

ENGINEERING AND OPERATIONS COMMITTEE

AGENDA FOR

JANUARY 28, 2010

Gary Arant – Chair	Jeremy Jungreis
John Johnson – Vice Chair	Bill Knutson
Richard Smith – Vice Chair	Ralph McIntosh
Jim Barrett	Ron Morrison
Jim Bowersox	Bud Pocklington
Betty Ferguson	Javier Saunders
Mike Hogan	Tom Wornham

1. Roll call – Determination of quorum.
2. Additions to agenda (Government Code Section 54954.2(b)).
3. Public comment – opportunities for members of the public to address the Committee on matters within the Committee’s jurisdiction.
4. Chair’s report.
 - 4-A Progress report on Engineering and Operations Committee’s Goals and Objectives for 2009 and 2010.
 - 4-B Directors’ comments.

I. CONSENT CALENDAR

1. Services contract with Truesdail Laboratories Inc. for water quality testing and analysis services. Joe Wegand
Staff recommendation: Award a two-year services contract (with option for an additional twenty-four (24) months) to Truesdail Laboratories, Inc. for an amount not-to-exceed \$220,000 to perform water quality laboratory analysis as required on the aqueduct delivery system. (Action)



II. ACTION/DISCUSSION

1. Asset Management Program Funding Policy. John Galleher
Staff recommendation: Accept Asset Management Program
Funding Policy recommendations. (Action)

III. INFORMATION

1. Presentation on advertisement for bids for the San Vicente Dam Raise Package 3 –Roller Compacted Concrete Dams and Appurtenant Facilities construction contract. Nicola Kavanagh

IV. CLOSED SESSION

V. ADJOURNMENT

Doria F. Lore
Clerk of the Board

NOTE: This meeting is called as an Engineering & Operations Committee meeting. Because a quorum of the Board may be present, the meeting is also noticed as a Board meeting. Members of the Board who are not members of the Committee may participate in the meeting pursuant to Section 2.00.060(g) of the Authority Administrative Code (Recodified). All items on the agenda, including information items, may be deliberated and become subject to action. All public documents provided to the committee or Board for this meeting including materials related to an item on this agenda and submitted to the Board of Directors within 72 hours prior to this meeting may be reviewed at the San Diego County Water Authority headquarters located at 4677 Overland Avenue, San Diego, CA 92123 at the reception desk during normal business hours.



January 20, 2010

Attention: Engineering and Operations Committee

Progress Report on Engineering and Operations Committee's Goals and Objectives for 2009 and 2010 (Information)

Purpose

This report provides a progress report on the Engineering and Operations Committee's goals and objectives that were established by the Board in April 2009.

Background

Every two years, following the appointment of new committee chairs, goals and objectives are updated for each committee. The Engineering and Operations Committee is responsible for matters of design, construction, replacement, maintenance and operation of the Authority's facilities, property and equipment, including: administration of the Capital Improvement Program; administration of the Aqueduct Protection Program; right of way acquisition and management; system and facility security; water quality; other matters relating to facility operations. During the next two years, the committee expects to review, discuss and make decisions pertaining to these matters. On April 23, 2009, the Board of Directors adopted a new set of goals and objectives for the Engineering and Operations Committee to accomplish in 2009 and 2010.

Discussion

The attached progress report lists the Engineering and Operations Committee's goals and objectives, and provides an update on the activities taken to implement the objectives and achieve the goals. This report was prepared under the direction of the Engineering and Operations Committee Chair, Gary Arant.

Prepared by: Frank Belock, Deputy General Manager
Michael T. Stift, Director of Engineering
Gary Eaton, Director of Operations and Maintenance
William L. Busch, Acting Director of Right of Way

Reviewed by: Gary Arant, Chair, Engineering and Operations Committee

Attachment: Progress Report on the 2009 and 2010 Goals and Objectives

**Engineering and Operations Committee
Progress Report on 2009 and 2010 Goals and Objectives
January 2010**

Committee Mission/Purpose Statement

The mission/purpose of the Engineering and Operations Committee is to develop for consideration by the full Board, policies relative to the Water Authority's Engineering, Operations and Maintenance (O&M), and Right of Way (ROW) Business.

Strategic Plan Objectives

- 1. Adopt an integrated asset management plan that will be used to support all budget proposals related to water assets for the next two-year budget. (January 2009 – Board approved January 2009 – SP #20)**

Activities: The Board adopted the integrated asset management plan in January 2009.

- 2. Water Authority Board will adopt a policy regarding funding of asset replacement. (January 2010 – SP #21)**

Activities: The Board is scheduled to review and consider adoption of the asset management funding policy at the January 2010 Board meeting.

Business Plan Goals

Asset Management

- 1. Approve an integrated Asset Management Plan to support budget proposals for the FY2010 and FY2011 budget. (January 2009 – Board approved February 2009 – BP #5)**

Activities: The Board adopted the integrated asset management plan in January 2009.

