

State of California Water Resources Control Board

Quality Management Plan

Policy Guidance

Version 1.0

October 1, 2010

I. Approval Page

Document Title: Quality Management Plan - Policy Guidance

Document Control Number: QMP - 001

Revision History

Version number	Effective Date	Changes made
1.0		First version of document

Approval:

For the State and Regional Water Quality Control Boards

_____ Date _____
William Ray
State Water Resources Control Board Quality Assurance Officer

_____ Date _____
Karen Larsen, acting
Director, Office of Information Management and Analysis

_____ Date _____
Tom Howard
Executive Director

For USEPA Region 9

_____ Date _____
Eugenia McNaughton, Ph.D.
Manager, Quality Assurance Unit

_____ Date _____
Alexis Strauss
Water Division Director

II. Table of Contents

I.	Approval Page.....	ii
II.	Table of Contents.....	iv
III.	Vision Statement.....	6
	A. State and Regional Board Quality Assurance Goals and Policies	7
	1. Quality Assurance Basic Goals.....	8
	2. Quality Assurance Policy.....	8
	B. Guiding Principles	10
IV.	Organization Responsibilities	10
	A. Water Board Responsibilities Requiring Incorporation of Quality Assurance Practices .	10
	B. State and Regional Water Boards Programs/Projects Covered by this Quality Management Plan.....	12
	C. The Quality Assurance Roundtable	14
	D. Roles and Responsibilities	15
	E. Personnel Qualifications and Training.....	19
V.	Quality Assurance Program Components.....	19
	A. Planning	19
	1. The Graded Approach.....	19
	2. Types of Planning Documents	20
	3. Quality Assurance Documentation Requirements	23
	B. Implementation	24
	1. Procurement	25
	2. Methods.....	25
	3. Documentation and Record Keeping	26
	4. Records Management.....	27
	5. Information Management.....	27
	6. Databases	28
	C. Oversight.....	29
	1. Management System Reviews	30
	2. Technical System Audits	30
	3. Data Review	31
	4. Oversight Record Keeping.....	31
VI.	Quality Improvement Process.....	31
	A. Project-specific problem identification Reports	31
	B. Internal Quality Assurance Reports	31
	C. Annual Quality Assurance Report to US EPA	32
VII.	APPENDICES	33
	A. Board Quality Assurance Training Agenda.....	33
	B. List of Current Quality Assurance Staff, State Board Program Representatives, and Regional Board Quality Assurance Lead Persons	33
	C. Current SWAMP Quality Assurance Program Plan	33
	D. QA Project Plan Development Tool Template	33
	E. EPA Guidance on Assessing Quality Systems EPA/QA/G-3 March 2003	33

F. EPA Guidance on Technical Audits & Related Assessments for Environmental Data
Operations EPA/QA/G-7 January 2000, re-issued May 2006 33
G. EPA Manual 5360 A1 May 2000..... 34

TABLES AND FIGURES

Table 1. State and Regional Water Board Quality Assurance Responsibilities 16
Table 2. QA Planning Document Life Cycle..... 20
Table 3 State and Regional Water Board Databases 28

Figure 1 Map of California Regional Water Boards..... 11

III. Vision Statement

This quality management plan has a single purpose. It provides a framework to guide the acquisition of environmental data that is credible and achievable. The setting is regulatory. The data are those collected by or for the California State and Regional Water Boards.

California's approach to protecting water quality is unique in the United States. In 1949, the California legislature created a system for protecting water quality with a state and nine Regional Water Boards. In 1967, the legislature combined the system of allocating water rights with the protection of water quality and placed both functions in the hands of the State Water Resources Control Board. The State Water Board is responsible for establishing regulations and policies affecting the total interest of the state. The Regional Water Boards are responsible for planning, permitting, and enforcement within their regions. The National Pollutant Discharge Elimination System, created through the Clean Water Act (1972), became a state and regional board responsibility. Although the Regional Water Boards are largely autonomous, the state-regional board system is integrated.

Regulations adopted by the Regional Water Boards must be submitted to the State Water Board for approval; permitting and enforcement decisions are subject to appeal to the State Water Board. Oversight of quality assurance and other statewide concerns presents a special challenge to this "ten board" system.

Quality assurance programs in this or any regulatory setting face challenges which often they can't overcome. They must compete with priorities of major programs for adequate staffing and funding for contractual assistance. Requests for strengthening quality assurance oversight often are met with the attitude: "We don't need more." That perception springs from another: "We contract with experts and rely on their expertise to assure us of high quality data."

Indeed, those perceptions probably do reflect the high quality of data that are developed for many state and federal sponsored projects. However, the large number of projects put in place year after year, and the complexity of many, demand that more bases be covered. State and federal agencies are ultimately responsible for the integrity of the projects they support. The data produced often become the foundation for new or modified environmental regulations.

The key to a successful quality management plan as envisioned here is "partnership." The partners will be the nine Regional Water Quality Control Boards, the State Water Resources Control Board (including the components-Office of Information Management and Analysis; Division of Water Quality, Division of Financial Assistance, and the Division of Water Rights), and the US EPA.

Normally, US EPA would not be considered a partner because this plan is produced by the State Water Board for review and acceptance by US EPA. That relationship will not change. However, the continuing participation by US EPA Region 9 will be mutually beneficial, and will enhance the quality of the plan and its implementation.

The partners will be brought together in a regularly scheduled Roundtable. The chair responsibility will rotate among the members. Equality among members will enhance their recognition of the importance of the program and their contribution to it.

Collectively Roundtable members will provide a comprehensive list of all data collection and analysis work that must bear the scrutiny of quality assurance planning and review. All of this information will be entered into a computer - based program, and updated when required. This data bank will provide for the first time a basis for a frank discussion on the scope and quality of existing quality assurance oversight at the State and Regional Water Boards. It will provide for the development a more robust quality assurance program over a several year period.

It also will promote discussion as to what processes are in place to assure data quality that could serve as acceptable alternatives to direct state oversight reviews. For example, data developed with state or federal funds and published in peer reviewed journals could be accepted as meeting quality assurance standards.

This Quality Management Plan outlines the pathway to integrate quality assurance principles into all data collection, assessment and analytical work of the State and Regional Water Boards. Full implementation of this plan will provide management with the secure foundation needed to make sound environmental decisions.

A. *State and Regional Board Quality Assurance Goals and Policies*

State and Regional Boards rely on its own environmental measurements and those collected by other agencies, contractors and grant recipients, and regulated parties to make decisions affecting public health and the environment. In response to both US EPA requirements, and directives from Cal/EPA, the Legislature, and the public the Boards established the Board-Wide Quality System creating a structured Quality System to ensure that data of known quality are generated by and for the State and Regional Boards. The responsibility to implement the system rests with all State and Regional Board staff and managers involved in data collection activities. Oversight responsibilities for developing and overseeing the system reside with the Quality Assurance Program. Having an effective Quality System in place provides decision makers the necessary knowledge and confidence to make the critical decisions for protecting public health and the environment. This Quality System, documented in this Quality Management Plan, describes the management and technical activities necessary to plan, implement, assess and ensure the effectiveness of quality assurance and quality control operations applied to the data collection programs in the State and Regional Boards. It further defines the roles, responsibilities and authorities for implementing this quality system.

