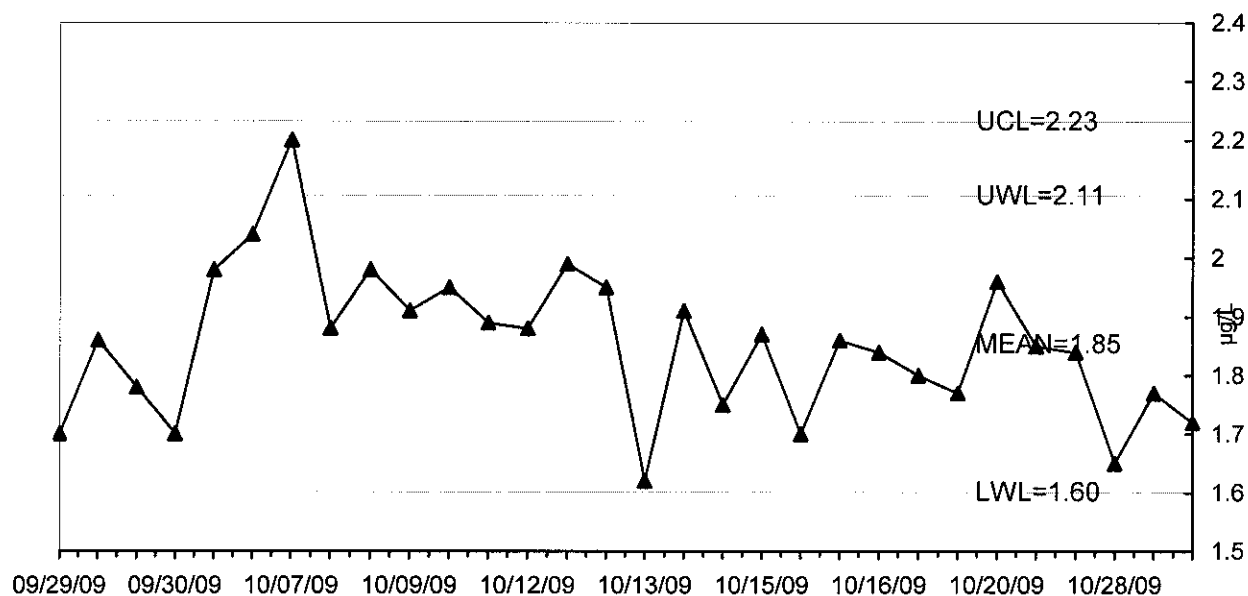
MS Detector

PCE

Standard value

2 ug/L

		P	P sq.	FORMULAS	
1	09/29/09	1.70	85.00	7,225.00	
2	09/29/09	1.86	93.00	8,649.00	P=
3	09/29/09	1.78	89.00	7,921.00	SUM P/N=
4	09/30/09	1.70	85.00	7,225.00	X BAR=
5	10/06/09	1.98	99.00	9,801.00	SUM P^2=
6	10/06/09	2.04	102.00	10,404.00	
7	10/07/09	2.20	110.00	12,100.00	Sp=
8	10/08/09	1.88	94.00	8,836.00	
9	10/09/09	1.98	99.00	9,801.00	
10	10/09/09	1.91	95.50	9,120.25	UCL= $\bar{P}+3Sp$ =
11	10/10/09	1.95	97.50	9,506.25	
12	10/10/09	1.89	94.50	8,930.25	
13	10/12/09	1.88	94.00	8,836.00	LCL= $\bar{P}-3Sp$ =
14	10/12/09	1.99	99.50	9,900.25	
15	10/13/09	1.95	97.50	9,506.25	
16	10/13/09	1.62	81.00	6,561.00	
17	10/14/09	1.91	95.50	9,120.25	
18	10/15/09	1.75	87.50	7,656.25	
19	10/15/09	1.87	93.50	8,742.25	
20	10/16/09	1.70	85.00	7,225.00	UWL= $\bar{P}+2Sp$ =
21	10/16/09	1.86	93.00	8,649.00	
22	10/16/09	1.84	92.00	8,464.00	
23	10/17/09	1.80	90.00	8,100.00	LWL= $\bar{P}-2Sp$ =
24	10/20/09	1.77	88.50	7,832.25	
25	10/20/09	1.96	98.00	9,604.00	
26	10/21/09	1.85	92.50	8,556.25	
27	10/28/09	1.84	92.00	8,464.00	
28	10/28/09	1.65	82.50	6,806.25	
29	10/29/09	1.77	88.50	7,832.25	
30	10/30/09	1.72	86.00	7,396.00	
		2780	258770		



SHEWHART QUALITY CONTROL CHART

09-Nov-09

507

3800-4

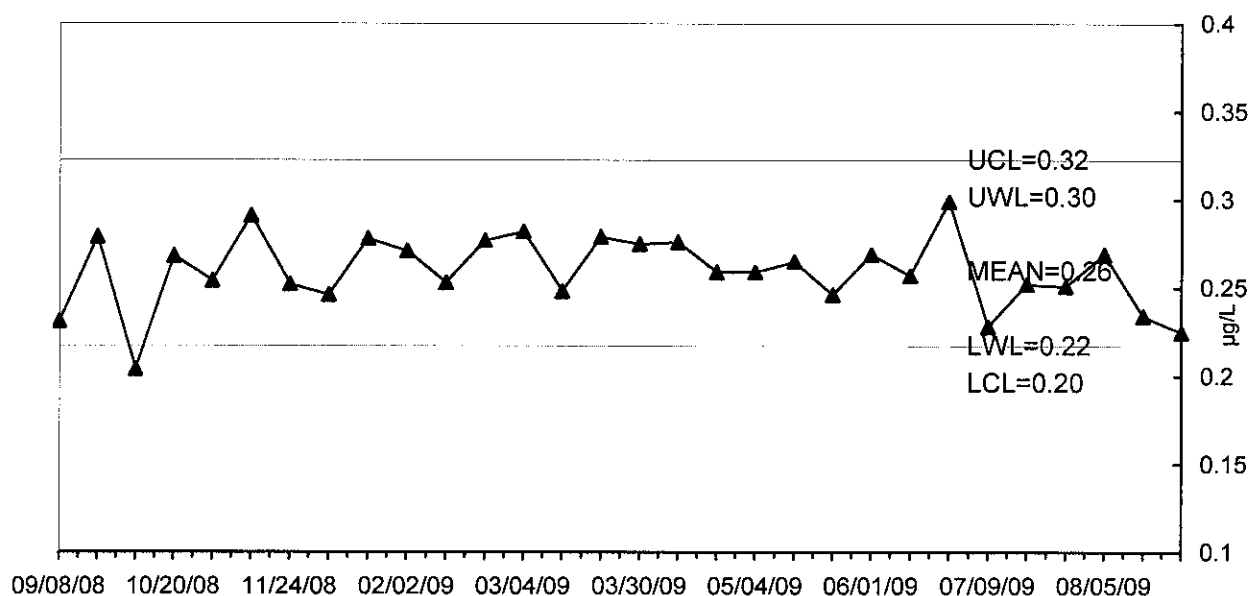
Detector A Detector

ATRAZ

Standard value

0.25 ug/L

		P	P sq.	FORMULAS	
1	09/08/08	0.23	92.40	8,537.76	
2	09/16/08	0.28	111.60	12,454.56	$\bar{P} =$ SUM P/N= 103.69
3	10/06/08	0.20	81.60	6,658.56	X BAR= 0.26
4	10/20/08	0.27	107.20	11,491.84	
5	10/30/08	0.25	101.60	10,322.56	SUM P^2= 324,629.92
6	11/10/08	0.29	116.40	13,548.96	9,677,076.64
7	11/24/08	0.25	100.80	10,160.64	Sp= 8.43
8	12/08/08	0.25	98.40	9,682.56	0.02
9	01/21/09	0.28	111.20	12,365.44	
10	02/02/09	0.27	108.40	11,750.56	UCL= $\bar{P} + 3Sp =$ 128.98
11	02/12/09	0.25	101.20	10,241.44	0.32
12	02/20/09	0.28	110.80	12,276.64	
13	03/04/09	0.28	112.80	12,723.84	LCL= $\bar{P} - 3Sp =$ 78.40
14	03/05/09	0.25	99.20	9,840.64	0.20
15	03/16/09	0.28	111.60	12,454.56	
16	03/30/09	0.28	110.00	12,100.00	
17	04/09/09	0.28	110.40	12,188.16	
18	04/20/09	0.26	103.60	10,732.96	
19	05/04/09	0.26	103.60	10,732.96	
20	05/08/09	0.27	106.00	11,236.00	UWL= $\bar{P} + 2Sp =$ 120.55
21	05/14/09	0.25	98.40	9,682.56	0.30
22	06/01/09	0.27	107.60	11,577.76	
23	06/11/09	0.26	102.80	10,567.84	LWL= $\bar{P} - 2Sp =$ 86.83
24	06/29/09	0.30	119.60	14,304.16	0.22
25	07/09/09	0.23	91.20	8,317.44	
26	07/20/09	0.25	100.80	10,160.64	
27	07/29/09	0.25	100.40	10,080.16	
28	08/05/09	0.27	107.60	11,577.76	
29	08/18/09	0.23	93.60	8,760.96	
30	09/01/09	0.23	90.00	8,100.00	
			3110.8	324629.92	



508

3800-3

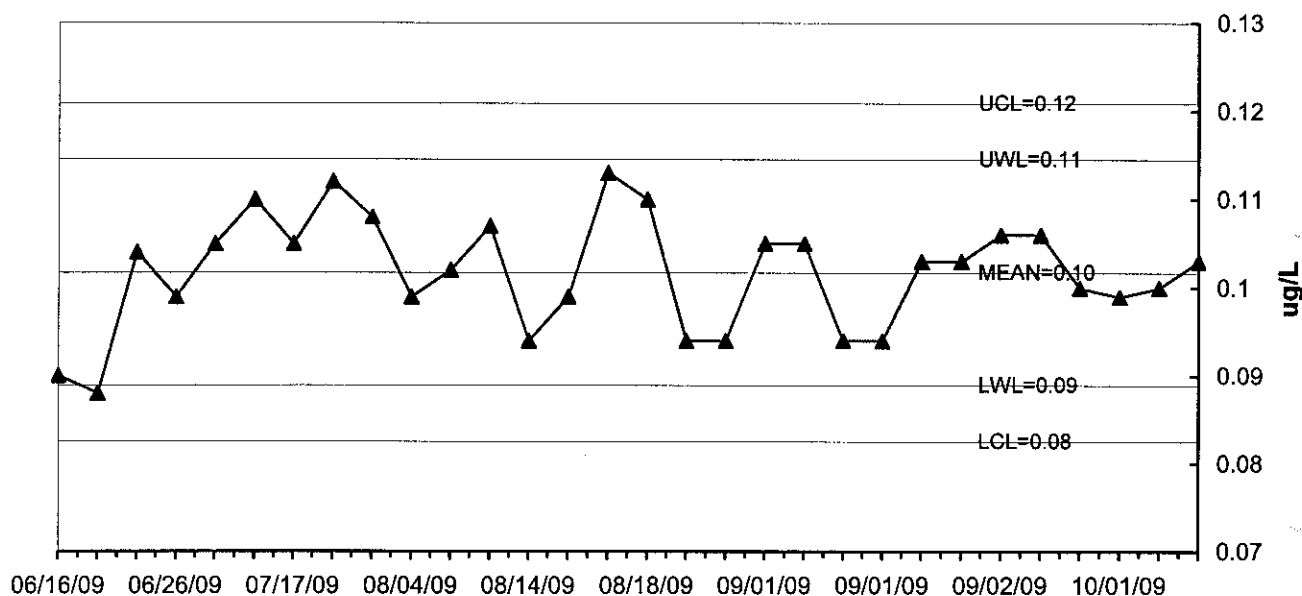
Detector A Detector

DDE

Standard value =

0.1 ug/L

			P	P sq.	FORMULAS	
1	06/16/09	0.090	90.00	8,100.00		
2	06/16/09	0.088	88.00	7,744.00	P=	SUM P/N= 101.70
3	06/25/09	0.104	104.00	10,816.00		X BAR= 0.10
4	06/26/09	0.099	99.00	9,801.00		
5	06/26/09	0.105	105.00	11,025.00	SUM P^2=	311,473.00
6	07/16/09	0.110	110.00	12,100.00		9,308,601.00
7	07/17/09	0.105	105.00	11,025.00	Sp=	6.40
8	07/17/09	0.112	112.00	12,544.00		0.01
9	08/04/09	0.108	108.00	11,664.00		
10	08/04/09	0.099	99.00	9,801.00	UCL= $\bar{P}+3Sp$ =	120.89
11	08/05/09	0.102	102.00	10,404.00		0.12
12	08/13/09	0.107	107.00	11,449.00		
13	08/14/09	0.094	94.00	8,836.00	LCL= $\bar{P}-3Sp$ =	82.51
14	08/14/09	0.099	99.00	9,801.00		0.08
15	08/17/09	0.113	113.00	12,769.00		
16	08/18/09	0.110	110.00	12,100.00		
17	09/01/09	0.094	94.00	8,836.00		
18	09/01/09	0.094	94.00	8,836.00		
19	09/01/09	0.105	105.00	11,025.00		
20	09/01/09	0.105	105.00	11,025.00	UWL= $\bar{P}+2Sp$ =	114.49
21	09/01/09	0.094	94.00	8,836.00		0.11
22	09/01/09	0.094	94.00	8,836.00		
23	09/02/09	0.103	103.00	10,609.00	LWL= $\bar{P}-2Sp$ =	88.91
24	09/02/09	0.103	103.00	10,609.00		0.09
25	09/02/09	0.106	106.00	11,236.00		
26	09/02/09	0.106	106.00	11,236.00		
27	10/01/09	0.100	100.00	10,000.00		
28	10/01/09	0.099	99.00	9,801.00		
29	10/09/09	0.100	100.00	10,000.00		
30	10/09/09	0.103	103.00	10,609.00		
			3051	311473		