- 2. Approve a long term Asset Management funding policy that meets the expectations of member agencies, Asset Management objectives, and complies with State/Federal regulations. (January 2010 – BP #7)**

Activities: The Board is scheduled to review and consider adoption of the asset management funding policy at the January 2010 Board meeting.

Capital Improvement Program

- 1. Complete and record the Notice of Completion for the ESP San Vicente Pumping Facilities projects on schedule and within budget to provide a means to transport emergency and carryover storage to and from the Second Aqueduct and the San Vicente Reservoir. (October 2009 – BP #3)**

Activities: The project is on track to be completed within budget.

The seven month delay in schedule is due to additional time to diagnose and resolve power grid supply issues with SDG&E and installation of subsequent SDG&E system, pre-procurement supplier, and construction contractor facility modifications. The Notice of Completion for the pumping facility's construction contract is scheduled for February and final testing by the supplier of the pumps, motors, and drives is scheduled for completion in May 2010.

- 2. Complete and record the Notice of Completion for the ESP San Vicente Pipeline per the revised schedule and budget. (November 2010 – BP #4)**

Activities: The project is on track to be completed on its revised schedule of November 2010. There is an unresolved construction claim that has been reviewed with the E&O Committee which may affect the final cost of the project.

- 3. Complete and record the Notice of Completion for the ESP Pump Storage Lake Hodges Facility per the revised schedule and budget to link Lake Hodges to the Water Authority's Aqueduct system, ultimately providing 20,000 acre-feet of emergency storage and 40 megawatts of hydroelectric power for regional use. (December 2010 – BP #6)**

Activities: The project is currently in the equipment testing phase. Due to issues that have recently developed, a revised commercial operation date and project completion date can only be determined at a later date and will then be communicated to the Board.

- 4. Award a contract for construction for the San Vicente Dam Raise foundation excavation to provide 152,000 acre-feet of emergency and carryover storage for regional use. (May 2009 – BP #9)**

Activities: Complete. A contract for the foundation excavation was awarded at the May 2009 Board meeting.

Operations and Maintenance

- 1. Resolve top three ROW enforcement cases identified on an annual basis. (Annually – BP #9)**

Activities: Right-of-Way accomplished this goal by resolving three of the top encroachments last year. These included recording a unilateral permit for a swimming pool as authorized by the Board, removal of large stockpiles of mulch and removal of a deck and patio cover.

Other Goals

1. Review the FY 2010 Annual Operating Plan. (June 2009)

Activities: The Annual Operating Plan for FY 2010 was reviewed and accepted by the Board in June 2009 and work is continuing on the FY 2011 plan which will be considered for adoption by the Board in June 2010.

2. Pursue aggressively any available state or federal funding, including American Recovery and Reinvestment Act, to augment Water Authority funding for the Capital Improvement Program.

Activities: Investigated 19 different grant opportunities and submitted three which were identified as applicable to the Water Authority. We were not successful in being selected to receive funding. We will continue to look for additional grant opportunities and will submit applications as appropriate.



January 20, 2010

Attention: Engineering and Operations Committee

Services contract with Truesdail Laboratories, Inc. for water quality testing and analysis services (Action)

Staff Recommendation

Award a two-year services contract (with option for an additional twenty-four (24) months) to Truesdail Laboratories, Inc. for an amount not-to-exceed \$220,000 to perform water quality laboratory analysis as required on the aqueduct delivery system.

Alternatives

1. Do not award this contract and direct staff to rebid this contract.

Fiscal Impact

There are sufficient funds for the first two years of this contract in the fiscal years 2010 and 2011 operating budget. Funding for optional years three and four will be contingent on Board approval of the fiscal years 2012 and 2013 operating budget. This item relates to all rate categories and Treated Water.

Background

The Water Authority is required by the California Department of Public Health (CDPH) to perform water quality sampling on the aqueduct system on a routine basis. Additional water quality sampling is performed as a tool for proper management of the Olivenhain Reservoir and as needed at the Twin Oaks Valley Water Treatment Plant to ensure contract compliance. Sample collection is conducted by state-certified operators (in-house), but sample analysis must be conducted by a state accredited laboratory.

Discussion

On July 30, 2009, a Notice Inviting Bids was distributed to 150 laboratories, who received notification via e-mails through the Network for a two year contract to perform water quality testing and analysis services with the option to extend the contract for an additional twenty-four (24) months. In addition, a Notice to Bidders was advertised in the San Diego Daily Transcript.

Six bids were received and opened on August 24, 2009. Due to bidders differing interpretations of the bid schedule, all bids were rejected. The bid schedule was revised prior to rebid.

On August 27, 2009 a second Notice Inviting Bids was distributed to 150 laboratories, who received notification via e-mails through the Network for a two year contract to perform water quality testing and analysis services with the option to extend the contract for an additional twenty-four (24) months. In addition, a Notice to Bidders was advertised in the San Diego Daily Transcript.

