



Design Consultant Project Management Requirements

Sacramento Regional County Sanitation District

Version 2.0



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Contents

- 1.0 Introduction..... 1**
- 2.0 General Management 1**
- 3.0 Project Management Plan 1**
- 4.0 Program Management Information System..... 2**
- 5.0 Work Breakdown Structure (WBS)..... 3**
- 6.0 Monthly Progress Report 3**
- 7.0 Project Invoices 4**
- 8.0 Project Schedule..... 4**
- 9.0 Schedule Updates and Maintenance..... 5**
- 10.0 Focused Meetings and Workshops 6**
 - 10.1 Focused Meetings 7
 - 10.1.1 Project Kickoff Meeting..... 7
 - 10.1.2 BODR Confirmation Meetings 7
 - 10.1.3 Preliminary Design Focused Meetings..... 7
 - 10.1.4 Design Phase Focused Meetings 7
 - 10.2 Workshops 7
 - 10.2.1 BODR Gate Workshop 8
 - 10.2.2 Preliminary Engineering Workshops 8
 - 10.2.3 RCD Workshops 8
 - 10.2.4 Final PDR Design Gate Workshop 8
 - 10.2.5 Design Kickoff Workshops..... 9
 - 10.2.6 Design Submittal Review Workshops..... 9
 - 10.2.7 Validation Workshops..... 9
 - 10.2.8 Constructability Workshop 9
 - 10.2.9 Risk Management Workshops 11
- 11.0 Consultant Office Technical Meetings 11**

Appendices

Appendix A - Excerpts from the QA/QC Program Developed by the PMO

1.0 Introduction

These guidelines provide additional detail to the Scope of Work in the RFP, and outline requirements each design consultant needs to incorporate into their proposed level of effort for EchoWater Project project management tasks.

2.0 General Management

The Consultant shall be responsible for detailed management of the project including the sub-consultants and shall keep the District apprised of the status of the project.

The Consultant shall provide the key management personnel as described in their proposal on this project. The Consultant shall not reassign the key project personnel without prior approval of the District.

The Consultant shall conduct bi-weekly project meetings with the District's Project Manager. These meetings shall be attended by the District's Project Manager and Consultant's Project Manager at a mutually agreeable time. The purpose of the meetings shall be to review the Consultant Project Manager's progress reports and the status of the project scope, schedule, budget and any issues that may affect completion of the project.

3.0 Project Management Plan

The Consultant shall prepare a Project Management Plan (PMP) that includes, at a minimum, the following sections:

- **Project Management Procedures:** Summarize procedures for milestone submittals, schedule and cost monitoring, and project status reporting. Include the baseline project schedule and WBS in this section.
- **Communication Plan:** Document project team communication procedures highlighting points of interaction between the Consultant and the PMO. Provide a copy of the project organizational chart.
- **Change Management Plan:** Develop a plan that establishes change identification, documentation, and tracking, as well as resolution procedures.
- **Risk Management Plan:** Establish risk management procedures including identification, tracking, and mitigation approach.
- **Quality Management Plan:** Develop and implement a Quality Management Plan (QMP) for all aspects, and all phases, of Consultant's work. Specific, minimum requirements for quality management are described in the RFP Scope of Work. In addition, excerpts from the QA/QC Program developed by the PMO are contained in Appendix A for the information of the Consultant.

- Health and Safety Plan: Prepare a project-specific Health and Safety Plan coordinated with the Program Health and Safety Plan, as well as District requirements.
- Administrative Procedures: Develop correspondence formatting, tracking, and logging procedures. This section shall also include invoice preparation and review procedures.

The draft PMP shall be submitted for District review within 30 calendar days from NTP. Consultant shall incorporate District comments into a final PMP submitted as a bookmarked PDF file. At a minimum, Consultant shall update the PMP on an annual basis for the duration of the project.