APPENDIX B

Incubator Temperature Log

Incubator Temperature Log Book

[illegible]

APPENDIX C

Media Preparation and Control Log

Orange County Water District Media Preparation and Control Log

[illegible]

APPENDIX D

Autoclave Log

Orange County Water District Autoclave Log Book

[illegible]

APPENDIX E

Thermometer Calibration Log

OCWD LABORATORY THERMOMETER CALIBRATION

Reference Thermometers :- S/N 3T3274

S/N 323717 (HB Instruments Certified)

LAB LOCATION	TEMPERATURE	TEMPERATURE	CORRECTION
	REFERENCE	TEST	TO
	THERMOMETER	THERMOMETER	READING
Water bath incubator @ 44.5 °C S/N 878-197	44.5 °C	44.5 °C	
Dry air incubator @ 35.0 °C S/N 91506	35.0 °C	35.0 °C	
Dry air incubator @ 28.0 °C S/N 14-983-108	28.0 °C	28.0 °C	
Refrigerator @ 2.5 °C S/N 3654	2.5 °C	2.5 °C	

Calibrated by SW
1/11/07 thru 1/16/07.

**OCWD LABORATORY
THERMOMETER CALIBRATION**

Test Thermometer: Fisher S/N 878-197		
Lab Location: 44.5 C Water Bath Incubator		
Scale Range: 0 and +25 - 55 C Division: 0.1 C		
Temperature C Standard	Temperature C Test Therm.	Correction To Reading
25.0	25.0	0.0
28.0	28.0	0.0
31.0	31.0	0.0
34.0	34.1	(-0.1)
37.0	37.1	(-0.1)
40.0	40.1	(-0.1)
42.0	42.0	0.0
42.5	42.5	0.0
43.0	43.0	0.0
43.5	43.5	0.0
44.0	44.0	0.0
44.5	44.5	0.0
45.0	45.0	0.0
45.5	45.5	0.0
46.0	46.0	0.0
46.5	46.5	0.0
47.0	47.0	0.0
47.5	47.5	0.0
48.0	48.0	0.0

Note: The test thermometer was calibrated against Curtin Matheson ASTM 64C S/N 09990, certified by Princo Instruments 11/04/1985.

Calibration by: John Bruns

Date: 05/17/2000

**OCWD LABORATORY
THERMOMETER CALIBRATION**

Test Thermometer: ERTCO S/N 91506		
Lab Location: 35 C Dry Air Incubator		
Scale Range: 0 and +25 - 55 C Division: 0.1 C		
Temperature C Standard	Temperature C Test Therm.	Correction To Reading
25.0	25.0	0.0
27.0	27.0	0.0
30.0	30.0	0.0
31.0	31.0	0.0
32.0	32.0	0.0
32.5	32.5	0.0
33.0	33.1	(-0.1)
33.5	33.6	(-0.1)
34.0	34.1	(-0.1)
34.5	34.6	(-0.1)
35.0	35.1	(-0.1)
35.5	35.6	(-0.1)
36.0	36.1	(-0.1)
36.5	36.6	(-0.1)
37.0	37.1	(-0.1)
37.5	37.6	(-0.1)
38.0	38.1	(-0.1)
38.5	38.6	(-0.1)
39.0	39.1	(-0.1)
39.5	39.6	(-0.1)
40.0	40.1	(-0.1)

Note: The test thermometer was calibrated against Curtin Matheson
ASTM 64C S/N 09990, certified by Princo Instruments 11/04/1985.

Calibration by: John Bruns

Date: 05/17/2000

**OCWD LABORATORY
THERMOMETER CALIBRATION**

Test Thermometer: Fisher S/N 14-983-10B		
Lab Location: 20 - 28 C Dry Air Incubator		
Scale Range: 20 - 110 C Division: 1 C		
Temperature C Standard	Temperature C Test Therm.	Correction To Reading
25.0	25.5	(-0.5)
26.0	26.0	0.0
27.0	27.0	0.0
28.0	28.0	0.0
29.0	29.5	(-0.5)
30.0	30.0	0.0
31.0	31.0	0.0
32.0	32.5	(-0.5)
33.0	33.5	(-0.5)
34.0	34.5	(-0.5)
35.0	35.5	(-0.5)
36.0	36.5	(-0.5)
37.0	37.5	(-0.5)
38.0	38.5	(-0.5)
39.0	39.5	(-0.5)
40.0	40.5	(-0.5)

Note: The test thermometer was calibrated against Curtin Matheson
ASTM 64C S/N 09990, certified by Princo Instruments 11/04/1985.

Calibration by: John Bruns

Date: 05/17/2000

APPENDIX F

Refrigerator Temperature Log

ORANGE COUNTY WATER DISTRICT MAIN LABORATORY REFRIGERATOR TEMPERATURE LOG

Month: Nov
Year: 2009

Refrigerator Temp. Taken Daily
Report When Temp. Exceeds $4.0 \pm 0.2^{\circ}\text{C}$

Initial	Date	Time	Refri. No. 1	Refri. No. 2	Refri. No. 3	Refri. No. 4	Refri. No. 5	#6	#7	Remarks
NP	1	9:25	4.3 5.0	3.0	3.0 2.5	12.0 10.5	4.0 3.5	3.6	1.5	21/10/09 date
NP	2	3:15	4.3 5.0	3.0	3.0 2.5	12.0 10.5	4.0 3.5	3.8	2.0	
NP	3	9:10	5.1 4.5	3.5	3.0 2.0	12.0 10.5	4.0 3.5			
W	4	11:00	4.7 4.5	4.0	3.8 3.0	9.0 8.0	4.0 4.0	3.8	4.0	* working ACW
NP	5	4:00	5.7 5.0	4.0	3.0 2.5	6.0 3.5	4.0 3.5	4.1	1.5	
NP	6	2:30	4.0 4.5	4.0 4.0	3.0 3.5	5.0 3.5	4.0 3.5	4.1	3.5	
	7									
	8									
NP	9	3:00	5.1 4.5	5.0	3.0 3.0	3.0 1.5	4.0 3.5	4.1	2.0	
	10									
	11									
	12									
	13									
	14									
	15									
	16									
	17									
	18									
	19									
	20									
	21									
	22									
	23									
	24									
	25									
	26									
	27									
	28									
	29									
	30									
	31									

Location:

No. 1: Kelvinater Refrig., Room 123
No. 2: Coldspot Refrig., Room 123
No. 3: North Refrig., Room 123

No. 4: South Refrig., Room 115
No. 5: North Refrig., Room 115

FRIG_LOG.WKS

Refridg # 1, 3, 4, 5 - 1st number = DIGITAL THERMOMETER
2nd number = REFRIGERATOR THERMOMETER

ORANGE COUNTY WATER DISTRICT MAIN LABORATORY REFRIGERATOR TEMPERATURE LOG

Month: October
Year: 2009

Refrigerator Temp. Taken Daily
Report When Temp. Exceeds $4.0 \pm 0.2^{\circ}\text{C}$

Initial	Date	Time	Refri. No. 1	Refri. No. 2	Refri. No. 3	Refri. No. 4	Refri. No. 5	Refri. No. 6	#	Remarks
NP	1	9:00	4.8 4.0	5.0	4.0	6.0 5.0	4.0 3.5	4.0		
NP	2	2:30	4.3 4.0	14.0	5.0	6.0	4.0 3.5	4.1		
	3									
	4									
W	5	10:45	3.7 4.0		5.0	6.0	4.0 4.0	4.1		
NP	6	9:00	4.3 4.5		5.0	5.0	4.0 4.0	4.2		
W	7	8:00	3.7 4.0		4.0 3.0	4.0 4.0	4.0 4.0	4.0		
NP	8	9:00	5.1 4.5		4.0 3.5	6.0 4.0	4.0 4.0	4.1		
NP	9	3:15	3.9 4.0		5.0 3.0	4.0 4.0	4.0 3.5	4.1		
	10									
	11									
NP	12	5:15	3.8 4.0		4.0 2.0	4.0 4.0	4.0 3.5	4.0		
NP	13	9:10	5.1 4.0		4.0 2.5	5.0 4.5	4.0 3.5	3.9		
W	14	15:15	4.3 4.0		4.0 3.0	5.0 5.0	4.0 4.0	4.2		
W	15	8:45	4.1 4.0		4.0 3.0	5.0 5.0	4.0 4.0	3.7		
NP	16	3:00	5.0 5.0		4.0 1.5	5.0 4.5	4.0 3.5	3.9		
	17									
	18									
NP	19	3:10	4.5 4.5		5.0 2.5	7.0 6.0	4.0 3.5	3.7		
NP	20	8:45	3.7 4.5	3.0	4.0 2.5	7.0 5.5	4.0 3.5	3.8		
W	21	13:00	4.3 4.0	4.0	4.0 3.0	9.0 7.0	4.0 4.0	4.2		
NP	22	9:00	4.6 4.0	4.0	3.0 1.5	7.0 4.5	4.0 4.0	4.2		
NP	23	2:35	4.0 4.0	3.0	3.0 2.0	10.0 8.5	4.0 3.5	4.3		Ref. 4 reported to Jerry
	24									
	25									
NP	26	2:30	4.7 4.0	4.0	4.0 2.5	11.0 10.5	4.0 3.5	4.1		
NP	27	1:15	3.7 4.0	3.5	4.0 3.0	11.0 10.5	4.0 3.5	4.4		Ref. #7-3.5
W	28	14:00	5.5 4.5	4.0	3.0 3.0	12.0 11.0	4.0 4.0	5.0		4.0
NP	29	9:10	4.2 4.5	5.5	3.0 2.5	12.0 10.5	4.0 4.0	3.9		3.5
NP	30	2:30	5.6 4.5	5.5	3.0 2.0	12.0 10.5	4.0 4.0	4.1		0.5
	31									

Location:

No. 1: Kelvinater Refrig., Room 123
No. 2: Coldspot Refrig., Room 123
No. 3: North Refrig., Room 123

No. 4: South Refrig., Room 115
No. 5: North Refrig., Room 115

FRIG_LOG.WK3

Refrigid. # 1, 3, 4, 5:

1st number = DIGITAL THERMOMETER
2nd number = REFRIGERATOR THERMOMETER

APPENDIX G

Suitability Test Results

Suitability Test

Analyst: FC

Culture: Enterobacter aerogenes

Initial Test Count

Incubation: Date Started: 7/8/08 Time: 2:30 Temp: 35.0 °C
 Date Completed: 7/9/08 Time: 2:00 Temp: 35.0 °C

10⁻⁶

Flask A - Referee Water			
Plates	0.5ml	1ml	2ml
Flask A	68	156	TNTC
Flask A	71	173	↓
Flask A	76	168	↓
Total	215	497	↓
Average	72	166	

Flask B - Test Water			
Plates	0.5ml	1ml	2ml
Flask B	70	180	TNTC
Flask B	74	143	↓
Flask B	66	157	↓
Total	210	480	↓
Average	70	160	

Sterility Check - 1 plate per solution, 1 mL per plate			
Solution	Count / mL	Solution	Count / mL
Sodium citrate	< 1	Blank	< 1
Ammonium sulfate	< 1	Dilution water	< 1
Salt mixture	< 1	Referee water	< 1
Ferrous sulfate	< 1	Test water	< 1
Buffer soln. 1:25	< 1	Agar Control	< 1

Final Test Count

Incubation: Date Started: 7/9/08 Time: 2:40 Temp: 35.0 °C
 Date Completed: 7/10/08 Time: 2:10 Temp: 35.0 °C

Write-in dilutions used			
Plates	10 ⁻³	10 ⁻⁴	10 ⁻⁵
A	TNTC	92	7
A	↓	88	9
A	↓	99	7
Total	↓	279	23
Average		93	7.7
Colonies/mL		930,000	767,000

Plates	10 ⁻³	10 ⁻⁴	10 ⁻⁵
B	TNTC	87	6
B	↓	91	8
B	↓	92	9
Total	↓	270	23
Average		90	7.7
Colonies/mL		900,000	767,000

Test Ratio = $\frac{\text{Colony count / mL Flask B}}{\text{Colony count / mL Flask A}} = 0.9677$ Agar Blank: < 1
 Dilution Water Blank: < 1

Interpretation: Ratio of 0.8 to 1.2 inclusive indicates NO toxic substances.