Effective implementation of the Board-Wide Quality System leads to several benefits, including:

- *Scientific Data Integrity* – State and Regional Boards will produce data of known and documented quality.

- *Reduced or Justifiable Resource Expenditures* - Resource expenditures can be reduced as information needs are more closely matched to the information collection activities. For example, through systematic planning, only the appropriate type, amount, and quality of data will be collected to satisfy State or Regional Board requirements.
- *Effective Management of Internal and External Activities* - The quality system provides documentation of activities and oversight for evaluation purposes. This reduces the potential for waste, fraud, and abuse.
- *Reliable and Defensible Decisions* - When the quality of data is known, it is possible to determine if the data can be used for a specific decision. This reduces the likelihood of challenges to regulations, enforcement actions; permit appeals, etc., resulting from the use of data of uncertain quality.

State and Regional Board quality assurance policies and activities regarding environmental data are consistent with the requirements of US EPA's Quality Management System requirements and in keeping with the directives placed on the State and Regional Boards. Basic goals and specific policies are summarized below.

1. Quality Assurance Basic Goals

- Environmental data used in decision-making are of known quality.
- Only necessary data are collected.
- Data collected are of the type and quality needed and claimed, and meet established objectives.

2. Quality Assurance Policy

State Board and Regional Board management considers the reliability and quality of environmental monitoring data to be of paramount importance and issue the following policy.

"The State Board will commit, to the best of its ability, the time and resources necessary to operate a Quality Assurance Program that consistently produces quality environmental measurement data (chemical, biological and physical measurements). The goal is to ensure that all environmental data will be of known quality and therefore, scientifically sound and legally defensible. The State Board also expects all personnel involved with environmental measurements including field, laboratory and data processing to assume responsibility to ensure the quality of the data.

State Board policy also requires that all environmental measurement activities performed by, or for, the State Board and Regional Water Quality Control Boards will follow procedures and guidelines outlined in this Quality Management Plan. The State Board and Regional Water Quality Control Boards will incorporate these quality assurance activities as they relate to responsibilities set forth in the Federal Clean Water Act and California's Porter-Cologne Water Quality Control Act."

To this end up-front quality assurance planning occurs during the planning of the data collecting activity. Before any work is done, data needs, data quality objectives, and quality assurance/quality control (QA/QC) procedures are documented in a Quality Assurance Project Plan, Sampling and Analysis Plan, or other planning document. Each document is reviewed and approved by the designated State or Regional Board Quality Assurance Program. Up-front planning is critical in programs where standard procedures are not defined, or compounds of interest and action levels are not specified by regulations.

Quality assurance/quality control procedures are implemented during the data collection process. Data are acquired according to the methods and procedures documented in the approved quality assurance Planning document. The impact of field and laboratory techniques and sampling and analysis conditions on data quality are determined using field and laboratory quality control samples and periodic audits. Oversight and follow-up corrective action are designed to prevent improper procedures from becoming institutionalized.

Quality assurance review assesses data quality and usability, based on the quality assurance/quality control information gathered during data collection. Data validation is used to document and communicate to the data user data quality.

B. Guiding Principles

This document presents policy guidance for the State and Regional Water Boards quality assurance program. As such, it meets US EPA expectations for a state quality management plan: “A Quality Management Plan documents how an organization structures its quality system and describes its quality policies and procedures, criteria for and areas of application, and roles, responsibilities and authorities. It also describes an organization’s policies and procedures for implementing and assessing the effectiveness of the quality system (“EPA Requirements for Quality Management Plans” “EPA/240/B-01/002, March 2001).”

The intended use of environmental data and the level of data quality necessary to support decisions made using that data will be established by State and Regional Water Board staff prior to the design and initiation of all data collection activities.

All State and Regional Water Board programs generating, using, or receiving environmental data will adhere to the policies outlined in this Quality Management Plan.

All data generated by or for the State and Regional Water Boards will be of known and documented quality. These data include those produced by other agencies, contractors, grant recipients and regulated parties.

Adequate resources and staff will be provided by the State and the Regional Water Boards to meet the quality assurance and quality control requirements of the Quality Management Plan.

IV. Organization Responsibilities

PURPOSE: To document management responsibilities for the quality of the data and analysis collected and used by organizations within the State and Regional Water Boards.

A. Water Board Responsibilities Requiring Incorporation of Quality Assurance Practices

The State Water Board develops statewide water quality standards, has general and oversight responsibilities for the Nation Pollution Discharge Elimination System (NPDES) and State discharge permits, long-term and special environmental quality studies, water rights and budgets. Regional Water Boards are defined by watershed boundaries (see Figure 1.).

Guided by State Water Board-developed water quality standards, each Regional Board is responsible for issuing and enforcing NPDES and State discharge permits, undertaking long-term and special environmental quality studies, and providing regional oversight of certain state programs, such as the Underground Storage Tank (UST) program.