4.0 Program Management Information System

The EchoWater Project has implemented an Owner's Program Management Information System (PMIS) using a web-based program called PMWeb. The objective of the system is to facilitate collaboration between the District, Program Manager and all contracted entities to be involved over the multi-year lifespan of planning, design and construction phases. It will be utilized as a single centralized, but fully accessible hub to support tracking and transmittal of deliverable documents integrated with their review, response and final signoff cycles. Action, issue and decision logs feed from the proper entry and maintenance of meeting notes in PMWeb. A library of shared documents will be available to the Consultant to retrieve or to post contributions. The Consultant shall be required to use PMWeb and follow procedures for general document sharing and at a minimum, shall use the system to perform the following functions:

- Meeting agenda and meeting notes entry
- Action item, issue, and decision log entry
- Submitting requests for information (RFI) to the PMO group
- Document & design drawing deliverable submittal and transmittals
- QA/QC documentation of review comments, responses and confirmations
- Contractor submittal comments and designer responses
- Direct upload of invoice and project progress monthly report submittals
- Tools to support Asset Management / Operations checklists
- Respond to Contractor RFIs through the system workflow sequence.

The District will provide the required number of PMWeb licenses to the Consultant for their use for the duration of the project, as well as the necessary user training for a mutually agreed upon list of participants. The PMO will train up to five (5) design consultant staff at the onset of the project. The design consultant should assume up to four (4) hours of training per staff member separated into up to four one-hour group training sessions held at the PMO. The design consultant shall then be responsible for training any other consultant and/or subconsultant staff that will use PMWeb within its organization over the life of the project.

5.0 Work Breakdown Structure (WBS)

The Consultant shall submit the project Work Breakdown Structure (WBS) for District approval within 10 business days following NTP. The WBS shall include a matrix indicating the budget amounts and man-hours for each task. For purposes of the proposal, the WBS shall match the tasks described in the Scope of Work and as provided in the sample labor hour matrix in the RFP. If the Consultant recommends additional tasks to the Scope of Work, the tasks shall be inserted in the appropriate location in the Scope of Work upon approval by the District.

At the beginning of the project, the District's Project Manager may require further division of tasks in order to identify the total billing per task. This will be discussed with the Consultant and adjustments made to the WBS.

The approved WBS shall form the basis for reporting the status of each Scope of Work task in the monthly Project Progress Report, the Project Invoices, and for updating the Program Schedule on a monthly basis.

6.0 Monthly Progress Report

Regardless of when the bi-weekly Project Manager's meetings occur, the Consultant shall submit a Monthly Progress Report, based on information generated in the P6 schedule update, that will include the following:

- Work completed to date (by WBS task/subtask breakdown)
- Work scheduled for the upcoming month
- Percent complete, tabulated on a per task basis (per WBS structure)
- Cost to complete, tabulated on a per task basis (per WBS structure)
- Earned value, determined on an overall project basis
- Updated project action, issue, and decision (AID) log
- Issues impacting project schedule or construction cost, and actual cost impacts
- Potential changes in project scope of work
- Status of the project budget
- Status of the project schedule.
- Consultant's plan to complete project within budget (if cost to complete is greater than approved budget)
- Overall project budget and schedule completion in graphical format on the same graph. Show actual budget used, original schedule completion and actual estimated project completion on the graph. Provide a projection of monthly cash flow and a cost and resource loaded schedule.

- An Oracle Primavera P6 R8.2 cost loaded schedule (XER) file using the tasks which are integrated into the District's WBS.

7.0 Project Invoices

The Consultant shall prepare and submit monthly invoices that document the man-hours and billing rate for each person that works on the project for each task in the WBS. Overhead and profit, or multiplier, and any direct costs shall also be shown for each task. As part of the summary section of the invoice, the Consultant shall also include the following information:

- Job No.
- Cost code
- Budget
- Current billing period invoicing
- Previous billing period "total invoiced to date"
- Budget Amount Remaining
- Current billing period "total percent invoice to date"
- Current billing period "total percent completed to date"

The cost component breakdown for each element above shall match that of the design contract. The monthly progress report and project schedule shall be submitted at the same time as the project invoice as part of the monthly request for payment.

The Consultant shall also provide percent budget spent for each of the District's WBS cost codes (i.e. by work package and phase). The District shall provide a list of cost codes by phase and task to the Consultant.

Subconsultant invoices shall be in the same format as the Prime Consultant

The data in the invoice shall be generated from the P6 monthly schedule update as shown in the updated Schedule of Values. The process is described further in Section 8.0. The District will provide a sample invoice structure to the Consultant at the beginning of the project.