<0.8 indicates growth-inhibition. >1.2 indicates growth-promotion

Data Sheet for Inhibitory Residue On Glassware And/Or Presterilized Plastic Petri Dishes

Date: 3/10/09 ^{in @ 2:30} Analyst: LTL

Detergent: Soap Alconox's Liqui-Nox Dishwasher Detergent

Bacterial Culture: Enterobacter aerogenes use bottle #4 (as SOP)

Plate Counts R2A Agar BD Lot 8108518 exp 1/26/10 — made Agar 3/10/09
open 1/26/09 Agar Blanks

Plates	1.0 ml	0.1 ml	Plates	1.0 ml	0.1 ml	Plates	1.0 ml	0.1 ml	Plates	1.0 ml	0.1 ml
A	240	33	B	286	41	C	238	26	D	263	31
A	227	25	B	244	31	C	234	33	D	259	32
A	266	30	B	254	23	C	245	35	D	232	30
Total	732 733	88	Total	784	95	Total	717	94	Total	754	93
Average	244	29	Average	261	32	Average	239	31	Average	251	31

A dish-washer C Liqui-Nox no-rinse B 12x Rinse D plastic Dishes

Calculations:

$$1. \frac{B - A}{B} \times 100 = \frac{261 - 244}{261} \times 100 = 0.065 = 6.5\%$$

$$2. \frac{B - C}{B} \times 100 = \frac{261 - 239}{261} \times 100 = 0.084 = 8.4\%$$

$$3. \frac{B - D}{B} \times 100 = \frac{261 - 251}{261} \times 100 = 0.038 = 3.8\%$$

$$4. \frac{A - C}{A} \times 100 = \frac{244 - 239}{244} \times 100 = 0.029 = 2.9\%$$

Interpretation:

- There is no inhibitory residue when glassware is washed by the routine washing procedure.
- The detergent does not have inhibitory properties.
- The prewashed and presterilized plastic petri dishes are not acceptable.
- The cleaning detergent is not eliminated during routine washing.

APPENDIX H

Chain of Custody

ORANGE COUNTY WATER DISTRICT

SAMPLE INFORMATION / CHAIN OF CUSTODY FORM

Station Name: NB-TAMS/1 Sampled By: LM Begin Sample Date/Time: 11/09/2009 / 0840 End Sample Date/Time: / / Sample Depth (feet): / Title22 Well: <input type="checkbox"/> Comments: Purgd Volume: _____ Discharge Location: _____ Treatment: _____	Sampling Method: COMPOSITE GRAB WBTOOL UNKWQSAM (circle one) Other: _____ Matrix (WATER) SOIL Other: _____ (circle one)	Laboratory: OCWD Send Results To: (circle one) OCWD GEOLOGY WF21 LAB RESEARCH Other: _____ Sampling Agency: OCWD Monitoring Program: TITLE22
Sample Temp.: 5 °C Signature (OK to process if out of range) _____		

Lab Sample Number	Turnaround (days)	# of Bottles Requested	F	P	C	Comments
09110202-02	6	14DIOX	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
03	1	NDMA-LOW	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
04	1	TDS	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
05	1	TITLE22N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

CHAIN OF CUSTODY RECORD

REQUISITIONED BY: (signature) <i>Don Man</i>	Date/Time 11/9/09	RECEIVED BY: (signature)	Date/Time
REQUISITIONED BY: (signature)	Date/Time	RECEIVED BY: (signature)	Date/Time 11/9/09 1345
		LOGGED IN BY: (signature)	Date/Time 11/9/09 1412

FIELD PARAMETERS

Lab Sample Number: 01
 EC: 277 umho/cm Temperature: 19.6 °C
 pH: 7.5 umho/cm DO: _____ mg/L
 ORP: _____ mV FRCL2: _____ TOTCL2: _____ mg/L

ORANGE COUNTY WATER DISTRICT

SAMPLE INFORMATION / CHAIN OF CUSTODY FORM

Station Name: OCWD-M10/1 Sampled By: BLR / CLP Begin Sample Date/Time: 10/28/2009 / 1025 End Sample Date/Time: / / Sample Depth (feet): / Title22 Well: <input type="checkbox"/>		Sampling Method: COMPOSITE GRAB WBTOOL UNKWQSAM Method: <u>VEDPUMP</u> SUBPUMP AIRLIFT Other: _____ Matrix: <u>WATER</u> SOIL Other: _____ (circle one) (circle one)	
Comments: Purged Volume: 119 G Discharge Location: Storm Drain Treatment: Carbon		Laboratory: OCWD Send Results To: GEOLOGY WF21 LAB RESEARCH Other: _____ Sampling Agency: OCWD Monitoring Program: GWRSPDR Sample Temp.: 8.0 °C Signature (OK to process if out of range)	

Lab Sample Number	Turnaround (days)	# of Analysis Bottles Requested	F	P	C	Comments
29100246-02	3	3	525	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
03	2	2	531	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
04	2	2	532	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
05	2	2	547	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
06	4	4	548	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
07	3	3	549	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
08	3	3	550	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
09	11	11	Q15QG	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
10				<input type="checkbox"/>	<input type="checkbox"/>	
11				<input type="checkbox"/>	<input type="checkbox"/>	
12				<input type="checkbox"/>	<input type="checkbox"/>	
13				<input type="checkbox"/>	<input type="checkbox"/>	

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (signature)	Date/Time	10/28/09	RECEIVED BY: (signature)	Date/Time	10/28/09
RELINQUISHED BY: (signature)	Date/Time		RECEIVED BY: (signature)	Date/Time	10/28/09 1210
			LOGGED IN BY: (signature)	Date/Time	10/28/09 1542

FIELD PARAMETERS

Lab Sample Number: 01
 EC: 471 umho/cm Temperature: 23.67 °C
 pH: 7.45 umho/cm DO: 0.05 mg/L
 ORP: -145 mV FRLC2: ☒ TOTCL2: ☒ mg/L

APPENDIX I

Backlog Reports

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Backlog Report

12-Oct-09

Lab #	Sample ID	Analyst/ Ext Date	# Cn	Collect Date	Due Date	Comments	Analyst/ Run Date
09100293-01	TB —		2	10/12/2009	10/26/2009	W/FM-11 & 16	PP S2B 10/16
09100294-02	FM-1/1 —		4	10/12/2009	10/26/2009	540 GAL. TO DIRT	IC S4B 10/16/09
09100295-02	FM-1A/1 —		4	10/12/2009	10/26/2009	200 GAL. TO DIRT	
09100296-02	AM-41/1 —		4	10/12/2009	10/26/2009	203 GAL. TO DIRT	
09100297-02	AM-41A/1 —		4	10/12/2009	10/26/2009	140 GAL. TO DIRT	
09100298-01	TB —		2	10/12/2009	10/26/2009	W/AM-41 & FM-1	
09100299-02	SAR-9/1/WB1/MP1 —		3	10/12/2009	10/26/2009		
09100300-02	SAR-9/1/WB1/MP2 —		3	10/12/2009	10/26/2009		
09100301-02	SAR-9/1/WB1/MP3 —		3	10/12/2009	10/26/2009		
09100302-02	SAR-9/1/WB1/MP4 —		3	10/12/2009	10/26/2009		
09100303-02	SAR-9/1/WB1/MP5 —		3	10/12/2009	10/26/2009		
09100304-02	SAR-9/1/WB1/MP6 —		3	10/12/2009	10/26/2009		
09100305-02	SAR-9/1/WB1/MP7 —		3	10/12/2009	10/26/2009		
09100306-02	SAR-9/1/WB1/MP8 —		3	10/12/2009	10/26/2009		
09100307-02	SAR-9/1/WB1/MP9 —		3	10/12/2009	10/26/2009		
09100308-02	SAR-9/1/WB1/MP10 —		3	10/12/2009	10/26/2009		
09100309-02	SAR-9/1/WB1/MP11 —		3	10/12/2009	10/26/2009		
09100310-02	SAR-9/1/WB1/MP12 —		3	10/12/2009	10/26/2009		
09100311-02	SAR-9/1/WB1/MP13 —		3	10/12/2009	10/26/2009		
09100312-02	SAR-9/1/WB1/MP14 —		3	10/12/2009	10/26/2009		
09100313-01	TB —		2	10/12/2009	10/26/2009	W/SAR-9	

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Backlog Report

13-Oct-09

Lab #	Sample ID	Analyst/ Ext Date	# Cn	Collect Date	Due Date	Comments	Analyst/ Run Date
09100322-05	GWRS-FPW		6	10/13/2009	10/27/2009		JC 10/16
09100323-01	TB		2	10/13/2009	10/27/2009	W/GWRS-FPW	↓ SAB
09100328-01	MISC		4	10/13/2009	10/27/2009	T-97 WASH WATER TANK	PP S2B 10/19/09
09100329-04	OCWD-M11/1		4	10/13/2009	10/27/2009	85 GAL. TO STORM DRAIN	
09100330-04	OCWD-M11/2		4	10/13/2009	10/27/2009	109 GAL. TO STORM DRAIN	
09100331-04	OCWD-M11/3		4	10/13/2009	10/27/2009	145 GAL. TO STORM DRAIN	
09100332-04	OCWD-M11/4		4	10/13/2009	10/27/2009	163 GAL. TO STORM DRAIN; CARBON TREATMENT	
09100334-01	TB		2	10/13/2009	10/27/2009	W/OCWD-M11	
09100335-04	OCWD-M47/1		6	10/13/2009	10/27/2009	700 GAL. TO GRASS	
09100336-04	OCWD-M47/2		4	10/13/2009	10/27/2009	895 GAL. TO GRASS	
09100337-04	OCWD-M47/3		4	10/13/2009	10/27/2009	1085 GAL. TO STORM DRAIN	
09100338-04	OCWD-M47/4		4	10/13/2009	10/27/2009	1480 GAL. TO STORM DRAIN	
09100339-04	OCWD-M47/5		4	10/13/2009	10/27/2009	1895 GAL. TO STORM DRAIN	
09100340-01	TB		2	10/13/2009	10/27/2009	W/OCWD-M47	✓

Orange County Water District Main Laboratory

John Bruns

X200.7 Workload Report

Lab #	Test Result	Date Received	Time Received	Action Level	Last Result	Sample ID	Date Sampled	Time Sampled	Expiration Date	Test Series
09110144-03	Na _____	11/4/2009	1:55:00 PM		49.40	SC-4/1/WB1/MP4	11/4/2009	10:25:00 AM	5/3/2010	OCR-I
	K _____				1.88				5/3/2010	
	Mg _____				20.70				5/3/2010	
	Ca _____				93.90				5/3/2010	
	TOTHRD _____				319.71				5/3/2010	
09110151-02	Na _____	11/5/2009	8:15:00 AM		42.90	IRWD-13/1	11/5/2009	7:20:00 AM	5/4/2010	GENLVLI
	K _____				1.73				5/4/2010	
	Mg _____				10.40				5/4/2010	
	Ca _____				46.80				5/4/2010	
	B _____			1	0.08				5/4/2010	
	TOTHRD _____				159.69				5/4/2010	
09110152-02	Na _____	11/5/2009	8:15:00 AM		40.80	IRWD-16/1	11/5/2009	7:40:00 AM	5/4/2010	GENLVLI
	K _____				1.60				5/4/2010	
	Mg _____				9.55				5/4/2010	
	Ca _____				44.00				5/4/2010	
	B _____			1	0.09				5/4/2010	
	TOTHRD _____				149.19				5/4/2010	
09110189-01	Ca _____	11/9/2009	8:10:00 AM		0.08	GWRS-DPW	11/9/2009	6:00:00 AM	5/8/2010	DPW-2WG
	CaHRD _____				0.21				5/8/2010	
09110196-04	Na _____	11/9/2009	11:15:00 AM		45.60	HB-5/1	11/9/2009	8:30:00 AM	5/8/2010	GENLVLI
	K _____				2.78				5/8/2010	
	Mg _____				6.98				5/8/2010	
	Ca _____				50.20				5/8/2010	
	B _____			1	0.07				5/8/2010	
	TOTHRD _____				154.09				5/8/2010	
09110197-03	Fe _____	11/9/2009	11:15:00 AM	225	536.00	HB-12/1	11/9/2009	10:25:00 AM	5/8/2010	Q23SG