California Regional Water Quality Control Boards

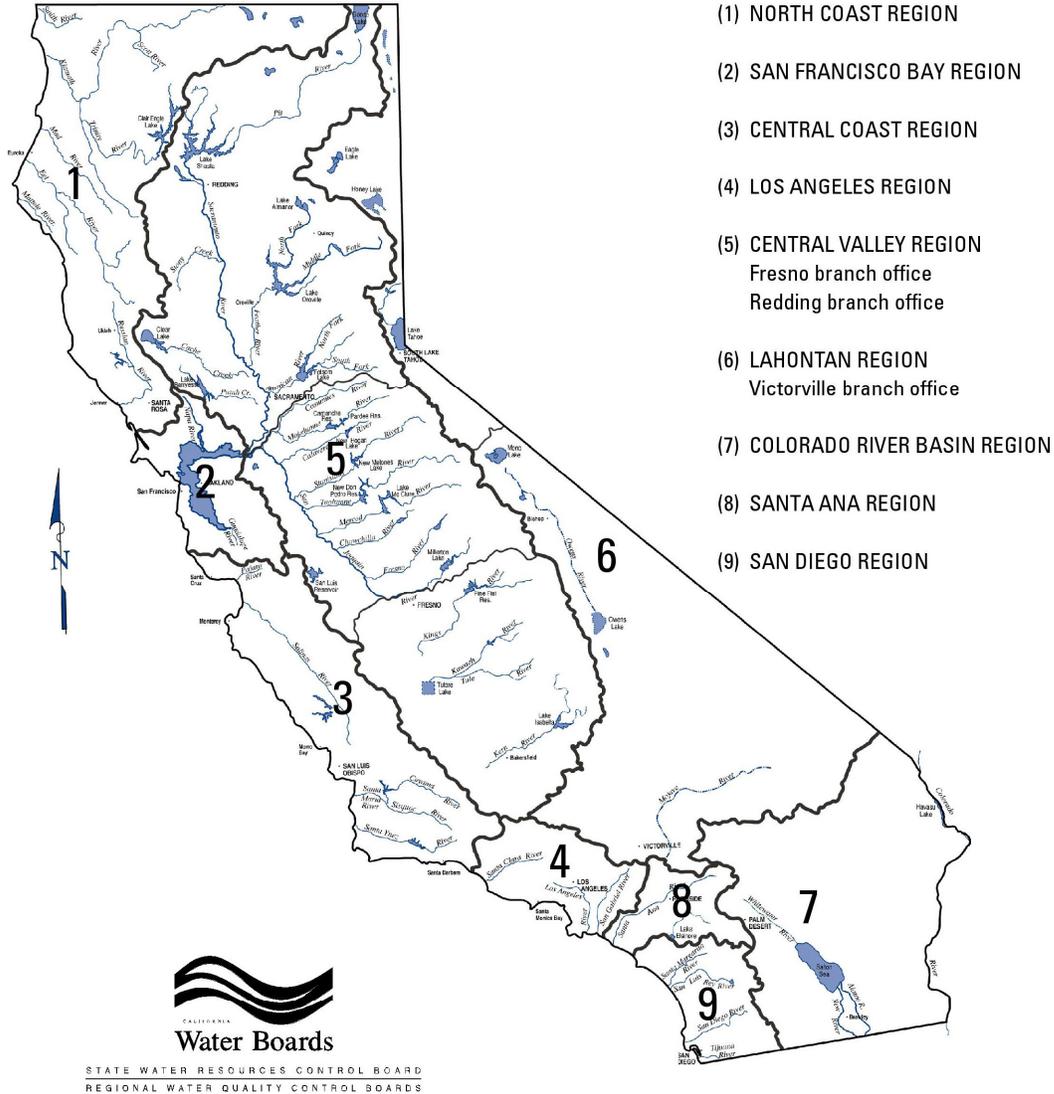


Figure 1 Map of California Regional Water Boards

B. State and Regional Water Boards Programs/Projects Covered by this Quality Management Plan

The Quality Management Plan (Management Plan) applies to programs within three State Water Board Divisions and the nine Regional Water Boards. All data collection and analysis activities of the following programs and activities will be guided by the principles of this Quality Management Plan.

- Division of Water Quality:
 - Water Quality Planning
 - National Pollution Discharge Elimination System
 - Ground Water Quality
 - Underground Storage Tank Program
 - Non Point Source Program

- Office of Information Management and Analysis
 - Surface Water Ambient Monitoring Program (SWAMP)
 - Board Quality Assurance Program
 - California Integrated Water Quality System (CIWQS)

- Division of Water Rights
 - Permitting
 - Enforcement
 - Hearings and Special Projects

- Division of Financial Assistance
 - Loans and Grants
 - Project Development I, II, III
 - Cleanup and Administration (Superfund)

- Regional Water Boards
 - North Coast Region (1)
 - San Francisco Bay Region (2)
 - Central Coast Region (3)
 - Los Angeles Region (4)
 - Central Valley Region (5) including Fresno and Redding office
 - Lahontan Region (6) including Victorville office
 - Colorado River Basin Region (7)
 - Santa Ana Region (8)
 - San Diego Region (9)

Final authority and responsibility for the Quality Assurance Program resides with the Executive Director of the State Water Board and the Executive Officers and the Assistant Executive Officers of the Regional Water Boards. With respect to implementation, responsibilities lie with the State Water Board Quality Assurance Program, State Water Board Program Quality

Assurance Representatives, Regional Water Board Quality Assurance Leads and the Quality Assurance Roundtable. These are described below. All Roles and Responsibilities are listed in Table 1.

The Quality Assurance Program is the point of contact for Quality Assurance activities within the State Water Board. The Quality Assurance Program and Board Quality Assurance Officer are members of the Quality Assurance Roundtable.

Each program within the State Water Board Divisions that generates data or funds environmental measurement projects has a designated Quality Assurance Representative. Quality Assurance Representatives are members of the Quality Assurance Roundtable.

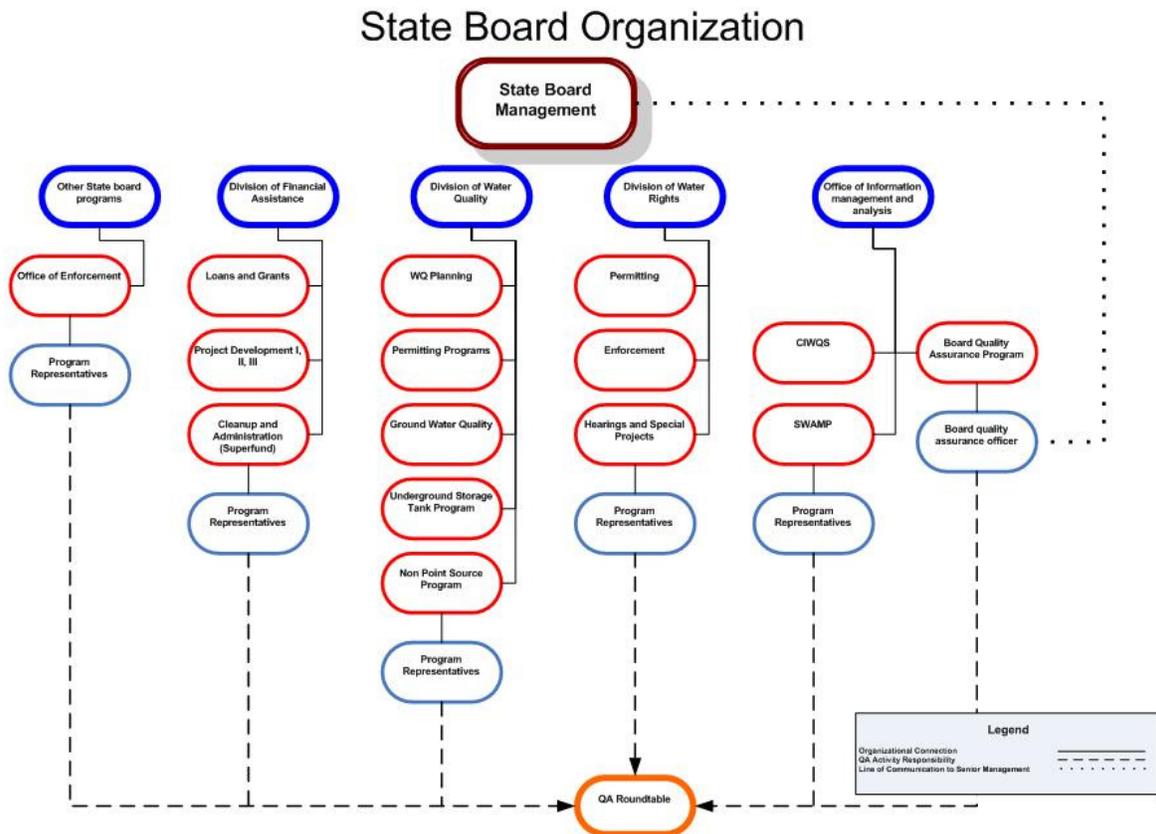


Figure 2 Simplified State Board Organization Chart

The Regional Water Boards have designated Quality Assurance Leads. The Regional Water Board Lead may be assisted by other personnel for specific program requirements. For example, the SWAMP has a Coordinator at each Regional Water Board. Quality Assurance Leads are members of the Quality Assurance Roundtable.