8.0 Project Schedule

The Consultant shall create a Detailed Project Schedule using the critical path method (CPM) with sufficient detail to clearly describe the work. The critical path should be free flowing and avoid the use of any constrained dates. The District discourages the use of lags and prefers that all activities have clear start and completion predecessors and successors. To assist with progress updating and invoicing, the Schedule of Values shall comply with the District's WBS. To assist with project reporting in PM Web, it is required that all Activity Id's in P6 begin with

a project-specific prefix. For example, for the Flow Equalization project this prefix will be “FE”.

The schedule shall be cost and resource (manpower) loaded and capable of calculating earned value performance. All Consultant staff should be assigned to work tasks with limited personnel assigned to the Project Management and QA/QC tasks. The schedule shall expand upon the District’s overall project schedule following the District’s WBS. At a minimum, the schedule shall include the following:

- Project start date and finish date for each activity
- Each project task and subtask in the WBS with established relationships
- Project addenda
- Milestones and gates for each task
- Project submittal dates
- Submittal dates for each deliverable
- Meeting and workshop dates
- District review periods

This schedule shall be submitted within 20 business days following NTP and is to be approved by the District’s Project Manager. The District will also require activity codes be used in the consultant’s schedule. These will be assigned by the District following contract award.

9.0 Schedule Updates and Maintenance

The Consultant shall maintain the project schedule and report progress on a monthly basis with a data date of the Monday following the last Friday of the month. Actual activity start and finish dates shall be noted along with the physical percent complete for each activity underway. Prior to invoice submittal, the Consultant and the District’s Project Manager will evaluate the percent complete for each activity worked on during the billing period. The schedule update shall clearly identify any variances from the approved Project Schedule. Actual costs for each task shall be included along with any budget changes. The Consultant shall also prepare planned, actual and earned value curves for the Project and include them with the updated schedule along with the calculated CPI and SPI.

A monthly Schedule Update Narrative shall be included that includes as a minimum any variances to planned milestone or deliverable dates and any projected or actual cost variances to the project costs. The earned value will be compared to the planned value and the actual invoice value for the month and discussed in the progress report. The Consultant will need to justify any requests for invoice payments over the planned value and explain how the overall budget will be met over the life of the project.

The Schedule Update and Progress Report shall be made in 2 submittals as follows:

- On the last Friday of the month (also referred to as the data date), the Schedule Update and Narrative Report, without updated cost data shall be submitted. This update shall have previously been reviewed with the PM. Completion dates can be estimated for activities completed just prior to the data date.
- The monthly Progress Report, to be received within 10 business days following the data date, shall include the updated schedule of values with actual costs, the updated monthly cash flow projections, and earned value tables, charts, and curves. The earned value will be compared to the planned value and the actual invoice value for the month and discussed in the progress report.

The Schedule Update and Progress Report shall be approved by the District's Project Manager prior to recommending payment.

10.0 Focused Meetings and Workshops

The Consultant shall hold meetings and workshops throughout the project to keep the District apprised of the job, review work in progress, share information, discuss project submittals, present findings of technical analyses, receive and resolve comments, and obtain decisions and direction by District staff. This section defines the major meetings and workshops to be held by the Consultant. In addition to the meetings described in the RFP and attachments, the Consultant should anticipate participation in management briefings and other meetings throughout the duration of the project. The Consultant shall also hold meetings as required to keep the District apprised of the job, to review work in progress, and to receive and resolve comments.

The Consultant shall prepare and submit an agenda package to the District (via PMWeb) for review at least one week prior to each meeting or workshop. The agenda package shall include a copy of the formal agenda and applicable review materials such as draft design criteria, design memoranda, associated drawings and specifications, to support meeting or workshop goals.

The Consultant shall prepare meeting notes from all workshops and meetings concerning the Project using PMWeb. The Consultant shall submit the meeting notes through PMWeb for approval within three (3) business days following the meeting or workshop. Agenda and minutes will be prepared in the required PMWeb format.

Ad-hoc meetings shall be recorded as follows:

- The Consultant shall notify the Project Manager/ Project Engineer prior to the meeting.
- The Consultant shall prepare meeting notes for the meeting.
- The notes shall be submitted to the Project Manager/Project Engineer and the Project Team.
- After review and modification, the meeting notes will be filed as a record of the meeting.