Orange County Water District Main Laboratory

Phuong Lam

4500NO3F Workload Report

Lab #	Test Result	Date Received	Time Received	Action Level	Last Result	Sample ID	Date Sampled	Time Sampled	Expiration Date	Test Series
09110183-01	NO2-N_____	11/9/2009	8:10:00 AM		0.17	GWRS-Q1	11/9/2009	6:00:00 AM	11/11/2009	Q1-2WG
	NO3NO2-N_____								11/23/2009	
	NO3-N_____				1.40				11/23/2009	
09110190-01	NO2-N_____	11/9/2009	8:10:00 AM	0.75	0.06	GWRS-FPW	11/9/2009	6:00:00 AM	11/11/2009	FPW-M2WG
	NO3NO2-N_____			7.5					11/23/2009	
	NO3-N_____			7.5	0.36				11/23/2009	
09110191-01	NO3-N_____	11/9/2009	9:05:00 AM	7.5	5.74	NO3-TUSTIN-TOTALBLE	11/7/2009	8:30:00 AM	11/21/2009	TUSNO3TF
09110192-01	NO3-N_____	11/9/2009	9:05:00 AM	7.5	5.74	NO3-TUSTIN-TOTALBLE	11/8/2009	11:00:00 AM	11/22/2009	TUSNO3TF
09110193-01	NO3-N_____	11/9/2009	9:05:00 AM	7.5	5.74	NO3-TUSTIN-TOTALBLE	11/9/2009	8:30:00 AM	11/23/2009	TUSNO3TF
09110194-01	NO3-N_____	11/9/2009	9:05:00 AM	7.5	8.06	DS-TUSTIN17ST-TOTALB	11/9/2009	8:30:00 AM	11/23/2009	TUSNO3TF
09110196-04	PRIORI NO2-N_____	11/9/2009	11:15:00 AM		0.00	HB-5/1	11/9/2009	8:30:00 AM	11/11/2009	GENLVLI
09110202-05	PRIORI NO2-N_____	11/9/2009	1:45:00 PM	0.75	0.00	NB-TAMS/1	11/9/2009	8:40:00 AM	11/11/2009	TITLE22N
	NO3NO2-N_____			7.5					11/23/2009	
PRIORI NO3_____				33.75	13.96				11/23/2009	

Orange County Water District Main Laboratory

Leticia Lagos

X1-300.0 Workload Report

Lab #	Test Result	Date Received	Time Received	Action Level	Last Result	Sample ID	Date Sampled	Time Sampled	Expiration Date	Test Series
09110196-04	Cl _____	11/9/2009	11:15:00 AM		28.64	HB-5/1	11/9/2009	8:30:00 AM	12/7/2009	GENLVL
	Br _____				0.07				12/7/2009	
PRIORI	NO3-N _____				2.25				11/11/2009	
	SO4 _____				61.22				12/7/2009	
09110197-03	Cl _____	11/9/2009	11:15:00 AM	400	723.58	HB-12/1	11/9/2009	10:25:00 AM	12/7/2009	Q23SG
	Br _____				2.24				12/7/2009	

Orange County Water District Main Laboratory

Stephanie Giraud

4500NH3H Workload Report

Lab #	Test Result	Date Received	Time Received	Action Level	Last Result	Sample ID	Date Sampled	Time Sampled	Expiration Date	Test Series
09110030-01	NH3-N _____	11/2/2009	7:45:00 AM	7.5		GWRS-FPW	11/2/2009	6:00:00 AM	11/30/2009	FPW-M2WG
09110073-04	NH3-N _____	11/3/2009	11:30:00 AM			RB-SANTIAGO-01	11/3/2009	8:45:00 AM	12/1/2009	OCR-I
09110074-04	NH3-N _____	11/3/2009	11:30:00 AM			SCS-13/1	11/3/2009	9:55:00 AM	12/1/2009	OCR-I
09110088-06	NH3-N _____	11/3/2009	12:10:00 PM			AMD-9/1	11/3/2009	9:40:00 AM	12/1/2009	OCR-I
09110089-06	NH3-N _____	11/3/2009	12:10:00 PM			AMD-9/2	11/3/2009	11:00:00 AM	12/1/2009	OCR-I
09110093-06	NH3-N _____	11/3/2009	12:55:00 PM			AM-44/1	11/3/2009	11:40:00 AM	12/1/2009	OCR-II
09110099-06	NH3-N _____	11/3/2009	1:20:00 PM			SAR-BELOWDAM-01	11/3/2009	11:10:00 AM	12/1/2009	OCR-I
09110100-06	NH3-N _____	11/3/2009	1:20:00 PM			SAR-IMPERIAL-01	11/3/2009	12:30:00 PM	12/1/2009	OCR-I
09110107-01	NH3-N _____	11/4/2009	7:55:00 AM			GWRS-Q1	11/4/2009	6:00:00 AM	12/2/2009	Q1-WG
09110111-01	NH3-N _____	11/4/2009	7:55:00 AM			GWRS-ROF	11/4/2009	6:00:00 AM	12/2/2009	ROF-WG
09110112-01	NH3-N _____	11/4/2009	7:55:00 AM			GWRS-ROP	11/4/2009	6:00:00 AM	12/2/2009	ROP-WG
09110116-01	NH3-N _____	11/4/2009	7:55:00 AM			GWRS-DPW	11/4/2009	6:00:00 AM	12/2/2009	DPW-WG
09110142-03	NH3-N _____	11/4/2009	1:55:00 PM			SC-2/1/WB2/MP5	11/4/2009	8:30:00 AM	12/2/2009	OCR-I
09110143-03	NH3-N _____	11/4/2009	1:55:00 PM			SC-4/1/WB1/MP2	11/4/2009	11:50:00 AM	12/2/2009	OCR-I
09110144-03	NH3-N _____	11/4/2009	1:55:00 PM			SC-4/1/WB1/MP4	11/4/2009	10:25:00 AM	12/2/2009	OCR-I
09110150-01	NH3-N _____	11/5/2009	7:50:00 AM	7.5		GWRS-FPW	11/5/2009	6:00:00 AM	12/3/2009	FPW-T2WG
09110190-01	NH3-N _____	11/9/2009	8:10:00 AM	7.5		GWRS-FPW	11/9/2009	6:00:00 AM	12/7/2009	FPW-M2WG

Orange County Water District Main Laboratory

Stephanie Giraud

X1-351.2 Workload Report

Lab #	Test Result	Date Received	Time Received	Action Level	Last Result	Sample ID	Date Sampled	Time Sampled	Expiration Date	Test Series
09100746-21	ORG-N _____	10/28/2009	12:10:00 PM	7.5		OCWD-M10/1	10/28/2009	10:25:00 AM	11/25/2009	Q15QG
	TKN _____			7.5					11/25/2009	
	TOT-N _____									
09100747-21	ORG-N _____	10/28/2009	12:10:00 PM	7.5		OCWD-M10/2	10/28/2009	10:40:00 AM	11/25/2009	Q15QG
	TKN _____			7.5					11/25/2009	
	TOT-N _____									
09100748-21	ORG-N _____	10/28/2009	12:10:00 PM	7.5		OCWD-M10/3	10/28/2009	9:30:00 AM	11/25/2009	Q15QG
	TKN _____			7.5					11/25/2009	
	TOT-N _____									
09100749-21	ORG-N _____	10/28/2009	12:10:00 PM	7.5		OCWD-M10/4	10/28/2009	9:20:00 AM	11/25/2009	Q15QG
	TKN _____			7.5					11/25/2009	
	TOT-N _____									
09100791-01	ORG-N _____	10/29/2009	7:55:00 AM	5		GWRS-FPW	10/29/2009	6:00:00 AM	11/26/2009	FPW-T2WG
	TKN _____			7.5					11/26/2009	
	TOT-N _____									
09110030-01	ORG-N _____	11/2/2009	7:45:00 AM	5		GWRS-FPW	11/2/2009	6:00:00 AM	11/30/2009	FPW-M2WG
	TKN _____			7.5					11/30/2009	
	TOT-N _____									
09110073-04	ORG-N _____	11/3/2009	11:30:00 AM			RB-SANTIAGO-01	11/3/2009	8:45:00 AM	12/1/2009	OCR-I
	TKN _____								12/1/2009	
09110074-04	ORG-N _____	11/3/2009	11:30:00 AM			SCS-13/1	11/3/2009	9:55:00 AM	12/1/2009	OCR-I
	TKN _____								12/1/2009	
09110088-06	ORG-N _____	11/3/2009	12:10:00 PM			AMD-9/1	11/3/2009	9:40:00 AM	12/1/2009	OCR-I
	TKN _____								12/1/2009	
09110089-06	ORG-N _____	11/3/2009	12:10:00 PM			AMD-9/2	11/3/2009	11:00:00 AM	12/1/2009	OCR-I
	TKN _____								12/1/2009	
09110093-06	ORG-N _____	11/3/2009	12:55:00 PM			AM-44/1	11/3/2009	11:40:00 AM	12/1/2009	OCR-II
	TKN _____								12/1/2009	
09110099-06	ORG-N _____	11/3/2009	1:20:00 PM			SAR-BELOWDAM-01	11/3/2009	11:10:00 AM	12/1/2009	OCR-I
	TKN _____								12/1/2009	
U J100-06	ORG-N _____	11/3/2009	1:20:00 PM			SAR-IMPERIAL-01	11/3/2009	12:30:00 PM	12/1/2009	OCR-I
	TKN _____								12/1/2009	

Orange County Water District Main Laboratory

Phil Harrington

X200.8D Workload Report

Lab #	Test Result	Date Received	Time Received	Action Level	Last Result	Sample ID	Date Sampled	Time Sampled	Expiration Date	Test Series
09110056-02										
	Al-DIS _____	11/2/2009	12:15:00 PM	750		SCWC-PBF3/1	11/2/2009	9:15:00 AM	5/1/2010	METALMOB
	Sb-DIS _____			4.5					5/1/2010	
	As-DIS _____			37.5					5/1/2010	
	Ba-DIS _____			750					5/1/2010	
	Be-DIS _____			3					5/1/2010	
	Cd-DIS _____			3.75					5/1/2010	
	Co-DIS _____								5/1/2010	
	Cu-DIS _____			750					5/1/2010	
	Pb-DIS _____			11.25					5/1/2010	
	Mn-DIS _____			37.5					5/1/2010	
	Hg-DIS _____			1.5					11/30/2009	
	Ni-DIS _____			75					5/1/2010	
	Se-DIS _____			37.5					5/1/2010	
	Ag-DIS _____			37.5					5/1/2010	
	Tl-DIS _____			1.5					5/1/2010	
	Zn-DIS _____			3750					5/1/2010	
09110057-02										
	Al-DIS _____	11/2/2009	12:15:00 PM	750		SCWC-PBF4/1	11/2/2009	9:20:00 AM	5/1/2010	METALMOB
	Sb-DIS _____			4.5					5/1/2010	
	As-DIS _____			37.5					5/1/2010	
	Ba-DIS _____			750					5/1/2010	
	Be-DIS _____			3					5/1/2010	
	Cd-DIS _____			3.75					5/1/2010	
	Co-DIS _____								5/1/2010	
	Cu-DIS _____			750					5/1/2010	
	Pb-DIS _____			11.25					5/1/2010	
	Mn-DIS _____			37.5					5/1/2010	
	Hg-DIS _____			1.5					11/30/2009	
	Ni-DIS _____			75					5/1/2010	
	Se-DIS _____			37.5					5/1/2010	
	Ag-DIS _____			37.5					5/1/2010	
	Tl-DIS _____			1.5					5/1/2010	
	Zn-DIS _____			3750					5/1/2010	

APPENDIX J

Sample Run Log

ORANGE COUNTY WATER DISTRICT

EPA METHOD: 524

INSTRUMENT: S4B

Sample List: 101609	Method: S4B-100509JC
Recall List: 101609	Chemist: Jantechon

Analysis Date: 10/16/09

Reported Date: 10/19/09

Vial ID	LAB #	SAMPLE ID	FILE ID	COMMENTS
1		DI	Purged DI	S4B 6793
2		SFB 10160900 (C)	2.0 PPB VOC	6794
3	A	09100294-02	FM-1/1	10/12/09
4	B	09100294-02 (E)	Dup	6796
5	A	09100295-02	FM-1A/1	6797
6	A	09100296-02	AM-4/1	6798
7	A	09100297-02	AM-4A/1	6799
8	A	09100298-01	TB	6800
9	A	09100299-02	SAR-9/1/WB1/MP1	6801
0	A	09100300-02	MP2	6802
1	A	09100301-02	MP3	6803
2	A	09100302-02	MP4	6804
3	A	09100303-02	MP5	6805
4		RDL 10160900 (W)	0.5 PPB RDL	6806
5		SMB 10160900 (C)	2.0 PPB VOC	6807
6	A	09100304-02	SAR-9/1/WB1/MP6	6808
7	B	09100304-02 (E)	Dup	6809
8	A	09100305-02	MP7	6810
9	A	09100306-02	MP8	6811
0	A	09100307-02	MP9	6812
1	A	09100308-02	MP10	6813
2	A	09100309-02	MP11	6814
3	A	09100310-02	MP12	6815
4	A	09100311-02	MP13	6816
5	A	09100312-02	MP14	6817
6	A	09100313-01	TB	6818
7	A	09100322-05	GWRS-FPW	6819
8		09100322-05 (S)	SPK	6820
9		09100322-05 (E)	S. Dup	6821
0	A	09100323-01	TB	6822