Typical Regional Board Organizational Chart

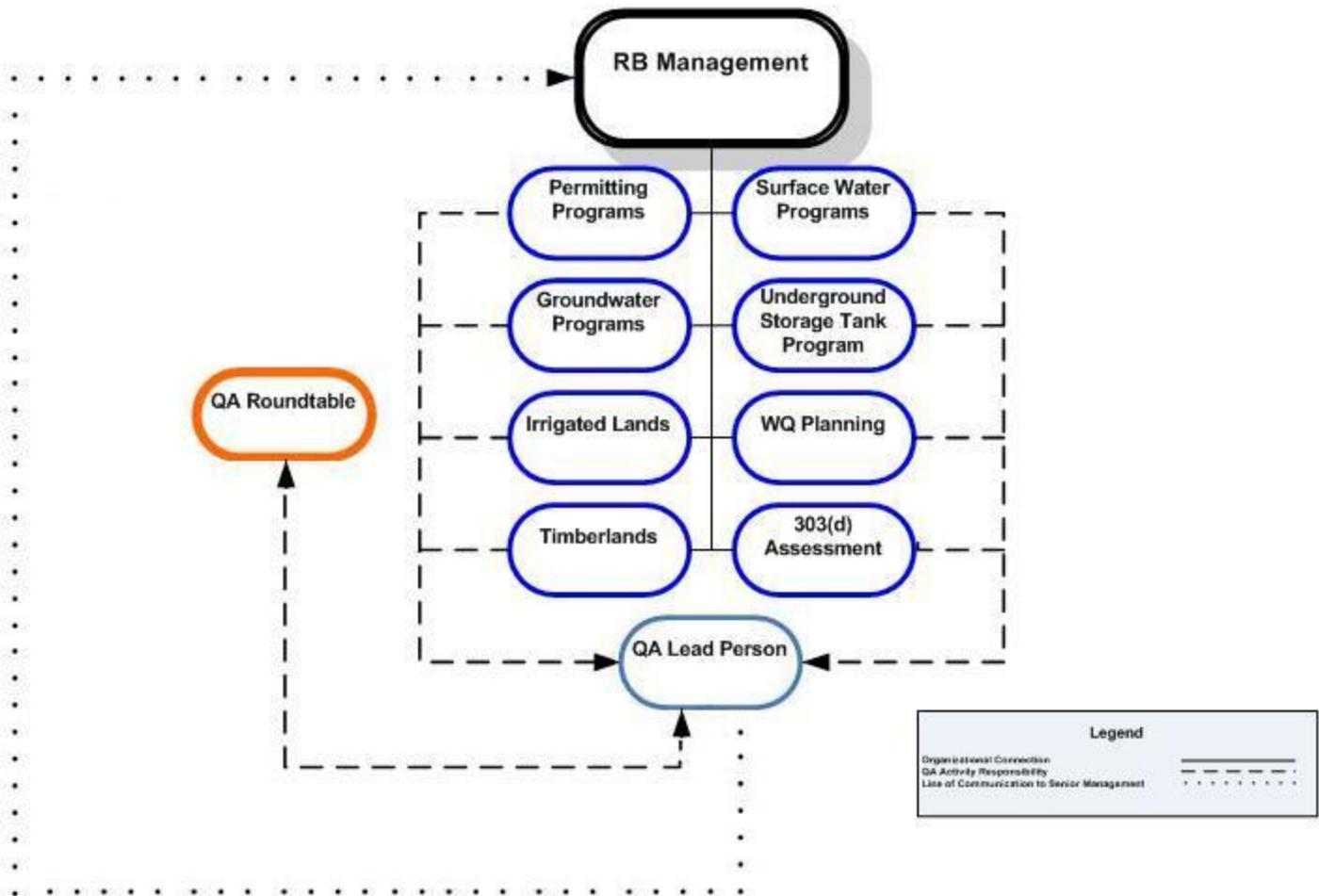


Figure 3 Simplified Regional Board Organization Chart

The US EPA Region 9 Quality Assurance Unit Manager (or designee) participates in the Quality Assurance Roundtable as well as representatives of US EPA Region 9 programs.

C. The Quality Assurance Roundtable

The Quality Assurance Roundtable is established to ensure that an appropriate level of planning for data acquisition and analysis is applied consistently throughout the State and Regional Water Boards. To meet this, the Roundtable will be a focus of information sharing, mutual sharing of

issues and solutions. The Quality Assurance Roundtable may discuss issues of general interest such as reviews of planning documents, training, contractor support, and laboratory performance. Programs and Regional Water Boards will provide the Roundtable with a compilation of all the activities for which their programs are responsible that require quality assurance planning.

Meetings are held once a month in person or via conference call. The responsibility for chairing the meetings will be the Board Quality Assurance Officer (or person designated by the Board Quality Assurance Officer). The hosting of the meeting, and taking and distributing minutes will rotate among the participants.

QA Roundtable Structure

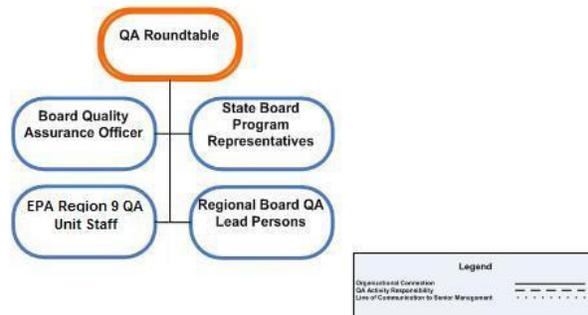


Figure 4 QA Roundtable Structure

D. Roles and Responsibilities

Roles and responsibilities of State and Regional Water Board management and Quality Assurance staff are listed in Table 1.

Table 1. State and Regional Water Board Quality Assurance Responsibilities

State and Regional Board Quality Assurance Responsibilities	State or Regional Board Program Manager	Quality Assurance Program and Board Quality Assurance Officer	Regional Board Quality Assurance Lead	State Board Program Quality Assurance Representative
<i>POLICY</i>				
Ensures that there are sufficient resources to implement and evaluate the policy	X			
Sets State and Regional Water Board Quality Assurance policy to be consistent with overall State Water Board Quality requirements	X			
Ensures that all applicable programs and projects comply fully with the requirements of the Quality Management Plan	X		X	X
Ensures that quality assurance performance standards are in place	X			
Ensures that other organizations generating environmental data under agreements with the State or Regional Water Board comply with requirements in the Quality Management Plan	X	X	X	X
Provides information and training about quality assurance and quality control concepts and practices		X	X	X
Participates in the Quality Assurance Roundtable		X	X	X

State and Regional Board Quality Assurance Responsibilities	State or Regional Board Program Manager	Quality Assurance Program and Board Quality Assurance Officer	Regional Board Quality Assurance Lead	State Board Program Quality Assurance Representative
<i>QUALITY ASSURANCE DOCUMENT REVIEW</i>				
Reviews grant proposals to assess the need for quality assurance requirements		X	X	X
Reviews and approves project level QA planning documents		X	X	X
Prepares annual up-dates of the State or Regional Water Board Quality Management Plan or Quality Assurance Program Plan and revises the plans every 5 years		X	X	X
Prepares an annual Regional Water Board and Program Quality Assurance Report	X		X	X
Prepares an annual Quality Assurance Report, including all State and Regional Water Board accomplishments, and submits to US EPA Region 9 Quality Assurance Program		X		
<i>QUALITY ASSURANCE TECHNICAL REVIEW</i>				