The Consultant shall prepare for all telephone and teleconferencing meetings in the same manner as outlined above.

A copy of all comments on project issues obtained by the Consultant from District staff without the direct District Project Manager's involvement shall be submitted for the Project Manager's approval within three (3) business days of receipt.

Upon receipt of District comments on each project submittal and each set of meeting or workshop materials, the Consultant shall address the comments and submit detailed responses to all District comments via PMWeb. The District will provide a template for submission of these comments.

10.1 Focused Meetings

The following provides an overview of the types of focused meetings anticipated on this project. The Consultant is encouraged to identify any additional focused meetings that may be required to support the Consultant's project approach.

10.1.1 Project Kickoff Meeting

A project kick-off meeting shall be held with District staff to introduce principal members of the District's and Consultant's teams.

10.1.2 BODR Confirmation Meetings

It is anticipated that meetings will be held to review Consultant comments and input on the BODR during the Planning phase of the project.

10.1.3 Preliminary Design Focused Meetings

Focused meetings shall be held throughout preliminary design to discuss specific issues in detail and generate comments and direction from District staff. The focused meetings will be held approximately once per week on a pre-established day. Meeting agendas will be determined based on work progress and cover all technical memoranda topics.

10.1.4 Design Phase Focused Meetings

Focused meetings will be held throughout final design to discuss specific issues in detail and generate comments and direction from District staff. The Consultant should assume a minimum 30 design phase focused meetings will be required, with topics selected as appropriate during each phase of design.

10.2 Workshops

The following provides an overview of the types of workshops anticipated on this project. The Consultant is encouraged to identify any additional workshops that may be required to support the Consultant's project approach.

10.2.1 BODR Gate Workshop

The BODR Gate Workshop (Gate 2) shall be held to review and accept the final BODR. This workshop shall be held immediately following the final BODR submittal by the PMO. The PMO will lead and organize this workshop. The Consultant staff required at this workshop shall include:

- Project Manager
- Design Manager
- Project Engineer

10.2.2 Preliminary Engineering Workshops

Preliminary Engineering Workshops shall be held during Preliminary Design to review each Technical Memorandum (TM) submitted by the Consultant. Each workshop shall be 4 to 6 hours in length.

10.2.3 RCD Workshops

The Consultant shall participate in three (3) reliability centered design (RCD) workshops. The first will be held during the BODR Confirmation task as part of the Planning Phase. The second will be held during the Preliminary Design after the P&IDs have been developed and reviewed. The third RCD workshop will be held during the final design phase of work after submittal of Design Submittal #2. The workshops shall be up to eight hours in length and facilitated by a third-party RCD expert provided by the District.

10.2.4 Final PDR Design Gate Workshop

The PDR Design Gate Workshop (Gate 3) shall be held to review and accept the PDR submittal. This workshop shall be held immediately following the final PDR submittal. The Consultant staff required at this workshop shall include:

- Project Manager
- Design Manager
- Project Engineer
- Lead Mechanical Engineer
- Lead Electrical
- I&C Engineer
- Lead Structural Engineer

The primary focus shall be to review the Consultant's quality control by reviewing the PDR including drawings. The Consultant shall also present its QA/QC documentation for the PDR. This workshop shall be four to eight (4-8) hours in length and held at the District.

10.2.5 Design Kickoff Workshops

The design kickoff workshops shall be held at the beginning of each design phase (DS-1, DS-2, and DS-3/FDS) of the project to review all elements required in the design submittal, validate the design progress since the previous submittal, and summarize decisions made at focused meetings. The workshop will also be an opportunity for the Consultant to provide an overview of the project to date, including a review of the BIM. The same District and Consultant staff that attended the PDR Design Gate workshop should attend these workshops. Each workshop shall be 4 to 6 hours in length.

10.2.6 Design Submittal Review Workshops

Up to six design submittal review workshops shall be held during the District's review period for each design submittal (PDR, DS1, DS2, and DS3/FDS). The design submittal workshops shall be working sessions that bring together District and Consultant staff to discuss specific design issues in detail. Specifically, District and Consultant staff shall review design aspects not previously covered relative to the operation and maintenance of the facilities (i.e., space between equipment, utility requirements, maintenance concerns, etc). They shall also review previous District comments to ensure that the comments have been incorporated into the subsequent submittal. The workshops shall address questions that District staff has identified during their review of the design submittal. Each workshop is estimated to be 4 hours in length.