Six bids were received and opened on September 8, 2009. Sierra Analytical Labs, Inc. was the apparent lowest responsive and responsible bidder. One week after the Board awarded the contract, Sierra Analytical Labs, Inc. requested to withdraw the bid due to mistakes that were made in pricing provided by sub-contracted labs.

The next lowest responsive and responsible bidder was Truesdail Laboratories, Inc., a SCOOP-certified small business. Although their bid price was substantially higher, selective use of member agency labs on the higher cost tests, in combination with Truesdail Laboratories, Inc., for lower cost tests, will allow staff to actually drop the award amount of the contract from \$320,000 down to \$220,000 over the four-year period and stay within budget.

Operations and Maintenance staff recommend awarding a two-year service contract to Truesdail Laboratories, Inc., for water quality testing and analyses services, with an option to extend the contract for an additional twenty (24) months, for a total contract amount not-to-exceed \$220,000.

Prepared by: Joseph N. Wegand, Operations & Maintenance Manager

Reviewed by: Gary A. Eaton, Director of Operations & Maintenance

Approved by: Frank Belock, Jr., Deputy General Manager

JNW/GAE/FB:sdw

January 20, 2010

Attention: Engineering and Operations Committee

Asset Management Program Funding Policy (Action)

Staff recommendation

Accept Asset Management Program Funding Policy recommendations.

Alternatives

1. Do not accept the Water Authority's Asset Management Program Funding Policy and direct staff to update or incorporate the Board's comments. This alternative would result in delaying the publishing of the Asset Management Program Funding Policy.

Fiscal Impact

The Asset Management Program is currently being funded using existing programs and projects. There will not be an increase to the FY2010/2011 CIP or Operating budgets due to the implementation of this funding policy.

Background

In April 2008, the Board completed a strategic plan that provided guidance in setting the Water Authority's strategic policies over the next 25 years. The Board identified Asset Management as one of three Key Result Areas (KRA's) on which to focus. The Asset Management KRA is supported by three Strategies: 1) Facilities Planning; 2) Capital Financing; and, 3) Facilities Operation and Maintenance. Facilities Operation and Maintenance has two objectives: 1) Adopt an integrated asset management plan to support all budget proposals for water assets by January 2009 and 2) Adopt a policy regarding funding of asset replacement by January 2010. Objective 1 was completed and the Board approved the Water Authority's Asset Management Plan for FY 2010 and 2011 in January 2009. This memorandum contains information and staff's recommendation relative to Objective 2, development of an asset management funding policy.

In November 2009, an Asset Management Working Group was formed in order to provide stakeholder input and direction to staff during the development of the Asset Management Funding Policy. The group was chaired by director Gary Arant, and included directors Mike Hogan, Ralph McIntosh, Richard Smith, and Barbara Wight. Meetings were held on November 24, December 7, and December 22, 2009. The working group reviewed the Asset Management Program specifics including the asset management history, asset evaluation methodology, past expenditures, and funding policy objectives.

Asset management includes all activities necessary to derive the most value from an asset through its life cycle. The overarching goal of asset management is that planning, design, construction, operation, maintenance, and surplus of assets is completed at the optimum time to ensure water delivery system reliability at the lowest cost and least impact to our member agencies. It is critical that each of these activities meets internal and external stakeholder expectations, and that budgets and schedules are managed to ensure success in meeting the Water Authority's mission of providing a safe and reliable supply of water.

The Asset Management Program, as presented to the Board in January 2009, defined three major asset classes: Pipelines, Facilities, and Equipment. The Asset Management Program will follow the basic principles of Project Portfolio Management (PPM), which utilizes a process for analyzing, prioritizing, and collectively managing asset management projects in each of the three asset classes. Asset management projects may include the repair, rehab, or replacement of critical equipment (ie valves, pipelines, or facilities). The decision to recommend a project will be made based upon specific asset class criteria that measure the relative benefits, costs, consequences and risks to the Water Authority of either executing or delaying the project. The expenditures required to perform this work will be summarized and presented to the Board as part of each 2-year budget process. The information provided to the Board will include a prioritized list of assets with their remaining service life, schedule for repair, rehabilitation, or replacement, and the costs associated with executing the asset management project portfolio for that budget cycle. These activities will be funded in accordance with the Asset Management Program's funding policy described below.

Previous Board actions:

In 1993, the Board approved the Replacement/Relining of existing PCCP. This CIP project was approved to facilitate the rehabilitation of Water Authority pre-stressed Pipelines.

In 1997, the Board authorized the establishment of an Equipment Replacement Fund.

In January 2009, the Board accepted the Asset Management Plan for fiscal years 2010 and 2011.