State and Regional Board Quality Assurance Responsibilities	State or Regional Board Program Manager	Quality Assurance Program and Board Quality Assurance Officer	Regional Board Quality Assurance Lead	State Board Program Quality Assurance Representative
Maintains a database tracking the status of Quality Assurance documents		X	X	X
Performs data validation and review for Programs and projects		X	X	X
Performs Management System Reviews of Regional Water Boards and Programs		X		
Performs technical systems audits of State and Regional Water Board environmental data collection activities		X	X	X
Coordinates with EPA to ensure consistency with the requirements of the Clean Water Act (CWA), e.g. Alternate Test Procedure applications and approvals.*		X	X	X
Manages the Discharge Monitoring Report-Quality Assurance program (DMR-QA)		X		
Manages contracts for quality assurance related services, such as statistical support and procurement of performance evaluation samples for statewide laboratory contracts		X		

*National Pollution Discharge Elimination System Program only

E. Personnel Qualifications and Training

Quality Assurance staff must be familiar with and understand the principles described in this Quality Management Plan and have a working knowledge of US EPA, State and Regional Water Board quality assurance guidance documents. The Quality Assurance Program, Representatives and Leads will develop a training curriculum in relevant topics for State and Regional Board staff. If there are specific requirements that must be met by organizations providing data to the State or Regional Board, focused training classes may be prepared or a quality assurance section added to other training on relevant subjects. In addition, the Quality Assurance Program, Program Representatives and Regional Leads may receive training from US EPA or contractors to facilitate their role in implementing the State and Regional Water Board Quality Program (Appendix A).

V. Quality Assurance Program Components

The three major quality assurance program components are Planning, Implementation and Oversight.

A. Planning

PURPOSE: To document how individual data operations are planned within the organization to ensure that data or information collected are of the needed and expected quality for their desired use.

1. The Graded Approach

Planning documents must be appropriate to the size and complexity of the program or project and to the intended use of the data. This graded approach allows for the development of quality assurance planning documents that reflect data quality objectives upon which program decisions are made. Data collection activities may be long-term, short-term, seasonal, or variable. Field and laboratory methods chosen are appropriate to program data quality objectives. The level of planning documentation reflects these specific requirements.

Any planning documents that include the use of existing data or data from secondary sources must specify the criteria used in determining the suitability of the data for their current use. The data are analyzed, evaluated and assessed against their intended use and quality performance criteria as described in the quality assurance planning document.

2. Types of Planning Documents

a) Planning Document Basics

Regardless of the type of planning document format chosen, all quality assurance planning documents contain the following elements.

- ◆ Identify sponsoring organization and personnel
- ◆ Project goal, objectives, and schedule
- ◆ Link data to project goal
- ◆ Type, quality, and quantity of data needed
- ◆ Acceptance or performance criteria
- ◆ Sampling plan and QA/QC requirements
- ◆ How the data will be analyzed

There are four types of planning documents: Quality Management Plans, Quality Assurance Program Plans (Program Plans), Quality Assurance Project Plans (Project Plans) and Sampling and Analysis Plans. Examples can be found in the Appendices B and C. Table 2 identifies responsibilities for each phase of the life cycle of four types of planning documents.

Table 2. QA Planning Document Life Cycle

<i>DOCUMENT</i>	<i>DEVELOP</i>	<i>APPROVE</i>	<i>IMPLEMENT</i>	<i>REVIEW AND UPDATE</i>	<i>DOCUMENT SOURCE</i>
Quality Management Plan (QMP)	State Water Board QA Office	State Water Board Executive Director and US EPA Region 9	State Board Program Representatives and Regional Board QA Leads	Review and update yearly Revise every 5 years	EPA Requirements for Quality Management Plans, QA-R2
Quality Assurance Program Plan (QAPrP)	Program	Program Management for applicable Program, State Water Board Quality Assurance Program, and US EPA Region 9	Program staff	Review yearly Revise every 5 years	EPA REGION 9 REQUIREMENTS FOR QUALITY ASSURANCE PROGRAM PLANS R9QA/03.1

State and Regional Board Quality Management Plan

Version 1.0
October 1, 2010

<i>DOCUMENT</i>	<i>DEVELOP</i>	<i>APPROVE</i>	<i>IMPLEMENT</i>	<i>REVIEW AND UPDATE</i>	<i>DOCUMENT SOURCE</i>
Quality Assurance Project Plan (QAPjP)	Program or Regional Board, grantee, contractor, other agencies	<p>For Program or Regional Board QAPjPs - Applicable Program management, Regional Board QA Lead person or State Board Program Representative (may use Board Quality Assurance Officer).</p> <p>For Grantees, Contractors and other Agencies - Grantee, Contractor, or Agency management and quality assurance staff plus applicable QA Lead Person or Program Representative (may use Board Quality Assurance Officer)</p>	Applicable Program, Regional Board, Grantee, Contractor, or Agency Project staff	Review yearly Revise every 3 years	EPA Requirements for Quality Assurance Project Plans, QA-R5

DOCUMENT	DEVELOP	APPROVE	IMPLEMENT	REVIEW AND UPDATE	DOCUMENT SOURCE
Sampling and Analysis Plans, Monitoring and Assessment Plans, and other types of planning documents	Same as for Quality Assurance Project Plans	Same as for Quality Assurance Project Plans	Same as for Quality Assurance Project Plans	For projects of limited duration. Can be revised if necessary owing to changes in project conditions	No specific document format required, however, the planning document must provide complete descriptions and contents answering the bulleted items found in section V.A.2.(a) <i>Planning Document Basics</i>

b) Quality Management Plan

This Quality Management Plan describes the State and Regional Water Boards’ quality assurance management policies and procedures. The State Water Board Quality Management Plan must be approved by US EPA.

c) Quality Assurance Program Plans (Program Plans)

A Program Plan defines the data quality objectives, decisions or goals, and measurement quality objectives that apply to all data generated under the program. Program Plans are prepared using the guidance "EPA Region 9 Requirements for Quality Assurance Program Plans (R9QA/03.1)." It may also describe the sampling, custody, sampling handling procedures, requirements for data review and validation required by the program. Program Plans define policies concerning when additional planning documents would be required and what information they should contain. Within the State Water Board, the SWAMP has a Program Plan that describes the quality elements associated with its data collection activities. Other State Water Board programs that collect ambient surface water data may develop a Program Plan using appropriate elements of the SWAMP (Appendix B).

d) Quality Assurance Project Plans (Project Plans)

The planning of project-specific data collection activities is documented in Project Plans. Board staff, contractors, other state or local agencies working as partners with the State or Regional Water Board, grantees or a contractor working for any of these organizations are required to prepare a Project Plan for any project generating or using environmental data. This includes use of data from secondary sources, modeling activities, biological monitoring, and physical and

chemical measurements. A Project Plan is a detailed record of the scope and objectives of data collection activities and the procedures and types of quality assurance/quality controls required to meet project objectives (see Appendix C).