ORANGE COUNTY WATER DISTRICT

EPA METHOD: 524

INSTRUMENT: S4B

Sample List: 101609	Method: SAB 100509JC
RecalList: 101609	Chemist: Janice Leon

Analysis Date: 10/16/09

Reported Date: _____

Vial ID	LAB #	SAMPLE ID	FILE ID	COMMENTS
1	RDD 10160900 (W)	0.5 PPB RDL	S4B 6823	
2	SBA 10160900 (C)	2.0 PPB VOC	6824	
3	SBH 10160900 (L)	10 PPB EPA100	6825	
4	SPOXY 101609 (D)	1/2 PPB OXY	6826	
5	SB TIC 101609 (P)	10 PPB TIC	6827	
6				
7				
8				
9				
0	METHOD 524 STANDARD TRACKING_2ND SOURCE 1 of 1 ACC STD: EPA-100, S-8259-R2, lot#B5020204-1A, exp:11/20/10 Open: 09/23/09 GGA SULPELCO: VOC MIX, 47932, lot#LB68318, exp:08/01/10 Open: 09/14/09 JC Ultra Sci, Internal, Surr 182, STM-320N-1, lot#CE-4205, exp:01/31/12 Open: 09/21/09 JC Ultra Sci, MTBE: NV-250-1, LOT#CC-2542, exp:09/30/10 Open: 09/03/08 GGA			
1		10ppb EPA100	DATE MADE: 10/08/09	DATE EXP: 10/22/09 BY: GGA
2		0.5ppb RDL	10/08/09	10/22/09 GGA
3		2ppb VOC 2ND SRC	10/06/09	10/20/09 GGA
4		10ppb TIC	10/06/09	10/20/09 JC
5		OXY/TBA/Low MTBE	10/05/09	10/19/09 GGA
6				
7				
8				
9				
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
0				

APPENDIX K

Quality Assurance Reports

ORANGE COUNTY WATER DISTRICT LABORATORY

CORRECTIVE ACTION REPORT

EPA Method 524

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.

* Samples Confirmed by S2B.

Reported No Dilution Result from S2B system.

* Sent ACN'S.

Analytical Chemist:

J. Decheon

Date:

10/19/09

Reviewing Chemist:

Stephany Yoo

Date:

10/09/09

Supervising Chemist:

Steve J. Green

Date:

11/9/09

ORANGE COUNTY WATER DISTRICT LABORATORY

QUALITY CONTROL REPORT

EPA Method 524

Worksheet Number: 52964

	Lab#	Analysis Date	TestID	Result	Units	Lower Limit	Upper Limit	% Recovery Out of Range
Standards:	SMB10160900C	10/16/09	NAP	1.38	ug/L	1.4	2.6	-31%
			CH3Br	0.68	ug/L	1.4	2.6	-66%
	SFB10160900C		NAP	1.35	ug/L	1.4	2.6	-33%
			CH3Br	1.22	ug/L	1.4	2.6	-39%
	SBTIC101609P	10/17/09	MBK	4.85	ug/L	7	13	-52%
	SBOXY101609V		TBA	1.18	ug/L	1.4	2.6	-41%
	SBA10160900C		ETBE	0.68	ug/L	0.7	1.3	-32%
			DIPE	0.59	ug/L	0.7	1.3	-41%
			NAP	1.25	ug/L	1.4	2.6	-38%
			B2CLEE	6.3	ug/L	7	13	-37%
			t13DCP	1.4	ug/L	1.4	2.6	-30%
			c13DCP	1.38	ug/L	1.4	2.6	-31%
			22DCP	0.84	ug/L	1.4	2.6	-58%
			CH3Br	0.5	ug/L	1.4	2.6	-75%
LBS:	RDL10160900W	10/16/09	MIBK	1.24	ug/L	1.25	3.75	-50%
			CH3Br	0.21	ug/L	0.25	0.75	-58%
			B2CLEE	1.01	ug/L	1.25	3.75	-60%
	RDD10160900W	10/17/09	B2CLEE	0.37	ug/L	1.25	3.75	-85%
			MIBK	0.95	ug/L	1.25	3.75	-62%
			22DCP	0.19	ug/L	0.25	0.75	-62%
			MEK	1.19	ug/L	1.25	3.75	-52%
			CH3Br	0.16	ug/L	0.25	0.75	-68%

Low 2 Std:

Std 2

High Std:

LFB:

Low LFB:

Low LFB 2:

High LFB:

	Lab#	Analysis Date	TestID	Result	Units	Lower Limit	Upper Limit	% Recovery Out of Range
Spike:	09100322-05S	10/17/09	14DCB	1.36	ug/L	1.4	2.6	-32%
Spike Dup:	09100322-05K	10/17/09	14DCB	1.34	ug/L	1.4	2.6	-33%
High Spike:								
High Spike Dup:								

ORANGE COUNTY WATER DISTRICT LABORATORY

DATA REVIEW REPORT

EPA Method 524

Worksheet Number: 52964

Sample ID	Collect Date	Lab#	Analysis Date	TestID	Result	Units	NR2	NR3	NR4	NR5	NR6	RDL	Action Level	Count	MCL
FM-1/1	10/12/2009	09100294-02	10/16/2009	CHCl3	0.71	ug/L	0.69	0.74	0.69	0.84	0.72	0.83	0.5	27	
FM-1/1	10/12/2009	09100294-02	10/16/2009	TCE	2.54	ug/L	2.24	2.2	2.27	2.06	1.96	1.35	0.5	27	5
FM-1/1	10/12/2009	09100294-02	10/16/2009	11DCE	0.33	ug/L	0.29	0.32	0.27	0.26	0.25	0.24	0.5	27	6
FM-1/1	10/12/2009	09100294-02	10/16/2009	PCE	0.34	ug/L	0.32	0.29	0.22	0.18	0.18	0.18	0.5	27	5
FM-1/1	10/12/2009	09100294-02	10/16/2009	TTHMs	0.7	ug/L	0.7	0.7	0.8	0.7	0.7	0.8	0.5	27	
FM-1A/1	10/12/2009	09100295-02	10/16/2009	CHCl3	0.30	ug/L	0.31	0.33	0.27	0.33	0.27	0.32	0.5	29	
FM-1A/1	10/12/2009	09100295-02	10/16/2009	11DCE	0.77	ug/L	0.87	0.7	0.67	1.2	0.91	0.5	4.5	29	6
FM-1A/1	10/12/2009	09100295-02	10/16/2009	PCE	0.78	ug/L	10.5	9.64	8.89	2.54	6.15	0.5	3.75	29	5
FM-1A/1	10/12/2009	09100295-02	10/16/2009	11DCE	10.66	ug/L	11.65	11.71	8.46	13.75	18.08	14.06	0.5	29	6
FM-1A/1	10/12/2009	09100295-02	10/16/2009	TCE	17.71	ug/L	7.58	7.63	7.93	8.01	4.35	6.98	0.5	29	5
FM-1A/1	10/12/2009	09100295-02	10/16/2009	111TCA	0.23	ug/L	0.23	0.22	0.3	0.18	0.31	0.5	150	29	200
FM-1A/1	10/12/2009	09100295-02	10/16/2009	TTHMs	0.4	ug/L	0.4	0.4	0.4	0.4	0.4	0.4	0.5	29	
FM-1A/1	10/12/2009	09100295-02	10/16/2009	11DCA	0.34	ug/L	0.25	0.35	0.32	0.32	0.6	0.35	0.5	29	5
AM-41/1	10/12/2009	09100296-02	10/16/2009	CHCl3	0.46	ug/L	0.49	0.49	0.57	0.48	0.54	0.46	0.5	31	
AM-41/1	10/12/2009	09100296-02	10/16/2009	TTHMs	0.4	ug/L	0.4	0.6	0.4	0.5	0.4	0.5	60	31	
AM-41/1	10/12/2009	09100296-02	10/16/2009	PCE	28.1	ug/L	37.4	34.04	30.8	37.58	34.9	38.34	0.5	31	5
AM-41/1	10/12/2009	09100296-02	10/16/2009	11DCE	0.93	ug/L	0.92	1.03	0.85	0.83	1.03	0.94	0.5	31	6
AM-41/1	10/12/2009	09100296-02	10/16/2009	TCE	1.76	ug/L	1.6	1.77	1.57	1.47	1.72	1.88	0.5	31	5
AM-41A/1	10/12/2009	09100297-02	10/16/2009	TCE	11.82	ug/L	11.19	13.01	10.23	7.67	5.66	4.27	0.5	32	5
AM-41A/1	10/12/2009	09100297-02	10/16/2009	11DCE	2.52	ug/L	2.65	2.77	2.35	2.19	2.24	1.6	0.5	32	6
AM-41A/1	10/12/2009	09100297-02	10/16/2009	PCE	4.3	ug/L	5.21	55.8	43.1	51.98	38.1	47.7	0.5	32	5

Reported
 1/10 Dilution Run by 52B (Reported) (P)

Sample ID	Collect Date	Lab#	Analysis Date	TestID	Result	Units	NR2	NR3	NR4	NR5	NR6	RDL	Action Level	Count	MCL
AM-41A/1	10/12/2009	09100297-02	10/16/2009	c12DCE	0.22	ug/L	0.26	0.18	0.16	0.15	0.12	0.5	4.5	32	6
AM-41A/1	10/12/2009	09100297-02	10/16/2009	TTHMs	0.4	ug/L	0.4	0.4	0.4	0.4	0	0.5	60	32	
AM-41A/1	10/12/2009	09100297-02	10/16/2009	CHCl3	0.25	ug/L	0.3	0.3	0.27	0.26	0.19	0.5		32	
SAR-9/1/WB1/MP1	10/12/2009	09100299-02	10/16/2009	CHCl3	0.32	ug/L	0.19	0.12	0.24	0	0.05	0.5		7	
SAR-9/1/WB1/MP1	10/12/2009	09100299-02	10/16/2009	c12DCE	0.62	ug/L	0.37	0.396	0.02	0	0	0.5	4.5	7	6
SAR-9/1/WB1/MP1	10/12/2009	09100299-02	10/16/2009	11DCE	2.66	ug/L	1.24	1.429	0.26	0	0.05	0.5	4.5	7	6
SAR-9/1/WB1/MP1	10/12/2009	09100299-02	10/16/2009	TTHMs	0.4	ug/L	0	0	0	0	0	0.5	60	7	
SAR-9/1/WB1/MP1	10/12/2009	09100299-02	10/16/2009	STYR	0.16	ug/L	0.22	0.388	0.24	0.31	0.18	0.5	75	7	100
SAR-9/1/WB1/MP2	10/12/2009	09100300-02	10/16/2009	TTHMs	0	ug/L	0	0	0.5	0	0	0.5	60	7	
SAR-9/1/WB1/MP2	10/12/2009	09100300-02	10/16/2009	CHCl3	0.18	ug/L	0.09	0.06	0.52	0.02	0.03	0.5		7	
SAR-9/1/WB1/MP2	10/12/2009	09100300-02	10/16/2009	11DCE	0.35	ug/L	0.08	0.02	0	0	0	0.5	4.5	7	6
SAR-9/1/WB1/MP3	10/12/2009	09100301-02	10/16/2009	TTHMs	0	ug/L	0	0	0.4	0	0	0.5	60	7	
SAR-9/1/WB1/MP3	10/12/2009	09100301-02	10/16/2009	CHCl3	0.01	ug/L	0.01	0.01	0.25	0.01	0.02	0.5		7	
SAR-9/1/WB1/MP4	10/12/2009	09100302-02	10/16/2009	STYR	0.53	ug/L	0.58	0.58	0.5	0.41	0.17	0.5	75	7	100
SAR-9/1/WB1/MP4	10/12/2009	09100302-02	10/16/2009	c12DCE	0.43	ug/L	0.34	0.65	0.67	0.61	0.5	0.5	4.5	7	6
SAR-9/1/WB1/MP5	10/12/2009	09100303-02	10/16/2009	MTBE	0.01	ug/L	0.03	0.03	0.02	0.27	0.02	0.2	0.2	7	
SAR-9/1/WB1/MP6	10/12/2009	09100304-02	10/17/2009	STYR	0.16	ug/L	0.17	0.18	0.06	0.27	0.19	0.5	75	7	100
SAR-9/1/WB1/MP7	10/12/2009	09100305-02	10/17/2009	STYR	0.16	ug/L	0.16	0.2	0.55	0.33	0.27	0.5	75	7	100
SAR-9/1/WB1/MP9	10/12/2009	09100307-02	10/17/2009	STYR	0.45	ug/L	0.34	0.52	0.57	0.49	0.35	0.5	75	7	100
SAR-9/1/WB1/MP9	10/12/2009	09100307-02	10/17/2009	c12DCE	0.21	ug/L	0.29	0.26	0.32	0.34	0.31	0.5	4.5	7	6
SAR-9/1/WB1/MP10	10/12/2009	09100308-02	10/17/2009	c12DCE	0.31	ug/L	0.28	0.83	0.91	0.77	0.73	0.5	4.5	7	6
SAR-9/1/WB1/MP10	10/12/2009	09100308-02	10/17/2009	STYR	0.65	ug/L	0.57	0.88	0.52	0.81	0.74	0.5	75	7	100
SAR-9/1/WB1/MP10	10/12/2009	09100308-02	10/17/2009	EtBENZ	0.16	ug/L	0.21	0.34	0.37	0.37	0.32	0.5	240	7	300
SAR-9/1/WB1/MP11	10/12/2009	09100309-02	10/17/2009	STYR	0.44	ug/L	0.33	0.67	0.6	0.57	0.45	0.5	75	7	100
SAR-9/1/WB1/MP12	10/12/2009	09100310-02	10/17/2009	STYR	0.22	ug/L	0.14	0.5	0.04	0.28	0.15	0.5	75	7	100
SAR-9/1/WB1/MP13	10/12/2009	09100311-02	10/17/2009	STYR	0.16	ug/L	0.25	0.31	0.43	0.2	0.24	0.5	75	7	100
SAR-9/1/WB1/MP14	10/12/2009	09100312-02	10/17/2009	STYR	0.84	ug/L	0.83	1.24	0.81	1.04	0.67	0.5	75	7	100
SAR-9/1/WB1/MP14	10/12/2009	09100312-02	10/17/2009	TTHMs	0	ug/L	0	0	0.4	0	0	0.5	60	7	