Discussion

Policy Considerations

As discussed in the Water Authority's Long-Range Financing Plan (LRFP), the Water Authority has three primary financial management policy objectives. These objectives are:

- **Cost Efficiency** – Minimize the cost of operations to maintain the lowest possible rates and charges
- **Predictable Rates** – Manage, to the extent possible, rate and charge volatility to provide stable rates and charges to our customers
- **Intergenerational Equity** – Tie the use/benefit of the assets to the benefiting rate payers

These objectives shape the Water Authority's financial management policies and, as such, shape the Asset Management Program's funding policy recommendations.

Funding Sources

There are three primary funding sources that the Water Authority can utilize to fund asset management projects. These sources include the Capital Improvements Program (CIP) funding mix of debt and PAYGO cash, dedicated funds established for a particular program (e.g. the Equipment Replacement Fund), or current year rate revenues. Each of the funding sources has direct implications on how well the financial management policy objectives can be met.

The CIP funding mix utilizes debt and cash to create a smooth project cost profile for projects that represent a significant investment in infrastructure (e.g. ESP). The CIP

funding mix also spreads the cost of these projects over the projects' service life tying the benefits from the asset to the benefiting rate payers.

Dedicated funds also smooth project costs over time by making "levelized" fund deposits over time that are funded by current rate payers. These funds are then used to pay for projects when they are needed. This not only smoothes rate and charge volatility but also ensures that the customers benefiting from the assets pay for them.

Current year rate revenues are funded as part of the operating budget. This funding source has the potential to increase rate and charge volatility and only impacts current customers.

Recommended Funding Policy

The recommended funding policy (see attachment A) for the three Asset Classes balances the assets characteristics (*e.g.* service life, year over year cost volatility, etc.) with the Water Authority's financial management policy objectives. The recommended funding plan for each Asset Class is discussed below.

Pipelines: The main characteristics of these projects are: 1) they are significant projects that require planning, design and construction management; 2) they require significant resources and represent a large investment in infrastructure; and 3) they remain in service for a long period of time, up to 100 years.

Based upon these characteristics, the current practice of using the CIP funding mix for these projects best achieves the financial management objectives.

Facilities: The main characteristics of these projects are 1) they are varied in size and cost, with some projects involving planning, design and construction management; 2) they can range from small repairs to projects that require significant resources and represent a large investment in infrastructure; and 3) they have a wide range of expected service lives.

Based upon these characteristics, the recommended funding policy is as follows:

- Major Projects (*i.e.*, replacement of existing facilities) – No change to the current practice of using the CIP funding mix for these projects is recommended.
- Equipment and Repair Projects – Staff recommends that a new Facilities Repair and Replacement (R&R) Fund be created. The fund would provide resources to support the Asset Management Program's life-cycle cost optimization of facility assets and fund other equipment projects (*e.g.* the existing valve and meter replacement project).

Equipment: The main characteristics of these projects are 1) they are relatively simple projects often involving the purchase of an asset; 2) they can range in cost but are not typically large cost items; and, 3) they remain in service for a relatively short period of time, between 3-15 years.

Based upon these characteristics, no changes to the current practice of funding these projects with a combination of the Equipment Replacement fund and operating funds is recommended. As is currently the practice, new equipment would be purchased with operating funds (*e.g.* budget) and replacements would be purchased with Equipment Replacement funds.

To summarize, staff's recommendation is to maintain the current funding policies for the Asset Classes and to add a new fund for facility R&R projects. The Facilities R&R Fund would provide funding for projects that would otherwise increase the volatility of the operating budget (*e.g.* the valve and meter replacement program once moved out of the CIP) and be paid for by rate payers at that time. As being recommended, the Facilities R&R Fund would recover the cost of facility R&R projects over time by smoothing rates and charges and collecting revenues from customers benefiting from the usage of the assets over time. Similar to the Equipment Replacement Fund, a fund deposit will be budgeted for in each multi-year budget and fund balance tracked separately. The size of the fund will be determined once a more detailed analysis of future funding needs is completed and will be presented to the Board as part of the 2012 budget process.

Implementation of Recommendation

The Asset Management Committee, comprised of representatives from Water Authority departments, will periodically review the recommended replacement, rehabilitation, repair, or surplus projects. The committee will summarize the recommendations in an Asset Management report containing a portfolio of projects that will be presented to the Board for approval during the biennial budget approval process. The projects listed in the Asset Management report will include a proposed budget schedule commensurate to the project scope of work. Funding decisions for asset management related projects would be reviewed biennially by the Asset Management Committee and presented to the Board during the budget development process. Additionally, a report on the performance and status of the overall Asset Management Program will be presented to the Board during the budget development process that shall include budget status, and proposed funding strategies and opportunities. The Operations and Maintenance Department is responsible for coordinating and implementation of the Asset Management Program through the Water Authority's Asset Management Committee.