10.2.7 Validation Workshops

Validation workshops shall be held to review and validate responses to comments for DS1, DS2, and DS3. These workshops shall be held after the consultant has reviewed the District's comments on each design deliverable and developed suggested resolutions to the comments. The primary focus is to resolve major comments in order to avoid rework with accompanying schedule delays. Issue resolution shall be documented in the Action Items, Issues, and Decision Log in PMWeb. Each workshop is anticipated to be 8 hours in length.

10.2.8 Constructability Workshop

A constructability workshop shall be held immediately following the DS2 submittal and shall be a 2-day workshop. The constructability review is intended to provide the District with an objective third party review of the construction documents for effectiveness in communicating information to prospective bidders. The review shall determine if the contract documents have sufficient information needed to bid and construct the project, and avoid misunderstandings and misinterpretations that may lead to conflict, confusion or claims during construction. This review is not a comprehensive plan check, a dimensional check, or a value engineering assignment. Further, it is recognized that comments may only be given on the level of detail provided at this level of design.

The PMO will assemble a Constructability Review Team from the construction industry, PMO, and District staff. Specialty consultants and discipline engineers may also be included. The PMO will notify the designer of the members participating in the Constructability Review. At this time, assume that there will be 10 participants.

Topics the Constructability Review Team shall consider include:

- Project consistency, discrepancies, and constructability issues
- Contradictions, bid package strategies, and bidability issues
- Field office requirements
- Contractor parking
- Contractor access road
- Construction utilities
- Utility company requirements
- Construction methods and mitigating impacts
- Viability of equipment relocation
- Operational requirements
- Access to make proper connections
- Coordination with other projects
- Draft Commissioning Plan
- Public nuisance issues
- Safety requirements
- Construction sequencing and schedule, materials storage, and work zone accessibility
- Clarity of the scope of work and interface activities
- Impacts on existing operation
- Access
- Cost control
- Other local conditions and constraints

The Constructability Review Team shall provide a list of comments and the Consultant shall respond to each comment, selecting those comments to be included in the final plans and specifications.

The PMO shall provide a constructability review facilitator. To facilitate the Constructability Review Workshop, the Consultant shall complete the following tasks:

- Prepare package for constructability review participants. The package shall consist of detailed plans and specifications and other information selected by the Consultant. The package shall be mailed to participants at least one week prior to the workshop.

- Prepare presentation on the project for the Constructability Review Team.
- Meet with Constructability Review Team to receive comments.
- Provide listing of constructability review comments and action taken on each comment.

All comments and recommendations of the workshop shall be incorporated into the contract documents at no additional cost to the District.

10.2.9 Risk Management Workshops

Consultant shall participate in the updating of the Risk Management Plan prepared during the BODR Phase of the project. This participation shall include attendance at District meetings in order to identify and mitigate potential risk to the project budget and schedule during construction. The first workshop shall be conducted during PDR phase, the second after DS 1 and the third two weeks after DS3.

11.0 Consultant Office Technical Meetings

The District believes it can be mutually beneficial to visit the Consultant offices from time to time to observe the detailed design in process, answer detailed technical questions, and establish lines of communication with Consultant staff. During the Design Phase, Consultant will arrange for District staff to meet in the Consultant's work center and audit "over the shoulder" design reviews with the Consultant's staff. The reviews will be monitored by a member of the Consultant's Management Team. Significant decisions will be reported to the Consultant's Project Manager and the District's Project Manager and logged into the Action Items, Issues, and Decision Log. Action items will also be identified and logged.

The Consultant shall schedule, at a minimum, the following meetings during design:

- One 4-hour visit to review the Loop Tag Number scheme and control documentation
- Three 4-hour visits to review Consultant Implementation of CAD and BIM standards, and P&ID tag extraction
- Two 4-hour visits to review the first few P&ID drawings
- Two 4-hour visits to review the early Control Strategies
- One 4-hour visit to review the Conduit, Tray and Cable Schedules
- One 4-hour visit to review each of the first elementary diagrams, first panel schematics
- Six 2-hour follow up visits for the above
- One 6-hour visit to review the asset databases

The Consultant shall schedule each of the above Office Technical meetings and shall coordinate with the District's Project Manager to be sure the correct personnel participate in the meetings. The Consultant may propose additional Office Technical Meetings or eliminate/combine Office Technical Meetings as needed to support the detailed design.