Sample ID	Collect Date	Lab#	Analysis Date	TestID	Result	Units	NR2	NR3	NR4	NR5	NR6	RDL	Action Level	Count	MCL
SAR-9/1/WB1/MP14	10/12/2009	09100312-02	10/17/2009	VNYLCL	0.12	ug/L	0.2	0	0.24	0.32✓	0.13	0.5	0.375	7	0.5
SAR-9/1/WB1/MP14	10/12/2009	09100312-02	10/17/2009	CHCl3	0.01	ug/L	0	0	0.3	0.01✓	0.01	0.5		7	
SAR-9/1/WB1/MP14	10/12/2009	09100312-02	10/17/2009	TOLU	0.13	ug/L	0.13	0.28	0.23	0.26✓	0.2	0.5	112.5	7	150
GWRs-FPW	10/13/2009	09100322-05	10/17/2009	CHCl3	0.2	ug/L	0.17	0.18	0.2	0.23✓	0.25	0.5		13	
GWRs-FPW	10/13/2009	09100322-05	10/17/2009	TTHMs	0	ug/L	0	0	0	0✓	0.4	0.5	60	13	
GWRs-FPW	10/13/2009	09100322-05	10/17/2009	CH2Cl2	0.21	ug/L	0.19	0.2	0.32	0.26✓	0.58	0.5	3.75	13	5

Chemist's Comments:

Reported 1/10 Dilution result. Run By SJB system (PP) 10/21/09 ✓

ORANGE COUNTY WATER DISTRICT LABORATORY

524 UCMR QA/QC REPORT

Lab#	Sample ID	Collect Date	MTBE	NBENZ
09010304-02D			0.00	0.00 out (wrong lab #)
09100294-02	FM-1/1	10/12/2009	0.05	0.00
09100294-02D			0.05	0.00
09100295-02	FM-1A/1	10/12/2009	0.07	0.00
09100296-02	AM-41/1	10/12/2009	0.05	0.00
09100297-02	AM-41A/1	10/12/2009	0.08	0.00
09100298-01	TB	10/12/2009	0.00	0.00
09100299-02	SAR-9/1/WB1/MP1	10/12/2009	0.04	0.00
09100300-02	SAR-9/1/WB1/MP2	10/12/2009	0.00	0.00
09100301-02	SAR-9/1/WB1/MP3	10/12/2009	0.01	0.00
09100302-02	SAR-9/1/WB1/MP4	10/12/2009	0.00	0.00
09100303-02	SAR-9/1/WB1/MP5	10/12/2009	0.01	0.00
09100304-02	SAR-9/1/WB1/MP6	10/12/2009	0.00	0.00
09100305-02	SAR-9/1/WB1/MP7	10/12/2009	0.00	0.00
09100306-02	SAR-9/1/WB1/MP8	10/12/2009	0.00	0.00
09100307-02	SAR-9/1/WB1/MP9	10/12/2009	0.00	0.00
09100308-02	SAR-9/1/WB1/MP10	10/12/2009	0.00	0.00
09100309-02	SAR-9/1/WB1/MP11	10/12/2009	0.00	0.00
09100310-02	SAR-9/1/WB1/MP12	10/12/2009	0.00	0.00
09100311-02	SAR-9/1/WB1/MP13	10/12/2009	0.00	0.00
09100312-02	SAR-9/1/WB1/MP14	10/12/2009	0.00	0.00
09100313-01	TB	10/12/2009	0.00	0.00
09100322-05	GWRS-FPW	10/13/2009	0.00	0.00
09100322-05K			4.56 ✓	8.98
09100322-05S			4.69 ✓	8.42
09100323-01	TB	10/13/2009	0.00 ✓	0.00
RDD10160900W			0.34 ✓	0.00
RDL10160900W			0.36 ✓	0.00
BA10160900C			1.77 ✓	0.00
SBH10160900L			24.95 ✓	55.39

524 UCMR QA/QC REPORT

Lab#	Sample ID	Collect Date	MTBE	NBENZ
SBOXY101609V			0.15 ✓	0.00
SBTIC101609P			0.05 ✓	0.00
SFB10160900C			1.93 ✓	0.00
SMB10160900C			1.79 ✓	0.00

ORANGE COUNTY WATER DISTRICT LABORATORY

524 UCMR QA/QC REPORT

Lab#	Sample ID	Collect Date	MTBE	NBENZ
09100304-02D			0.00	0.00

ORANGE COUNTY WATER DISTRICT LABORATORY

UCMR RPD QUALITY CONTROL REPORT

EPA Method 524

Worksheet Number: 52964

	Lab#	Date of Analysis	TestID	Result (ug/L)	Lower Limit (ug/L)	Upper Limit (ug/L)	Accuracy	Precision
Spike:	09100322-05S	10/17/09	MTBE	4.69	3	7	6.20%	
			NBENZ	8.42	7	13	15.80%	
Spike Dup:	09100322-05K	10/17/09	MTBE	4.56	3	7	8.80%	
			NBENZ	8.98	7	13	10.20%	
Spike RPD:	09100322-05K	10/17/09	MTBE					2.81%
			NBENZ					6.44%
High Spike:								
High Spike Dup:								
High Spike RPD:								

APPENDIX L

Action Level Notification Reports

The ALN below for Lab# 09100295-02,TestID:11DCE has been sent to the following Address:ALNWQORG@ocwd.com.
A copy of this ALN has been sent to the following Address:
JCheon@ocwd.com

ALN Report

ALN Report Summary

SampleID: FM-1A/1

TestID: 11DCE

Reported Result: 11.7 ug/L

Date Sampled: 10/12/2009 Time Collected: 10:00:00 AM

*****ALN REPORT*****

Report Date:	10/27/2009
SampleID:	FM-1A/1
Lab#:	09100295-02
Date Sampled:	10/12/2009
Time Collected:	10:00:00 AM
Analysis Date:	10/16/2009
Monitoring Program:	FBVOC
Re-Sample?	No
Test Name:	1,1-Dichloroethene
Analyzed By Method:	524
Reported Result:	11.7 ug/L
Numeric Result:	11.65 ug/L
Action Level:	4.5 ug/L
MCL:	6 ug/L
Analysis Verified:	Yes
Analysis Re-Checked:	No
Analyzing Chemist:	JC
Sending Chemist:	Janice Cheon

Field Comments:

200 GAL. TO DIRT

Chemist Comments:

The ALN below for Lab# 09100295-02, TestID: PCE has been sent to the following Address: ALNWQORG@ocwd.com.
A copy of this ALN has been sent to the following Address: JCheon@ocwd.com

ALN Report

ALN Report Summary

SampleID: FM-1A/1

TestID: PCE

Reported Result: 10.5 ug/L

Date Sampled: 10/12/2009 Time Collected: 10:00:00 AM

*****ALN REPORT*****

Report Date:	10/27/2009
SampleID:	FM-1A/1
Lab#:	09100295-02
Date Sampled:	10/12/2009
Time Collected:	10:00:00 AM
Analysis Date:	10/16/2009
Monitoring Program:	FBVOC
Re-Sample?	No
Test Name:	Tetrachloroethene
Analyzed By Method:	524
Reported Result:	10.5 ug/L
Numeric Result:	10.5 ug/L
Action Level:	3.75 ug/L
MCL:	5 ug/L
Analysis Verified:	Yes
Analysis Re-Checked:	No
Analyzing Chemist:	JC
Sending Chemist:	Janice Cheon

Field Comments:
200 GAL. TO DIRT

Chemist Comments:

The ALN below for Lab# 09100295-02, TestID: TCE has been sent to the following Address: ALNWQORG@ocwd.com.
A copy of this ALN has been sent to the following Address: JCcheon@ocwd.com

ALN Report

ALN Report Summary

SampleID: FM-1A/1

TestID: TCE

Reported Result: 7.6 ug/L

Date Sampled: 10/12/2009 Time Collected: 10:00:00 AM

*****ALN REPORT*****

Report Date:	10/27/2009
SampleID:	FM-1A/1
Lab#:	09100295-02
Date Sampled:	10/12/2009
Time Collected:	10:00:00 AM
Analysis Date:	10/16/2009
Monitoring Program:	FBVOC
Re-Sample?	No
Test Name:	Trichloroethene
Analyzed By Method:	524
Reported Result:	7.6 ug/L
Numeric Result:	7.58 ug/L
Action Level:	3.75 ug/L
MCL:	5 ug/L
Analysis Verified:	Yes
Analysis Re-Checked:	No
Analyzing Chemist:	JC
Sending Chemist:	Janice Cheon

Field Comments:
200 GAL. TO DIRT

Chemist Comments:

The ALN below for Lab# 09100296-02,TestID:PCE has been sent to the following
Address:ALNWQORG@ocwd.com.
A copy of this ALN has been sent to the following Address:
JCheon@ocwd.com

ALN Report

ALN Report Summary

SampleID: AM-41/1

TestID: PCE

Reported Result: 28.1 ug/L

Date Sampled: 10/12/2009 Time Collected: 1:40:00 PM

*****ALN REPORT*****

Report Date:	10/27/2009
SampleID:	AM-41/1
Lab#:	09100296-02
Date Sampled:	10/12/2009
Time Collected:	1:40:00 PM
Analysis Date:	10/16/2009
Monitoring Program:	FBVOC
Re-Sample?	No
Test Name:	Tetrachloroethene
Analyzed By Method:	524
Reported Result:	28.1 ug/L
Numeric Result:	28.1 ug/L
Action Level:	3.75 ug/L
MCL:	5 ug/L
Analysis Verified:	Yes
Analysis Re-Checked:	No
Analyzing Chemist:	JC
Sending Chemist:	Janice Cheon

Field Comments:
203 GAL. TO DIRT

Chemist Comments:

The ALN below for Lab# 09100297-02,TestID:PCE has been sent to the following
Address:ALNWQORG@ocwd.com.
A copy of this ALN has been sent to the following Address:
JCheon@ocwd.com

ALN Report

ALN Report Summary

SampleID: AM-41A/1

TestID: PCE

Reported Result: 41.3 ug/L

Date Sampled: 10/12/2009 Time Collected: 2:20:00 PM

*****ALN REPORT*****

Report Date:	10/27/2009
SampleID:	AM-41A/1
Lab#:	09100297-02
Date Sampled:	10/12/2009
Time Collected:	2:20:00 PM
Analysis Date:	10/16/2009
Monitoring Program:	FBVOC
Re-Sample?	No
Test Name:	Tetrachloroethene
Analyzed By Method:	524
Reported Result:	41.3 ug/L
Numeric Result:	41.3 ug/L
Action Level:	3.75 ug/L
MCL:	5 ug/L
Analysis Verified:	Yes
Analysis Re-Checked:	No
Analyzing Chemist:	JC
Sending Chemist:	Janice Cheon

Field Comments:

140 GAL. TO DIRT

Chemist Comments:

The ALN below for Lab# 09100297-02,TestID:TCE has been sent to the following Address:ALNWQORG@ocwd.com.
A copy of this ALN has been sent to the following Address:
JCheon@ocwd.com

ALN Report

ALN Report Summary

SampleID: AM-41A/1

TestID: TCE

Reported Result: 11.2 ug/L

Date Sampled: 10/12/2009 Time Collected: 2:20:00 PM

*****ALN REPORT*****

Report Date:	10/27/2009
SampleID:	AM-41A/1
Lab#:	09100297-02
Date Sampled:	10/12/2009
Time Collected:	2:20:00 PM
Analysis Date:	10/16/2009
Monitoring Program:	FBVOC
Re-Sample?	No
Test Name:	Trichloroethene
Analyzed By Method:	524
Reported Result:	11.2 ug/L
Numeric Result:	11.19 ug/L
Action Level:	3.75 ug/L
MCL:	5 ug/L
Analysis Verified:	Yes
Analysis Re-Checked:	No
Analyzing Chemist:	JC
Sending Chemist:	Janice Cheon

Field Comments:

140 GAL. TO DIRT

Chemist Comments:

APPENDIX M

Certificate of Analysis Reports

Orange County Water District Main Laboratory

- CERTIFICATE OF ANALYSIS -

Lab#: 09100355-01
Sample ID: GWRS-FPW
Sample Matrix: WATER
Sample Group ID: 09100355
Monitoring Program: GWRSPDR

Collect Date: 10/14/2009
Collect Time: 06:00
Collect By: O&M

Field Comments:

Lab Comments:

Flag Definitions

"L" = below Low Limit; "A" = above Action Level; "H" = above High Limit; "M" = above Maximum Contaminant Level.