Prepared by: John J. Galleher Jr., Operations and Maintenance Manager
Reviewed by: Gary A. Eaton, Director of Operations and Maintenance
Reviewed by: Eric Sandler, Director of Finance
Approved by: Frank Belock Jr., Deputy General Manager

GAE/JJG:cao

Attachments:

1. Asset Management Program Funding Policy
2. Asset Management frequently asked questions (FAQs)



Asset Management Program Funding Policy

Date: January 28, 2010 **Revision:**

Purpose

In January 2009, the Water Authority's Board adopted an Asset Management Plan that defined three major asset classes and how each one was going to be prioritized for repair, rehabilitation, or replacement using criteria specific to the class. This policy establishes how each of these three asset classes will be funded.

Policy

Embedded within the Asset Management Program's funding policy are the Water Authority's financial management policy objectives. These policy objectives are:

- **Cost Efficiency** – Minimize the cost of operations to maintain the lowest possible rates and charges
- **Predictable Rates** – Manage, to the extent possible, rate and charge volatility to provide stable rates and charges to our customers
- **Intergenerational Equity** – Tie the use/benefit of assets to the benefiting rate payers

Definition of Asset Classes

The Water Authority's assets have been broken down into major three asset classes; Pipelines, Facilities, and Equipment. These classes were developed based upon their function and impact to the Water Authority's mission.

Pipelines Class: Includes the various type of pipelines used to transport water to the Member Agencies, with the exception of the facilities that meter, pump, or treat the water. It includes a complex network of over 300 miles of pipelines ranging in diameter from 20-inches to 108-inches and constructed with a variety of materials (e.g. Steel, PCCP).

Facilities Class: Includes all water delivery facilities in the system. Currently over 120 facilities are used to meter, pump, treat, generate electricity, and control the flow of water.

Equipment Class: Includes construction equipment, SCADA system hardware, Peoplesoft, technical equipment, and specialty tools required to operate and maintain the water delivery system. This class strives to track and replace capital equipment when the capital equipment has reached the end of its useful life.

Pipeline Asset Class Funding

Pipeline Asset class projects will be funded as part of the Capital Improvements Program (CIP) and will be budgeted as part of the CIP.

Facilities Asset Class Funding

Facilities Asset class projects for major projects (i.e., replacement of existing facilities) would continue to be funded using the Capital Improvements Program (CIP) funding mix. Equipment and repair projects would have a new Facilities Repair and Replacement (R&R) Fund would provide funding for projects that would otherwise increase the operating budget and be paid for by rate payers at that time.

Equipment Asset Class Funding

Equipment Asset class projects will be funded in part by current year revenues (Operating Budget) and through draws on the Equipment Replacement Fund.

Asset Management FAQs

During the development of the Asset Management Funding Policy, there were several questions raised by stakeholders. These questions and associated answers are included below.

Q1. Will this Asset Management Funding Policy have an impact on the current rates?

A1. No. This policy will not have a fiscal impact on the current 2 year budget. Future impacts will be discussed as part of the bi-annual budget process.

Q2. Isn't there a current program to rehabilitate, replace, or repair the Water Authority's pipelines?

A2. Yes. However, this program only has funds to cover approximately 80% (66 of 82.5 miles) of the prestressed concrete cylinder pipelines (PCCP). The Water Authority has over 300 miles of pipelines constructed of various materials with different service lines. The pipelines that are not included in the replacement program are currently being monitored by Aqueduct Protection Program staff and will be brought forward to the Board for replacement or rehabilitation as part of the CIP budget process.

Q3. How are the projects prioritized?

A3. Projects are prioritized based on condition and consequence/risk of failure. Each asset class has specific criteria that is used to determine the assets condition and consequence of failure. An example of the condition assessment factors for pipelines include:

- i. Age
- ii. Pipe material (past performance)
- iii. Pressure
- iv. Construction (How the pipe was installed)
- v. Design
- vi. Environment (soil conditions, corrosivity, etc.)
- vii. External impacts (ROW encroachments, overloading, etc.)

A3. An example of consequence of failure factors for pipelines include:

- i. Life safety
- ii. Property damage
- iii. Environmental damage (flooding, etc.)
- iv. Member agency impacts (loss of service, lack of redundancy, etc.)
- v. Adjacent utility impacts (damage to utilities from pipe failure, including adjacent Water Authority pipelines)

A3. After the condition assessment and consequence of failure is completed, a risk matrix is developed for each asset class. This matrix compares the condition against the consequence of failure and places the asset in one of the four quadrants (see figure below). The mix of projects is referred to as the AM Project Portfolio. If the assets are in the upper right quadrant (red), they are in the worst condition and have the highest consequence of failure and will be the highest priority for repair, replacement, or rehabilitation.