*EchoWater Project Design Consultant
Project Management Requirements*

The District may also request additional “over the shoulder” design review meetings (on a periodic basis) to audit the design in other areas not listed above.

APPENDIX A

EXCERPTS FROM THE
QA/QC PROGRAM DEVELOPED
BY THE PMO



**Excerpts from the
QA/QC Program Developed
By the PMO**

Sacramento Regional County Sanitation District

FINAL DRAFT



September 2012

The following excerpts from the Sacramento Regional County Sanitation District (SRCSD) Quality Control – Quality Assurance Plan (Quality Management Plan) for projects related to the EchoWater Project shall be followed by all Project participants. These excerpts have been specifically identified as expectations of the SRCSD of their Design Consultants.

1.0 Purpose of the Quality Management Plan

The Quality Management Plan (QMP) describes the requirements, procedures, and responsibilities for conducting quality assurance and control (QA/QC) activities while working on the EchoWater Project for the Sacramento Regional County Sanitation District (SRCSD). The QMP is based on the expectation and confirmation that all services provided on the EchoWater Project will be conducted using sound principles that meet the standards of professional and industry practice and satisfy requirements set forth by SRCSD.

1.1 Quality Management Goals

The goals for compliance with the Quality Management Plan for the EchoWater Project include the following:

- Errors and omissions in all work products are minimized,
- Production and construction costs are controlled through focus on doing quality work (“Do it right the first time”),
- Schedule adherence to meet permit compliance is maintained by minimizing rework or wasted efforts.

1.2 Success Metrics for Quality Management Compliance

- All work products and services provided meet the requirements and intent for service defined by SRCSD
- All work products and services provided meet the acceptable standards of professional practice and industry standards

The expectations for quality execution of the EchoWater Project were first established by SRCSD, and then defined at the Program level and Project level as depicted in the following graphic. This figure identifies that the procedures and requirements for compliance with this QMP is expected at every level.



2.0 EchoWater Project Quality Management

The activities of the PMO and all participants in the design, construction, and commissioning of the capital projects included in the EchoWater Project will be covered under the requirements of this Quality Management Plan (QMP). The Quality Management Plan will be implemented at two levels, Program-Level quality assurance/quality control (QA/QC) and Project-Level QA/QC.

Table 1 provides a summary of quality control and quality assurance requirements for the following entities:

- Program Management (PMO)
- Design and other Professional Services
- Contractor and Third-Party Construction Management

In general, each entity is responsible for executing their work activities with a focus on providing high-quality work products or services that incorporate the best practices of the industry, federal and state guidelines, and expectations of the Sacramento Regional County Sanitation District for the EchoWater Project.

Compliance with the requirements and procedure of this QMP is mandatory to achieve a successful end result for the Program. The scope of work to be accomplished and the schedule to complete requires that each entity conducts their efforts with a “do it right the first time” focus.

This QMP outlines the minimum requirements that are expected and will be monitored for compliance. Each step of the QMP activities requires the assignment of ownership for conducting the reviews, following-up on addressing the review comments, documenting and signing off that the review process has been conducted and comments were resolved appropriately. The documentation of the quality control and assurance process will become part of the project files for each EchoWater project as well as filed in the master program files. Quality management activities will be proactively conducted throughout the EchoWater Project.

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3.0 Project-Level Requirements

The Project-Level (design consultants, contractors, and third party construction managers) staff will conduct both Quality Control and Quality Assurance activities throughout the EchoWater Project.

The consultant/contractor Project Manager, or their designee, is responsible for developing a Quality Management Plan for each project, including the assignment of QC reviewers, establishing the budget and schedule for conducting the QC reviews, confirming that review comments are documented along with resolution of the review comments, and periodically conducting audits to ensure compliance by the project team.