Lab#	Analytical Method	Test Name	Test ID	Result	Units	Flag	RDL	Analysis Date	By	Prep Date
09100355-01										
	2510B	Electrical Conductivity	EC	111	um/cm		1	10/14/2009	kn	
	2540C	Total Dissolved Solids	TDS	56.5	mg/L		1	10/14/2009	tn	
	4500H+B	pH	pH	8.5	UNITS	A	1	10/14/2009	kn	
	X200.7	Sodium	Na	7.3	mg/L		0.1	10/23/2009	jab	10/15/2009
		Potassium	K	0.3	mg/L		0.1	10/23/2009	jab	10/15/2009
		Magnesium	Mg	<0.1	mg/L		0.1	10/23/2009	jab	10/15/2009
		Calcium	Ca	13.1	mg/L		0.1	10/23/2009	jab	10/15/2009
		Boron	B	0.23	mg/L		0.1	10/23/2009	jab	10/15/2009
		Calcium Hardness	CaHRD	32.7	mg/L		0.25	10/23/2009	jab	10/15/2009
		Total Hardness (as CaCO3)	TOTHRD	33.0	mg/L		1	10/23/2009	jab	10/15/2009
	X200.8	Aluminum	Al	11.0	ug/L		1	10/29/2009	ph	10/15/2009
		Antimony	Sb	<0.5	ug/L		0.5	10/29/2009	ph	10/15/2009
		Arsenic	As	<1	ug/L		1	10/29/2009	ph	10/15/2009
		Barium	Ba	<1	ug/L		1	10/29/2009	ph	10/15/2009
		Beryllium	Be	<0.5	ug/L		0.5	10/29/2009	ph	10/15/2009
		Cadmium	Cd	<1	ug/L		1	10/29/2009	ph	10/15/2009
	X200.7	Chromium	Cr	<1	ug/L		1	10/21/2009	jab	10/15/2009
		Trivalent Chromium	CrIII	<1	ug/L		1	10/21/2009	jab	10/15/2009
	X1-218.6	Hexavalent Chromium (dissolved)	CrVI	<0.2	ug/L		0.2	10/14/2009	ltl	
	X200.8	Cobalt	Co	<1	ug/L		1	10/29/2009	ph	10/15/2009
		Copper	Cu	<1	ug/L		1	10/29/2009	ph	10/15/2009
		Lead	Pb	<1	ug/L		1	10/29/2009	ph	10/15/2009
		Manganese	Mn	1.4	ug/L		1	10/30/2009	ph	10/15/2009
		Manganese (dissolved)	Mn-DIS	1.5	ug/L		1	10/30/2009	ph	10/15/2009
		Mercury	Hg	<0.1	ug/L		0.1	10/29/2009	ph	10/15/2009
		Nickel	Ni	<1	ug/L		1	10/29/2009	ph	10/15/2009
		Selenium	Se	<1	ug/L		1	10/29/2009	ph	10/15/2009
		Silver	Ag	<1	ug/L		1	10/29/2009	ph	10/15/2009
		Thallium	Tl	<0.5	ug/L		0.5	10/29/2009	ph	10/15/2009
	X200.7	Vanadium	V	<1	ug/L		1	10/21/2009	jab	10/15/2009
	X200.8	Zinc	Zn	1.8	ug/L		1	10/29/2009	ph	10/15/2009
	X200.7	Iron	Fe	8.9	ug/L		1	10/21/2009	jab	10/15/2009
	4500NH3H	Ammonia Nitrogen	NH3-N	1.2	mg/L		0.1	10/16/2009	sg	
	X1-351.2	Organic Nitrogen	ORG-N	<0.1	mg/L		0.1	10/22/2009	sg	

Orange County Water District Main Laboratory

- CERTIFICATE OF ANALYSIS -

Lab#: 09100355-01

Collect Date: 10/14/2009

Sample ID: GWRS-FPW

Collect Time: 06:00

Sample Matrix: WATER

Collect By: O&M

Sample Group ID: 09100355

Monitoring Program: GWRSPDR

Field Comments:

Lab Comments:

Flag Definitions

"L" = below Low Limit; "A" = above Action Level; "H" = above High Limit; "M" = above Maximum Contaminant Level.

Lab#	Analytical Method	Test Name	Test ID	Result	Units	Flag	RDL	Analysis Date	By	Prep Date
X1-351.2		Total Kjeldahl Nitrogen	TKN	1.2	mg/L		0.2	10/22/2009	sg	
		Total Nitrogen	TOT-N	1.5	mg/L		0.3	10/22/2009	sg	
2320B		Alkalinity-Phenolphthalein	ALKPHE	2.2	mg/L		1	10/14/2009	kn	
		Total Alkalinity (as CaCO3)	TOTALK	46.0	mg/L		1	10/14/2009	kn	
		Hydroxide (as CaCO3)	OHCa	<1	mg/L		1	10/14/2009	kn	
		Carbonate (as CaCO3)	CO3Ca	4.3	mg/L		1	10/14/2009	kn	
		Bicarbonate (as CaCO3)	HCO3Ca	41.7	mg/L		1	10/14/2009	kn	
4500NO3F		Nitrite Nitrogen	NO2-N	0.043	mg/L		0.002	10/15/2009	pml	
		Nitrate + Nitrite Nitrogen	NO3NO2-N	0.28	mg/L		0.1	10/14/2009	pml	
X1-300.0		Fluoride	F	<0.1	mg/L		0.1	10/14/2009	lgl	
		Chloride	Cl	4.4	mg/L		0.5	10/14/2009	lgl	
		Bromide	Br	<0.1	mg/L		0.1	10/14/2009	lgl	
300.1B		Bromide	Br	<0.01	mg/L		0.01	10/28/2009	lgl	
4500NO3F		Nitrate Nitrogen	NO3-N	0.23	mg/L		0.1	10/14/2009	pml	
365.1		Phosphate Phosphorus (orthophosphate)	PO4-P	<0.01	mg/L		0.01	10/14/2009	sg	
X1-300.0		Sulfate	SO4	<0.5	mg/L		0.5	10/14/2009	lgl	
300.1B		Chlorite	CLO2	<10	ug/L		10	10/28/2009	lgl	
		Bromate	BrO3	<5	ug/L		5	10/28/2009	lgl	
		Chlorate	CLO3	<10	ug/L		10	10/28/2009	lgl	
4500SiOC		Silica	SiO2	<1	mg/L		1	10/20/2009	tn	
5540C		Surfactants	MBAS	<0.02	mg/L		0.02	10/14/2009	tn	
2120B		Apparent Color (unfiltered)	APCOLR	<3	UNITS		3	10/14/2009	vv	
2150B		Threshold Odor Number (Median)	ODOR	0.0	TON		0	10/14/2009	vv	
		Odor Range High	ODORHI	0.0	TON		0	10/14/2009	vv	
		Odor Range Low	ODORLO	0.0	TON		0	10/14/2009	vv	
X1-335.4		Cyanide	CN	<5	ug/L		5	10/27/2009	pml	
4500CLF		Free Chlorine	FRCL2	<0.1	mg/L		0.1	10/14/2009	mv	
		Total Chlorine	TOTCL2	1.2	mg/L		0.1	10/14/2009	mv	
4500CLD		Free Res. Chlorine - Amperometric Method	FRCL2A	<0.1	mg/L		0.1	10/14/2009	kn	
		Tot. Res. Chlorine - Amperometric Method	TOTCLA	0.4	mg/L		0.1	10/14/2009	kn	
9221B		Total Coliform (Mult. Tube Fermentation)	TCOLIM	<2	MPN		2	10/14/2009	mv	
9221E		Fecal Coliform (Mult. Tube Fermentation)	FCOLIM	<2	MPN		2	10/14/2009	mv	
X1-314.0		Perchlorate	CLO4	<2.5	ug/L		2.5	10/19/2009	lfl	
H2O2		Hydrogen Peroxide	H2O2	2.5	mg/L		0.1	10/14/2009	fc	
2330B		Corrosivity	CORROS	-0.19	S.I.		-100	10/27/2009	kn	

Orange County Water District Main Laboratory

- CERTIFICATE OF ANALYSIS -

Lab#: 09100355-01
Sample ID: GWRS-FPW
Sample Matrix: WATER
Sample Group ID: 09100355
Monitoring Program: GWRSPDR

Collect Date: 10/14/2009
Collect Time: 06:00
Collect By: O&M

Field Comments:

Lab Comments:

Flag Definitions

"L" = below Low Limit; "A" = above Action Level; "H" = above High Limit; "M" = above Maximum Contaminant Level.

Lab#	Analytical Method	Test Name	Test ID	Result	Units	Flag	RDL	Analysis Date	By	Prep Date
1030F		Total Anions	TOTANI	1.075	meq/L		0	10/27/2009	vv	
		Total Cations	TOTCAT	1.075	meq/L		0	10/27/2009	vv	

Orange County Water District Main Laboratory

- CERTIFICATE OF ANALYSIS -

Lab#: 09100391-01
Sample ID: GWRS-FPW
Sample Matrix: WATER
Sample Group ID: 09100391
Monitoring Program: GWRSPDR

Collect Date: 10/15/2009
Collect Time: 06:00
Collect By: O&M

Field Comments:

Lab Comments:
 TCOLIM analyzed past holding time.

Flag Definitions

"L" = below Low Limit; "A" = above Action Level; "H" = above High Limit; "M" = above Maximum Contaminant Level.

Lab#	Analytical Method	Test Name	Test ID	Result	Units	Flag	RDL	Analysis Date	By	Prep Date
09100391-01										
	2510B	Electrical Conductivity	EC	101	um/cm		1	10/15/2009	kn	
	4500NH3H	Ammonia Nitrogen	NH3-N	1.2	mg/L		0.1	10/16/2009	sg	
	X1-351.2	Organic Nitrogen	ORG-N	<0.1	mg/L		0.1	10/30/2009	sg	
		Total Kjeldahl Nitrogen	TKN	1.2	mg/L		0.2	10/30/2009	sg	
		Total Nitrogen	TOT-N	1.5	mg/L		0.3	10/30/2009	sg	
	4500NO3F	Nitrite Nitrogen	NO2-N	0.041	mg/L		0.002	10/15/2009	pml	
		Nitrate + Nitrite Nitrogen	NO3NO2-N	0.30	mg/L		0.1	10/16/2009	pml	
		Nitrate Nitrogen	NO3-N	0.26	mg/L		0.1	10/16/2009	pml	
	9221B	Total Coliform (Mult. Tube Fermentation)	TCOLIM	<2	MPN		2	10/15/2009	mv	
	9221E	Fecal Coliform (Mult. Tube Fermentation)	FCOLIM	<2	MPN		2	10/15/2009	mv	

Orange County Water District Main Laboratory

- CERTIFICATE OF ANALYSIS -

Lab#: 09100522-01
Sample ID: GWRS-FPW
Sample Matrix: WATER
Sample Group ID: 09100522
Monitoring Program: GWRSPDR

Collect Date: 10/21/2009
Collect Time: 06:00
Collect By: O&M

Field Comments:

Lab Comments:

Flag Definitions

"L" = below Low Limit; "A" = above Action Level; "H" = above High Limit; "M" = above Maximum Contaminant Level.