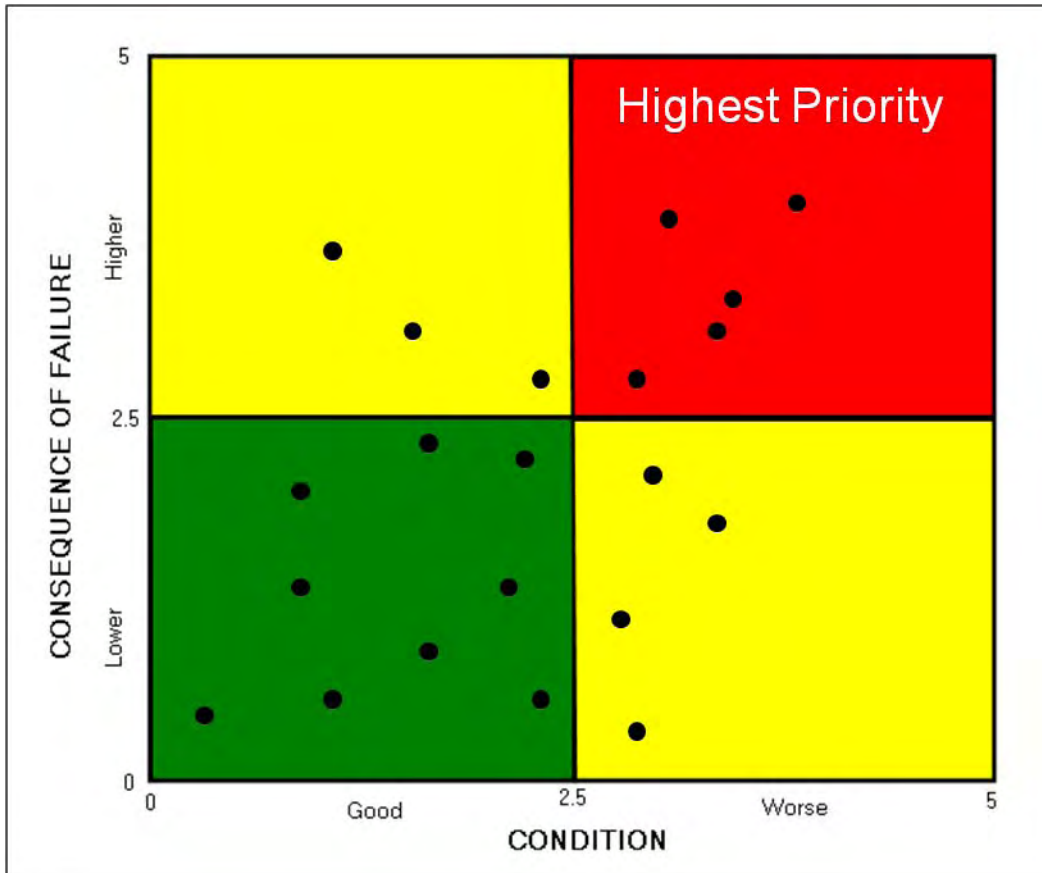


Figure 1 - Risk Matrix

Q4. What conditions could change a project from green to red in Figure 1?

- A4. A project could go from green to red if either the condition worsened or the consequence of failure increased. In the case of our pipelines, this could occur if:
- i. The annual inspection found that the pipelines condition had degraded.
 - ii. A leak was found in the pipeline.
 - iii. There was a failure or increased Acoustic Fiber Optic (AFO) condition monitoring activity.
 - iv. Additional infrastructure was constructed adjacent to our pipeline increasing the consequence of failure.

Q5. Is it possible for a project to go from a red to yellow or green?

- A5. Yes. Generally this only happens if the consequence of failure changes (drainage is improved, buildings are removed from the ROW, improved inspection technology revealing the asset condition to be better than previously assessed, etc.).



January 20, 2010

Attention: Engineering and Operations Committee

Advertisement for bids for the San Vicente Dam Raise Package 3 – Roller Compacted Concrete Dams and Appurtenant Facilities construction contract. (Information)

Purpose

Inform the Board of the advertisement to solicit construction bids for the San Vicente Dam Raise Package 3 – Roller Compacted Concrete Dams and Appurtenant Facilities.

Background

In June 1998, the Board approved adding the Emergency Storage Project to the Capital Improvement Program. The Emergency Storage Project includes raising the existing San Vicente Dam by 54 feet to provide 52,000 acre feet of emergency storage. In April 2008, the Board certified the Carryover Storage Project Environmental Impact Report, allowing the dam to be raised an additional 63 feet to provide 100,000 acre feet of carryover storage. Therefore, the dam will be raised a total of 117 feet, providing an additional 152,000 acre-feet of combined storage for the region. The following is the project's construction package implementation plan:

- Package 1 – Test Quarry (Complete)
- Package 2 – Foundation Preparatory Work (In construction)
- Package 2B – Vegetation Cutting and Erosion Control (In construction)
- Package 3 – Roller Compacted Concrete Dams and Appurtenant Facilities (Advertising for construction bids)
- Package 4 – Bypass Pipeline (Selecting Design Consultant)
- Package 5 – Marina Improvements (In design)
- Package 6 – Post Construction Habitat Restoration (In planning)

In May 2009, the Board awarded the Package 2 – Foundation Preparatory Work construction contract to excavate the main and saddle dam foundations and prepare the site for the dam raise. With the Board's approval of Package 2, the Division of Safety of Dams, the state regulatory agency having jurisdiction over the San Vicente Dam, requires the Water Authority to complete the dam raise by constructing Package 3. If the Package 3 project is not implemented, then DSOD will require replacing the dam's existing concrete structures, such as the spillway and parapet walls, filling the 10-foot diameter tunnel through the dam with concrete, and returning the excavated foundations to their original grade by filling with concrete.