EPA provides requirements for Quality Assurance Project Plans in "EPA Requirements for Quality Assurance Project Plans" (QA/R-5), EPA/240/B-01/003, March 2001. Guidance can be found in "EPA Guidance for Quality Assurance Project Plans" (QA-G5), EPA/240/R-02/009, December 2002 (http://www.epa.gov/quality/qa_docs.html). Other formats or guidance, which have been submitted and approved by the Quality Assurance Program, may be used as appropriate.

e) Sampling and Analysis Plans

For one-time sampling events, Sampling and Analysis Plans, rather than Project Plans, are prepared. Sampling and Analysis Plans must address decisions to be made with the data, define data quality objectives or regulatory criteria, and describe sampling, analysis, and data review processes. Guidance can be found in US EPA Region 9 guidance document "Sampling and Analysis Plan Guidance and Template, Version 2, Private Analytical Services Used," R9QA/002.1 April, 2000 (<http://www.epa.gov/region09/qa/projplans.html>).

f) Other Planning Documents

Consistent with the use of a graded approach for the development of planning documents, programs may develop specialized templates to cover unique data collection activities, such as inspections, emergency response, samples of opportunity. Examples can be found on the US EPA Region 9 website (http://www.epa.gov/region09/qa_docs.html).

3. Quality Assurance Documentation Requirements

a) State and Regional Water Boards

State or Regional Water Board staff must conduct their data collection activities under an approved Quality Assurance planning document. In all cases, the decision as to what documentation is needed will follow a graded approach, will be consistent with program or project objectives, and will be sufficient to generate data of known and appropriate quality.

Approved Quality Management Plans, Program Plans and Project Plans may remain in effect for 5 years, but should be reviewed annually for minor changes, such as changes in personnel. Sampling and Analysis Plans on the other hand, apply only to a one-time event.

Quality assurance planning documents are reviewed and approved by appropriate Quality Assurance Program staff (Table 2). For example, the US EPA Quality Assurance Office reviews

and approves the State Water Board Quality Management Plan. US EPA and the State Quality Assurance Program review and approve State Water Board Program Plans. Regional Water Board Quality planning document are reviewed and approved by the State Water Board Quality Assurance Program. The State Water Board Program Quality Assurance Representatives or Regional Water Board Quality Assurance Leads review and approve Project Plans and Sampling and Analysis Plans.

b) Contracts

State or Regional Water Board contracts which include environmental measurements or use of environmental data should be reviewed either by the State Water Board Quality Assurance Program, State Water Board Representative or Regional Water Board Lead.

c) Grants or Assistance Agreements

The State Water Board intends that grant-funded data collection and analysis activities are compatible with those described in the SWAMP Program Plan. The SWAMP Program Plan is in Appendix C and at www.waterboards.ca.gov/SWAMP.

Grants that include data collection activities or use secondary data must contain provision for the preparation of appropriate planning documents and should be reviewed by State Water Board Representative and the Quality Assurance Program.

The use of a graded approach extends to grantees. The nature and size of the project, the size and expertise of the grantee organization, the grantee's quality assurance program, and the grantee's history in documenting data quality in previous work should be taken into account.

d) Interagency Agreements

If the State or Regional Water Boards enter into an agreement with other governmental agencies to collect environmental data, that agency must submit an appropriate planning document to be reviewed and approved by the appropriate Quality Assurance staff before measurement activities begin.

B. Implementation

PURPOSE: To document the procedures for purchased items and services that directly affect the quality of environmental programs; to document the appropriate controls for quality-related documents and records determined to be important to the mission of the organization; and to ensure that computer hardware and software satisfy the organization's requirements.

1. Procurement

a) Procurement of Equipment and Materials

Purchases of goods and services made by State and Regional Board are in made in accordance with the rules for purchasing found in the State Water Board Contract Information Manual (available via the Board's intranet at http://waternet/das/html/bm_con_manual.htm) and applicable purchasing rules set forth by the Department of General Services.

b) Procurement of Services Involving Environmental Measurements

Services involving environmental measurements may include sampling contracts, analytical services contracts, data validation contracts, emergency service contracts, and support for inspections, modeling, or other activities. A Program must identify its requirements and develop technical specifications, evaluation criteria, and certifications to meet them. These are documented on a standard contract form, with attachments, which is reviewed and approved by the appropriate State or Regional Water Board Contract Manager.

Environmental services contracts must have quality assurance and quality control requirements integrated into the statement of work. Quality assurance requirements should be included in Requests for Proposal and/or Invitations for Bid. A State or Regional Water Board Quality Assurance staff person should be included on the review panel.

Once the contract is awarded, the State or Regional Water Board Contract Manager is responsible for ensuring that activities covered in the statement of work are implemented. The prime contractor maintains responsibility for all subcontracted work.

2. Methods

a) Sampling

Sampling methods, sample preservation, and sample storage used by the State and Regional Water Boards and their contractors follow accepted procedures described in US EPA guidance, *Standard Methods for the Examination of Water and Wastewater* or other recognized sources wherever possible. Protocols developed internally are written as standard operating procedures (see Methods, Section ii.c). Sampling methods are described or included in Program Plans, Project Plans or Sampling and Analysis Plans.

b) Analytical

State and Regional Water Board Programs that contract for laboratory analytical services include the National Pollution Discharge Elimination System [NPDES] Program, the Surface Water Ambient Monitoring Program [SWAMP], the Groundwater Ambient Monitoring Assessment Program [GAMA], the Underground Storage Tank Program [UST], the Non-Point Source Program, special projects and Superfund. Analytical methods may be prescribed by program. NPDES Program permittees, for example, must use methods listed in the Clean Water Act (CFR Title 40 Part 136 and up-dates). If other methods are proposed, they must be referenced and documented. Method requirements are described in the quality assurance planning documents or permit.

c) Standard Operating Procedures

A standard operating procedure is a set of written instructions that document a routine or repetitive activity. The development and use of standard operating procedures are an integral part of a successful quality program. Guidance for preparing standard operating procedures can be found in “Guidance for the Preparation of Standard Operating Procedures (G-6)” EPA/600/B-07/004 April 2007 (http://www.epa.gov/quality/qa_docs.html). SWAMP has developed a series of standard operating procedures (<http://swamp.mpsl.mlml.calstate.edu/resources-and-downloads/standard-operating-procedures>) for environmental data collection that are available for use by other programs.

d) Guidance Documents

The State and Regional Water Boards may develop specific guidance when US EPA guidance is not available or appropriate. Guidance documents are assigned unique document control numbers. For reference, US EPA national and Region 9 guidance documents are available on the US EPA Region 9 Quality Assurance web page (<http://www.epa.gov/region09/qa/r9-qadocs.html>).

3. Documentation and Record Keeping

a) Records Tracking System

Quality Management Plan & Quality Assurance Program Plan Availability

The State Water Board Quality Management Plan and Program Plans are available on the web (<http://www.waterboards.ca.gov>).