Lab#	Analytical Method	Test Name	Test ID	Result	Units	Flag	RDL	Analysis Date	By	Prep Date
09100522-01										
	2510B	Electrical Conductivity	EC	105	um/cm		1	10/21/2009	kn	
	2540C	Total Dissolved Solids	TDS	53.5	mg/L		1	10/22/2009	tn	
	4500H+B	pH	pH	8.3	UNITS		1	10/21/2009	kn	
	X200.7	Calcium	Ca	10.7	mg/L		0.1	10/23/2009	jab	10/21/2009
		Calcium Hardness	CaHRD	26.7	mg/L		0.25	10/23/2009	jab	10/21/2009
	2320B	Alkalinity-Phenolphthalein	ALKPHE	<1	mg/L		1	10/21/2009	kn	
		Total Alkalinity (as CaCO3)	TOTALK	41.8	mg/L		1	10/21/2009	kn	
		Hydroxide (as CaCO3)	OHCa	<1	mg/L		1	10/21/2009	kn	
		Carbonate (as CaCO3)	CO3Ca	<1	mg/L		1	10/21/2009	kn	
		Bicarbonate (as CaCO3)	HCO3Ca	41.8	mg/L		1	10/21/2009	kn	
	9221B	Total Coliform (Mult. Tube Fermentation)	TCOLIM	<2	MPN		2	10/21/2009	mv	
	9221E	Fecal Coliform (Mult. Tube Fermentation)	FCOLIM	<2	MPN		2	10/21/2009	mv	
	H2O2	Hydrogen Peroxide	H2O2	2.7	mg/L		0.1	10/21/2009	fc	
	2330B	Corrosivity	CORROS	-0.52	S.I.		-100	10/27/2009	kn	

Orange County Water District Main Laboratory

- CERTIFICATE OF ANALYSIS -

Lab#: 09100295-03
Sample ID: FM-1A/1
Sample Matrix: WATER
Sample Group ID: 09100295
Monitoring Program: FBVOC

Collect Date: 10/12/2009
Collect Time: 10:00
Collect By: BLR

Field Comments:
 200 GAL. TO DIRT

Lab Comments:

Flag Definitions

"L" = below Low Limit; "A" = above Action Level; "H" = above High Limit; "M" = above Maximum Contaminant Level.

Lab#	Analytical Method	Test Name	Test ID	Result	Units	Flag	RDL	Analysis Date	By	Prep Date
09100295-03										
	14DIOX	1,4-Dioxane	14DIOX	4.8	ug/L	A	1	10/14/2009	ly	
		1,2-Dibromoethane	EDB	ND	ug/L		0.005	10/14/2009	ly	
		1,2-Dibromo-3-chloropropane	DBCP	ND	ug/L		0.01	10/14/2009	ly	
		1,2,3-Trichloropropane	123TCP	ND	ug/L		0.005	10/14/2009	ly	
		2-Chloroethylvinyl ether	2CIEVE	ND	ug/L		0.1	10/14/2009	ly	
		Methylisothiocyanate	MITC	ND	ug/L		0.01	10/14/2009	ly	

Orange County Water District Main Laboratory

- CERTIFICATE OF ANALYSIS -

Lab#: 09100295-02
Sample ID: FM-1A/1
Sample Matrix: WATER
Sample Group ID: 09100295
Monitoring Program: FBVOC

Collect Date: 10/12/2009
Collect Time: 10:00
Collect By: BLR

Field Comments:
 200 GAL. TO DIRT

Lab Comments:

Flag Definitions

"L" = below Low Limit; "A" = above Action Level; "H" = above High Limit; "M" = above Maximum Contaminant Level.

Lab#	Analytical Method	Test Name	Test ID	Result	Units	Flag	RDL	Analysis Date	By	Prep Date
09100295-02										
524.2		Dichlorodifluoromethane	CCl2F2	ND	ug/L		0.500	10/16/2009	JC	
		Chloromethane	CH3Cl	ND	ug/L		0.500	10/16/2009	JC	
		Vinyl chloride	VNYLCL	ND	ug/L		0.500	10/16/2009	JC	
		Bromomethane	CH3Br	ND	ug/L		0.500	10/16/2009	JC	
		Chloroethane	ClETHA	ND	ug/L		0.500	10/16/2009	JC	
		Trichlorofluoromethane (Freon 11)	CCl3F	ND	ug/L		0.500	10/16/2009	JC	
		1,1-Dichloroethene	11DCE	11.7	ug/L	A	0.500	10/16/2009	JC	
		Trichlorotrifluoroethane (Freon 113)	Cl3F3E	ND	ug/L		0.500	10/16/2009	JC	
		Methylene Chloride	CH2Cl2	ND	ug/L		0.500	10/16/2009	JC	
		trans-1,2 Dichloroethene	t12DCE	ND	ug/L		0.500	10/16/2009	JC	
		1,1-Dichloroethane	11DCA	TR	ug/L		0.500	10/16/2009	JC	
		2,2-Dichloropropane	22DCP	ND	ug/L		0.500	10/16/2009	JC	
		cis-1,2-Dichloroethene	c12DCE	0.8	ug/L		0.500	10/16/2009	JC	
		Bromochloromethane	CH2BrCl	ND	ug/L		0.500	10/16/2009	JC	
		Chloroform	CHCl3	TR	ug/L		0.500	10/16/2009	JC	
		1,1,1-Trichloroethane	111TCA	ND	ug/L		0.500	10/16/2009	JC	
		Carbon tetrachloride	CCl4	ND	ug/L		0.500	10/16/2009	JC	
		1,1-Dichloropropene	11DCP	ND	ug/L		0.500	10/16/2009	JC	
		Benzene	BENZ	ND	ug/L		0.500	10/16/2009	JC	
		1,2-Dichloroethane	12DCA	ND	ug/L		0.500	10/16/2009	JC	
		Trichloroethene	TCE	7.6	ug/L	A	0.500	10/16/2009	JC	
		1,2-Dichloropropane	12DCP	ND	ug/L		0.500	10/16/2009	JC	
		Dibromomethane	CH2Br2	ND	ug/L		0.500	10/16/2009	JC	
		Bromodichloromethane	CHBrCl	ND	ug/L		0.500	10/16/2009	JC	
		Toluene	TOLU	ND	ug/L		0.500	10/16/2009	JC	
		trans-1,3-Dichloropropene	t13DCP	ND	ug/L		0.500	10/16/2009	JC	
		1,1,2-Trichloroethane	112TCA	ND	ug/L		0.500	10/16/2009	JC	
		Tetrachloroethene	PCE	10.5	ug/L	A	0.500	10/16/2009	JC	
		1,3-Dichloropropane	13DCP	ND	ug/L		0.500	10/16/2009	JC	
		Dibromochloromethane	CHBr2Cl	ND	ug/L		0.500	10/16/2009	JC	
		1,2-Dibromoethane	EDB	ND	ug/L		0.500	10/16/2009	JC	
		Chlorobenzene	CLBENZ	ND	ug/L		0.500	10/16/2009	JC	
		1,1,1,2-Tetrachloroethane	1112PC	ND	ug/L		0.500	10/16/2009	JC	
		Ethylbenzene	EtBENZ	ND	ug/L		0.500	10/16/2009	JC	

Orange County Water District Main Laboratory

- CERTIFICATE OF ANALYSIS -

Lab#: 09100295-02
Sample ID: FM-1A/1
Sample Matrix: WATER
Sample Group ID: 09100295
Monitoring Program: FBVOC

Collect Date: 10/12/2009
Collect Time: 10:00
Collect By: BLR

Field Comments:

200 GAL. TO DIRT

Lab Comments:

Flag Definitions

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Lab#	Analytical Method	Test Name	Test ID	Result	Units	Flag	RDL	Analysis Date	By	Prep Date
524.2		m,p-Xylene	mp-XYL	ND	ug/L		0.500	10/16/2009	JC	
		o-Xylene	o-XYL	ND	ug/L		0.500	10/16/2009	JC	
		Styrene	STYR	ND	ug/L		0.500	10/16/2009	JC	
		Bromoform	CHBr3	ND	ug/L		0.500	10/16/2009	JC	
		Isopropylbenzene	ISPBZ	ND	ug/L		0.500	10/16/2009	JC	
		Bromobenzene	BRBENZ	ND	ug/L		0.500	10/16/2009	JC	
		1,2,3-Trichloropropane	123TCP	ND	ug/L		0.500	10/16/2009	JC	
		1,1,2,2-Tetrachloroethane	1122PC	ND	ug/L		0.500	10/16/2009	JC	
		Propylbenzene	PRPBZ	ND	ug/L		0.500	10/16/2009	JC	
		2-Chlorotoluene	2CLTOL	ND	ug/L		0.500	10/16/2009	JC	
		1,2,3-Trichlorobenzene	123TCB	ND	ug/L		0.500	10/16/2009	JC	
		1,2,4-Trichlorobenzene	124TCB	ND	ug/L		0.500	10/16/2009	JC	
		1,2,4-Trimethylbenzene	124TMB	ND	ug/L		0.500	10/16/2009	JC	
		1,2-Dichlorobenzene	12DCB	ND	ug/L		0.500	10/16/2009	JC	
		1,3,5-Trimethylbenzene	135TMB	ND	ug/L		0.500	10/16/2009	JC	
		1,3-Dichlorobenzene	13DCB	ND	ug/L		0.500	10/16/2009	JC	
		1,4-Dichlorobenzene	14DCB	ND	ug/L		0.500	10/16/2009	JC	
		4-Chlorotoluene	4CLTOL	ND	ug/L		0.500	10/16/2009	JC	
		4-Isopropyltoluene	4IPTOL	ND	ug/L		0.500	10/16/2009	JC	
		cis-1,3-Dichloropropene	c13DCP	ND	ug/L		0.500	10/16/2009	JC	
		1,2-Dibromo-3-chloropropane	DBCP	ND	ug/L		0.500	10/16/2009	JC	
		Hexachlorobutadiene	HCIBut	ND	ug/L		0.500	10/16/2009	JC	
		Naphthalene	NAP	ND	ug/L		0.500	10/16/2009	JC	
		n-Butylbenzene	nBBENZ	ND	ug/L		0.500	10/16/2009	JC	
		sec-Butylbenzene	sBBENZ	ND	ug/L		0.500	10/16/2009	JC	
		tert-Butylbenzene	tBBENZ	ND	ug/L		0.500	10/16/2009	JC	
		Methyl tert-butyl ether	MTBE	ND	ug/L		0.200	10/16/2009	JC	
		Total THMs	TTHMs	TR	ug/L		0.500	10/16/2009	JC	
		Total Xylenes (m,p,&o)	TOTALX	ND	ug/L		0.500	10/16/2009	JC	
		Ethyl tert-butyl ether	ETBE	ND	ug/L		1.000	10/16/2009	JC	
		tert-amyl methyl ether	TAME	ND	ug/L		1.000	10/16/2009	JC	
		Diisopropyl ether	DIPE	ND	ug/L		1.000	10/16/2009	JC	
		bis (2-chloroethyl) ether	B2CLEE	ND	ug/L		5.000	10/16/2009	JC	
		Methyl Isobutyl Ketone (MIBK)	MIBK	ND	ug/L		5.000	10/16/2009	JC	
		Methyl Ethyl Ketone (MEK)	MEK	ND	ug/L		5.000	10/16/2009	JC	

Orange County Water District Main Laboratory

- CERTIFICATE OF ANALYSIS -

Lab#: 09100295-02
Sample ID: FM-1A/1
Sample Matrix: WATER
Sample Group ID: 09100295
Monitoring Program: FBVOC

Collect Date: 10/12/2009
Collect Time: 10:00
Collect By: BLR

Field Comments:

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Lab Comments:

Flag Definitions

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Lab#	Analytical Method	Test Name	Test ID	Result	Units	Flag	RDL	Analysis Date	By	Prep Date
524.2		tert-butyl alcohol	TBA	ND	ug/L		2.000	10/16/2009	JC	
		Nitrobenzene	NBENZ	ND	ug/L		5.000	10/16/2009	JC	
		Total 1,3-Dichloropropene	x13DCP	ND	ug/L		0.500	10/16/2009	JC	
		Carbon Disulfide	CS2	ND	ug/L		0.500	10/16/2009	JC	
		Acetone	ACETNE	ND	ug/L		10.000	10/16/2009	JC	
		2- Hexanone (MnBK)	MBK	ND	ug/L		10.000	10/16/2009	JC	
		Acrolein	ACROLN	ND	ug/L		10.000	10/16/2009	JC	
		Acrylonitrile	ACRYLO	ND	ug/L		10.000	10/16/2009	JC	
		Vinyl Acetate	AAVE	ND	ug/L		10.000	10/16/2009	JC	

APPENDIX N

Laboratory Sample Analysis and Data Flowchart

ORANGE COUNTY WATER DISTRICT

Laboratory Sample Analysis and Data Flow Chart