Previous Board actions: In May 2009, the Board authorized the General Manager to execute a construction contract with Barnard Construction Company, Inc. for the Package 2 – San Vicente Foundation Preparatory Work project.

Discussion

The Package 3 project includes raising the existing dam, constructing a saddle dam, building new access roads, and constructing a new outlet tower, pipelines, and control facility to regulate the flow of water from the expanded reservoir to Water Authority and City of San Diego facilities as shown in attached Figure 1.

As part of our design efforts, staff conducted a risk analysis identifying potential design, construction, schedule, and budget risks. The following actions were implemented to mitigate these risks:

Contractor Prequalification. Package 3 is a specialized and complex construction project. As a result, construction prime contractors were prequalified to ensure the firms possessed the required experience and financial stability to complete the work on schedule and budget, and in a quality manner. We prequalified prime contractors as shown in the attached Table 1, and expect five bids. Bids for construction will only be accepted from the prequalified firms.

Olivenhain Dam Lessons Learned. Many of the design features and lessons learned from the Olivenhain Dam were incorporated into the San Vicente Dam Raise design. For example, similar to Olivenhain, the dam foundation work was divided into a separate construction package to expose the dam's foundation and allow the Package 3 contractors to see the actual foundation during the bid period, reducing the potential for differing site condition claims. This approach allowed us to address unexpected foundation conditions, typically one of the largest risks to meeting a dam's construction schedule.

Division of Safety of Dams Coordination. DSOD is a key stakeholder that ultimately approves the dam raise design, construction, and operation. Engaging DSOD early and often throughout the dam raise design has fostered a good working relationship and ensures the regulatory agency's concurrence with design, while maintaining the project schedule. DSOD was involved from the very beginning of the design phase, and has taken a conservative approach in its review and approval of the design, performing an independent technical analysis of the structural performance and future operation of the dam. We need to ensure adequate inspection by DSOD since they will ultimately need to sign-off on the finished project prior to reservoir filling. Therefore, we included in the contract the need for the contractor to provide reports and schedule DSOD inspections collaboratively, such as the contractor must schedule work so there are no DSOD inspections during State furlough days without prior authorization by DSOD and the Water Authority.

Roller Compacted Concrete Aggregate. The RCC mix design includes water, cement, and aggregates or crushed rocks. As an alternative to purchasing aggregate from an outside source, the Package 1 – Test Quarry project found it feasible to mine aggregates onsite, significantly reducing project costs and impacts to the community. Five subsurface borings at the marina site were initially planned. However, based on the Board of Senior Consultants' recommendation and the designer's concurrence, the number of borings was increased to ten to obtain more information to assess the quality

and quantity of available aggregate at the site. Based on the results from the borings, three locations in the marina have been identified as quarry sites to better ensure an adequate amount of suitable quality on-site aggregate material is available for the RCC mix.

Roller Compacted Concrete Integrity. The mix design produces RCC with a target strength, important so the existing and raised dams are compatible and behave as a single structure. To prevent the structure from cracking, the placement temperature is controlled, often by adding chilled water during the RCC operations. To minimize the Water Authority's risk, the contract is structured so that the Package 3 contractor is responsible for determining the best time of year to place RCC, requiring cooling costs to be included in the bid, based on the contractor's proposed RCC operations. Additionally, Package 3 also includes an RCC trial placement, to demonstrate the contractor's RCC operations, ensuring DSOD's approval before the actual dam raise work begins.

Quality Assurance and Quality Control. The Board of Senior Consultants, composed of technical experts in the field of large roller compacted concrete dams, and the operation of dams, reviewed and provided input throughout development of the design. Specific BOSC members, whose expertise is dam construction, will remain on the project to provide technical support during the construction phase. Their work will include review of the final mix design and any suggested modifications by the contractor. In addition, independent third party engineering firms completed comprehensive technical design reviews to identify design and address issues that may impact the construction budget and schedule.

In an effort to facilitate small and minority owned business participation on the Package 3 construction contract, three contractor outreach events were held for the project. At the November 17, 2009 Contractor Open House, our focus was to provide an opportunity for prequalified contractors to meet with potential subcontractors and vendors. The outreach event was successful with over 100 individuals in attendance, including participation by the Water Authority's SCOOP Committee.