Planning Document Database – Tracking System

When a planning document is received it is entered into a database. The fields to be used include:

- Document Identification Number
- Date document logged in
- Person approving the document

- Organization approving the document
- Type of planning document
- Full name of the document
- Comment Field
- Name of the Program for which the plan was prepared
- Entity responsible for the preparation
- Plan author
- Plan reviewer (or contractor)
- Version Number
- Date plan logged in
- Date review of the plan is due
- Date plan logged out
- Status of the planning document

Whenever it is reviewed and/or approved a notation of its status is made in the database. The information will be available for Quality Assurance Roundtable discussion.

4. Records Management

Planning Document Storage and Retention

Program and Project Plans and standard operating procedures are kept by the appropriate organization. The Program or Regional Water Board defines its requirements for the transmittal, distribution and retention of planning and guidance documents. These requirements should be documented in Program or Project Plans.

Program Plans and Project Plans should also describe requirements for storage and retention of hard copy information associated with data generated by project and sampling and analysis plans.

5. Information Management

a) Information Management Policies

Computer hardware and software purchase, development and maintenance are the responsibility of the State Water Board Office of Information Technology. This Office also maintains and manages internet and intranet capabilities. Each State and Regional Water Board Program is responsible for the implementation of policies relative to the electronic submission of data. For program or specific data submission requirements, the appropriate Program Plans or Project Plans should be consulted.

b) Purchase of Computer Hardware and Software

The purchase of computer hardware and software by the State and Regional Water Boards and their contractors must comply with the procedures found in Management Memo 01-10 California Software Management Policy (http://www.swrcb.ca.gov/water_laws/index.html). This policy is designed to ensure that the computer hardware and software meet program requirements and are consistent with State standards.

6. Databases

Databases used by the State and Regional Water Boards are either off-the-shelf software or programs developed for a specific application. If a commercial program is used, the organization will ensure that it is appropriate for its intended use. If a program is developed for a specific use, the organization using the program will fully validate and test the program to ensure that it meets the requirements of the user. These requirements will be described in work plans, statements of work, or other documents when the program is procured or developed.

It is State and Regional Water Board requirement that quality control data accompany environmental data. NPDES related data are stored in the California Integrated Water Quality System (CIWQS). This includes effluent, compliance and enforcement data. Surface water ambient monitoring data are stored in the SWAMP/ California Environmental Data Exchange Network (CEDEN) system. The SWAMP has developed standardized data formats for submittal of ambient water data, including physical, chemical, toxicological, and biological parameters. Groundwater data are stored in the GeoTracker database or in the Groundwater Ambient Monitoring and Assessment (GAMA) database. Each program has responsibility for quality control of data entry and corrections and will document all requirements in their Quality Assurance Program Plans, and will stipulate in their QAPrPs what elements must be included in any Quality Assurance Project Plans, or other planning documents the QAPrP requires of individual projects or activities.

All state-certified laboratories performing analysis for NPDES dischargers must participate in the US EPA Discharge Monitoring Report – Quality Assurance (DMR-QA) Study Program (<http://www.epa.gov/compliance/monitoring/programs/cwa/dmr/index.html>). The results are sent to the Quality Assurance Program.

Table 3 State and Regional Water Board Databases

	<i>CIWQS</i>	<i>GEO-TRACKER</i>	<i>SWAMP</i>	<i>CEDEN</i>	<i>STORET-WQX US EPA*</i>	<i>CA SWRCB WEBSITE</i>
<i>DATA SOURCE</i>						
NPDES	X					
Effluent	X					

	<i>CIWQS</i>	<i>GEO-TRACKER</i>	<i>SWAMP</i>	<i>CEDEN</i>	<i>STORET-WQX US EPA*</i>	<i>CA SWRCB WEBSITE</i>
Enforcement	X					
Compliance	X					
GAMA		X				
UST		X				
SWAMP			X	X	X	X
Grantees				X		X
Other Agencies				X		X

* STORET (Storage and Retrieval), US EPA’s repository for water quality data is changing to WQX (Water Quality Exchange) (<http://www.epa.gov/storet/wqx.html>)

a) Standards for Computer-Generated Data

Grants and contracts that transmit data to the State or Regional Water Boards must conform to State Water Board Office of Information Technology standards for data delivery format. Data generated via computer software, such as maps generated by ARC-GIS, must also meet Office of Information Technology standards. These standards may be found at the Board’s intranet site at <http://waternet/oit/html/policies.html>

b) Hardware Requirements

The CIWQS database is server-based and all standard State or Regional Water Board workstations are compatible with it.

c) Development of Software

Software applications developed within the Boards are usually limited in scope and are developed using existing software. Before such programs are used in wider applications, they must be tested to ensure that they will meet the requirements of the program or project to which they will be applied. The process includes development and verification of the application and preparation of a manual.

C. Oversight

PURPOSE: To document how the organization will determine the suitability and effectiveness of the performance of its environmental programs. Mechanisms must be in place to monitor the effectiveness and to measure the adequacy of the program.

Assessment of the quality of environmental data collection activities consists of four activities: ii) management system reviews, ii) technical system audits, iii) data review and iv) oversight record keeping.

1. Management System Reviews

The US EPA Region 9 Quality Assurance Office will conduct a management system review of the State Water Board Quality Assurance Program every three years. The Quality Assurance Program will review State Programs and Regional Water Boards every 4 years; three organizations will be evaluated each year. The results of these reviews will be included in the annual report to US EPA.

Management System Reviews evaluate whether an organization has an effective quality assurance program and whether it has the necessary resources and qualified individuals to generate data of known quality. These reviews evaluate staff understanding of quality assurance roles and responsibilities and knowledge of quality assurance practices and principles. These reviews also describe how the quality assurance program is being implemented.

Management system reviews will be conducted in accordance with the "Guidance for Preparing, Conducting, and Reporting the Results of Management Systems Reviews EPA/240/240/R-03/002, G-3," March 2003 (Appendix D).

The Quality Assurance Round Table will develop the management system review schedule for the year. Ideally, the reviews are conducted on-site, but desktop exercises and review self-evaluation reports may also provide relevant information.

2. Technical System Audits

The Program Representatives conduct technical system audits for State Water Board Programs or projects. Regional Leads conduct Regional Board technical system audits. Audit schedules reflect availability of resources and the level of decisions being made by the program generating the data.

Technical systems audits evaluate the data collection activities of a project or program. Documentation of data generation activities are reviewed to determine whether quality assurance planning documents are being implemented (see Appendix E). Schedules and procedures for technical system audits are specified in Program Plans.

State contracted laboratories may also be audited. These audits do not replace California Department of Public Health Environmental Laboratory Accreditation Program (ELAP) audits. The technical systems audit will focus on data being generated for a specific project or program.

Technical system audits reports describe when, how and by whom the audit was conducted, what specific procedures were reviewed and will include a summary of the findings and recommendations for corrective action. The audit report will be transmitted to appropriate project or management personnel so that corrective action can be initiated. Follow-up activities are project-specific.

3. Data Review

Program and project data should be reviewed at a level appropriate to their intended use at periodic intervals as described in the relevant planning document. Programs are encouraged to work with the Quality Assurance Roundtable to identify procedures for reviewing the data against QA/QC criteria to establish whether the data are suitable for the intended use.