Quality is achieved when the work is planned, assigned, executed, and checked. Responsible professionals and quality control reviewers will check all work for conformance to the standards of the industry and project requirements.

Quality Control Reviews: The consultant/contractor project-level staff will be responsible for conducting quality control reviews to achieve the following objectives:

- Organizing and submitting design calculations to the District, in conjunction with design submittals as described in the design consultant's scope of work. The design consultant will be responsible for QC review, and documentation of review process, prior to submitting to the District. Therefore, the District can rely on the accuracy of the submitted calculations for use on the EchoWater Project, including coordination with design consultants working on other EchoWater projects.
- QC reviews shall be conducted as an integral component of project activities. Project deliverables shall be verified for conformance to applicable project standards and the functional, regulatory and uniformity requirements of the project.
- QC reviews shall be conducted to verify that the deliverable and supporting documents are complete considering the scheduled level of completeness and intended purpose, are understandable, conform to reasonable and applicable standards relative to their intended purpose, and meet the District's and PMO's requirements. QC review activities may include verifying one or more of the following:
 1. Information, assumptions and data used in developing a deliverable
 2. Basis of design and rationale for key project decisions, calculation methods and/or reasonableness of design results or conclusions
 3. Use of appropriate analytical methodology, of appropriate standards, automation tools and calculation methods
 4. Clarity of writing and use of proper format and correct grammar
 5. Appropriately qualified personnel are providing the deliverables
 6. Deliverables provided meet the contractual scope and/or District expectations
- QC reviews shall be completed before documents are used in-house or released to outside parties, including the District (or PMO). For service deliverables that do not result in a document, QC reviews or project quality assurance activities shall be provided as necessary to verify that the expected level of services is provided.

- QC reviews shall be conducted and documented for all documents that directly or indirectly constitute deliverables including: formal correspondence, reports, studies, presentation materials, drawings, specifications, calculations, opinions of probable construction costs and procurement documents. Formal correspondence items that are not considered to be a deliverable such as routine letters, memorandums and e-mail communications should be checked prior to transmittal.

A distinction is made between a QC review and checking that may occur prior to performing a QC review. Checking is comprised of verifying the accuracy of documents, correspondence, calculations, drawings, spreadsheets and/or other computer applications relative to their intended purpose. Checking activities shall be performed as part of the production process and shall be verified as a specific QC review activity. The responsibility for checking shall be identified in the project Quality Management Plan. Table 2 provides a brief listing of anticipated deliverables, work products, and/or submittals for the different phases of work under the EchoWater Project activities. A specific list of required deliverables will be defined in the Request for Proposals and in the proposals submitted.

Table 2 - Anticipated Deliverables or Work Products for the Consultants/Contractors

Phase	Deliverables or Work Products
Design	<ul style="list-style-type: none"> • Technical standards, guidelines, and basis of design criteria • Technical memoranda, fact sheets, and design reports • Spreadsheet and model validation • Design development drawings, revised data sheets, preliminary specifications • Design discipline checklists for stages of design • Contract documents including: construction drawings and specifications • Design development cost estimates and preliminary vendor quotes
Bid & Award	<ul style="list-style-type: none"> • Submittals required in the General and Supplemental Conditions • Submittals required in the Division 1 specifications (project schedule, staffing, etc.) • Conformed bid documents with all addenda • Submitted bid price and schedule of values
Construction	<ul style="list-style-type: none"> • RFIs, responses, and status reports • Shop Drawings, review comments, and status reports • Field Orders and their status reports • Change Proposal Requests and their status reports • Work Change Directives and their status reports • Change Orders and their status reports • Functional Testing plans
Commissioning	<ul style="list-style-type: none"> • Start-up plan with interface provisions for existing facilities • Performance Testing plans • Process narratives of systems • Systems integration plan with existing SCADA system • O&M manuals • Staff training plan • Performance testing and certification
Closeout	<ul style="list-style-type: none"> • Final acceptance • Record drawings • Warranty documentation • File closeout and archiving

Quality Assurance: Consultant/contractor project-level project managers will be responsible for conducting quality assurance reviews to monitor compliance with their quality management plans for work efforts on the EchoWater Project.

Compliance with the procedures and requirements defined in the Quality Management Plan must be met in order to provide services professionally and consistently in the execution of the EchoWater Project.