The Package 3 project's estimated construction cost is between \$170 and \$190 million, with a construction duration of approximately two and one-half years. The project is expected to be complete by the end of 2012. Reservoir filling will begin when construction is complete, and will take up to five years for the reservoir to reach its new operating level. Staff expects to return to the Board in April 2010 with a recommendation for construction contract award.

Prepared by: Nicola M. Kavanagh, Senior Engineer
Reviewed by: Michael T. Stift, Director of Engineering
Approved by: Frank Belock, Jr., Deputy General Manager

Attachments:

Figure 1 – Location Map

Table 1 – List of Prequalified Prime Contractors

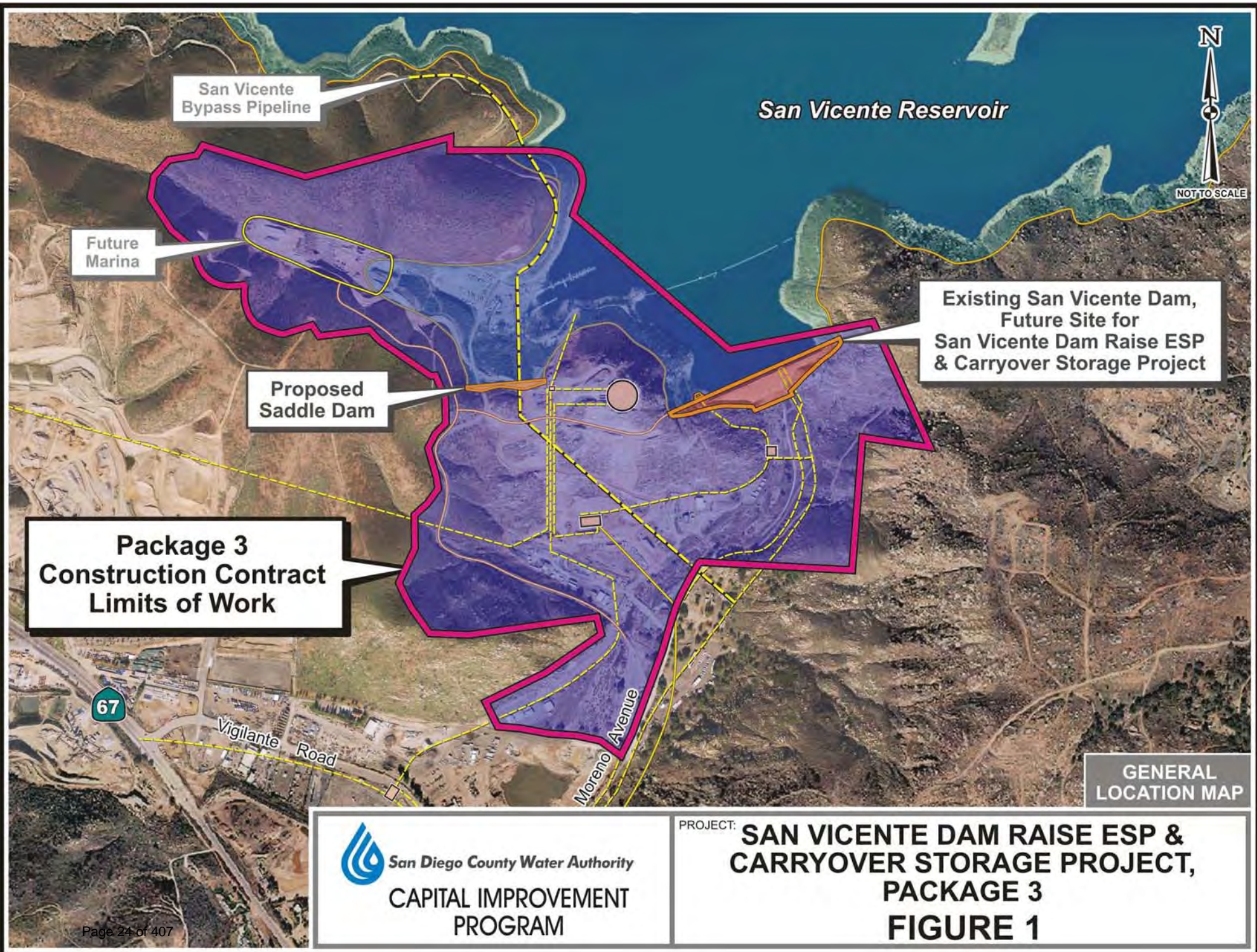


TABLE 1

List of Prequalified Prime Contractors
San Vicente Dam Raise Package 3 –
Roller Compacted Concrete Dams and Appurtenant Facilities

• Ames/Granite - Joint Venture
• Barnard
• Barnard/ASI - Joint Venture
• Dragados
• Dragados/ CC Myers - Joint Venture
• Kiewit
• Shimmick/Obayashi - Joint Venture

Note: Barnard and Dragados are prequalified as individual firms and as potential joint ventures. Both firms can only submit one bid and will either submit as an individual firm or a prequalified joint venture.