4. Oversight Record Keeping

A record of results from quality assessments, such as Management System Reviews, Technical System Audits or data validation reports are retained by the auditor and the audited organization, and made available to the Quality Assurance Roundtable.

VI. Quality Improvement Process

PURPOSE: To document how the organization will improve the organization's quality system.

A. Project-specific problem identification Reports

When data quality problems are encountered during a project, they are identified by project staff and a report, which includes corrective actions taken, is submitted to the Quality Representative or Lead for review. Quality staff investigates the problem to determine whether it is specific or systemic. Training in investigative procedures, assessment, potential corrective actions, and reporting processes are included in the basic training program relative to this Quality Management Plan provided to all staff. The forum for discussing these reports is the Quality Assurance Roundtable.

B. Internal Quality Assurance Reports

Annual quality assurance reports are prepared by the Program Representative and Regional Water Board Leads and are submitted to the Quality Assurance Program. These reports include the following information:

- Personnel activities, including trainings, staff changes, organizational changes that affect quality assurance
- Current and projected resources available to perform quality assurance activities
- Number and category of planning documents reviewed and/or approved
- Number and category of guidance documents developed
- Number of category of audits performed
- Status of audit findings and corrective actions taken
- Data quality issues, findings, and corrective actions taken

C. Annual Quality Assurance Report to US EPA

This annual quality assurance report includes a compilation of quality assurance information from all the Program and Regional Water Board (see Sections A and B above); a summary of the QA Roundtable meetings, action items and actions taken; and any other relevant activities. The report should address the following topics: adequacy of personnel and financial resources to meet workload; training, including needs assessments and trainings provided; significant quality assurance management accomplishments, such as innovative practices, revisions to the Quality Management Plan, technical assessments, quality assurance planning documents, awards and recognition; assessments of quality systems and outcomes; and information management associated with data quality; Finally, the report should include a discussion of quality assurance activities planned for the next year (work plan) (see Appendix F).

The report is submitted to US EPA Quality Assurance Office as partial fulfillment of the requirements of the State Water Board grant.

The routine use of planning, implementation and oversight activities by a trained Quality Assurance staff who are in regular communication about data quality issues assures continual “Quality Improvement” for the State and Regional Water Board data collection activities.

VII. APPENDICES

Click on the links to be taken to the referenced document.

A. **Board Quality Assurance Training Agenda**

[Board QA training agenda](#)

Outline view of training material, including an overview of this Quality Management Plan, basic training in processes/procedures required by this Quality Management Plan, quality assurance/quality control, and specialty topics.

B. **List of Current Quality Assurance Staff, State Board Program Representatives, and Regional Board Quality Assurance Lead Persons**

[List of current Quality Assurance Program staff, State Board Program Representatives, and Regional Board Quality Assurance Lead Persons](#)

C. **Current SWAMP Quality Assurance Program Plan**

http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/qapp/swamp_qapp_master090108a.pdf

D. **QA Project Plan Development Tool Template**

[2008_SWAMP_qapp_template.doc](#)

E. **EPA Guidance on Assessing Quality Systems EPA/QA/G-3 March 2003**

[G3 Guidance on Assessing Quality Systems \[final\].pdf](#)

F. **EPA Guidance on Technical Audits & Related Assessments for Environmental Data Operations EPA/QA/G-7 January 2000, re-issued May 2006**

[G7 Guidance on Technical Audits and Assessments \[final\].pdf](#)

G. *EPA Manual 5360 A1 May 2000*

[EPA Quality Manual for Environmental Programs 5360A1.pdf](#)

Board QA Training Agenda

Outline of Quality Assurance training

Training topic	Short description and intended audience
Overview of the Quality Management Plan and Quality Systems	Large-picture view of the Quality Assurance Plan and quality systems in general for upper management.
Overview of the Quality Management Plan and Major features, functions, processes, and procedures	Overview of the Quality Assurance Plan as it applies to program activities intended for program management at the State and Regional Boards
Program requirements for writing a Quality Assurance Program Plan and implementing its features	Detailed descriptions of processes and procedures including the writing and application of a Quality Assurance Program Plan intended for Program management and staff assigned to write and implement a Quality Assurance Program Plan
Program requirements for writing a Quality Assurance Project Plan for Board data collection activities	Detailed description of the process of writing a Quality Assurance Project Plan using the requirement set forth in a Program's Quality Assurance Program Plan and to be used by the Program's staff in data collection activities
Writing a quality planning document for Board data collection activities	Description of the contents for writing a quality planning document other than a Quality Assurance Project Plan to be used by Program staff in data collection activities
Writing a Quality Assurance Project Plan or other quality planning document based on the requirements of a Program's Quality Assurance Program Plan and prepared by parties outside the Board	Same as those for Board staff except will include use of any templates developed by the Program. Intended for persons outside the Board who have to comply with Board requirements in order to report data.
Topics of Interest and Basic Knowledge	
Basic Statistical Elements	A discussion of those statistical elements, such as averages and standard deviations, used by staff in the assessment of data. Little or no math – concepts only. Required training for all staff reviewing and assessing data.
Using Censored Data (data reported as non-detect)	A discussion of the processes available to assess datasets containing one or more reported non-detections. Required training for all staff reviewing and assessing data.

Training topic	Short description and intended audience
Basic Laboratory Quality Assurance/Quality Control	Beginning instruction in the processes and procedures used by environmental testing laboratories. Requirement of all staff using or collecting data
Special topics in Laboratory Quality Assurance/Quality Control	Selected topics and discussion on items of interest to Board staff. Those interested in the topic
Auditing and Assessing Data Quality Processes under a Quality Planning Document	Overview of the auditing and assessing process of systems under a quality planning document. Program Representatives and Regional Board Lead Persons.
Auditing and Assessing Quality Assurance Program Plans	Overview of the auditing and assessing process for activities under a Quality Assurance Program Plan. Program Representatives and Regional Board Lead Persons.
Other special topics	As requested by Board staff.
Special topics of interest to persons outside the Board	As requested by Board staff or by persons required to comply with a Quality Assurance Program Plan.

List of Current Quality Assurance Program Staff, State Board Program Representatives, and Regional Board Quality Assurance Lead Persons

Quality Assurance Program Staff

Board Quality Assurance Officer..... William Ray

State Board Program Representatives

Surface Water Ambient Monitoring Program (SWAMP) Beverly vanBuuren
Stormwater Greg Gearheart
NPDES Renan Jauregui
303(d) Assessment Shakoora Azimi-Gaylon
TMDL Joanne Cox
Ag Waiver Johnny Gonzales

Regional Board Quality Assurance Lead Persons

Region 1 – North Coast Region William Ray
Region 2 – San Francisco Bay James Ponton
Region 3 – Central Coast Karen Worcester
Region 4 – Los Angeles Jau Ren Chen
..... Thizar Tintut-Williams, Groundwater Division
Region 5 – Central Valley Leticia Valadez
Region 6 – Lahonton Bruce Warden
Region 7 – Colorado River Jeff Geraci
Region 8 – Santa Ana River Pavlova Vitale
Region 9 – San Diego Helen Yu

