

# SANTA CLARA VALLEY WATER DISTRICT PERFORMANCE AUDIT OF THE CONSTRUCTION CONTRACT CHANGE ORDER PROCESS

## SUMMARY OF KEY FINDINGS

August 2019 Board Audit Committee



# Audit Objectives

Audit Objective

Are potential improvement opportunities present in the construction change order process?

# Audit Scope and Approach

- **Construction contracts change order process**
- **Water Utilities, Dam Safety and Capital Delivery, Watershed Divisions, CIP Committee, and DRB Members**
- **Completed construction projects, CYs 2017, 2018**

- Reviewed construction contract change order policies and procedures and compared to best practices.
- Interviewed COO's, managers, project managers, construction managers, Capital Improvement Program (CIP) Committee members, District counsel staff, Valley Water (VW) contractors, former Dispute Resolution Board (DRB) members to discuss potential improvement opportunities.
- Examined the use of the Quality Environmental Management System (QEMS) applicable to project management.
- Examined review and authorization structures and activities.
- Analyzed 34 change orders associated with six contracts completed in CY '17 and '18 (6 projects).
- Conducted root cause analysis attributed to change orders to the extent possible. For this analysis, we relied on agency and expert interviews coupled with the results of our review of change orders.

# Background

- A change order is a written alteration that is issued to modify or amend a contract or purchase order. In reference to construction contracts, change orders are generally issued for unanticipated conditions encountered during construction that are not covered by the drawings, plans, or specification of the project.
- Change orders at VW are referred to as:
  - Pending Change Orders (PCO)
  - Contract Change Orders (CCO)
  - Directed Change Orders (DCO)
- Change orders are possible on nearly all construction projects. The goal is to minimize the number of change orders issued on projects because the more change orders issued, the higher risk of cost overruns, project completion delays, and unnecessary work.
- Change order management and administration will take on added importance to VW stemming from future plans to complete 67 projects over the next 15 years at a cost of over \$5.157B.

# Audit Findings

## **Finding 1: Opportunities are Present to Better Align Valley Water (VW) Change Order Management and Administration to Leading Practices**

A. Policies and procedures can be updated to address the latest in change order practices.

- 22 of 30 change order best practices are addressed in VW policies
- Examples of other best practices that are not addressed in VW policies and procedures include:
  - Use of Independent Cost Estimates
  - Prohibit commencement of work until approval of change orders
  - Establish advisory body to support change order management and administration
  - Centralization of some support service activities

VW's change order policies and procedures are not currently designed to mitigate potential risks that could occur on large-scale construction projects

# Audit Findings

## **Finding 2: Change Order Management and Administration Needs Uniform Implementation or Other Enhancements**

- A. Official forms should capture reasons for the changes.
- B. Final and balancing change orders need consistent preparation.
- C. Contingency budget development should consider potential risks.
- D. Delegation of approval authority of change orders needs consistency.
- E. Cost reductions on capital projects should be consistently processed through change orders.
- F. Separating change orders to retain staff approval authority should be avoided
- G. QEMS can be expanded and enhanced
  - 1. Incorporate existing Valley Water practices onto QEMS project reports
  - 2. Enhance the close-out checklist by including a review of open COs and PCOs
  - 3. Consistently implement document Q-751-01
  - 4. Clarify Section 11, Appendix A, (Q-751-013, Capital Project Delivery)
  - 5. Enhance the risk management process document W-710-128

# Audit Findings

## **Finding 3: Root Cause of Change Orders is Attributed to the Absence of Strong Support Systems**

- A. Root cause analysis (RCA) is a methodological technique designed to pinpoint the precise cause of an occurrence of a single or set of events or problems.
- B. The likely root cause for change orders is the absence of strong support systems to aid project and construction managers. These support systems include:
  - Enhanced oversight of the design process. DRB members said constructability reviews, conducted by experts independent of the design process, are an effective method to prevent change orders for both projects designed by Valley Water staff and projects designed by consultants.
  - Robust project management training programs.
  - Enhanced change order policies and procedures.
  - Enhanced quality assurance forms.
  - Utilization of an advisory body that would support decision-making on change orders.
- C. Without development of new and enhanced support systems, VW can likely expect an increase of change orders on future capital construction projects.

# Recommendations

## Recommendations:

1. To mitigate the potential service and financial risks created by the issuance of change orders, especially on large-scale projects, we recommend that the Chief Executive Officer (CEO) update capital construction change order policies and procedures applicable to large-scale projects to:
  - a. Require an Independent Cost Estimate (ICE) for capital construction change orders.
  - b. Use a separate advisory body to review and recommend the approval of change orders.
  - c. Prohibit commencement of work until after change order approval.
2. To help mitigate the occurrence of change orders, the CEO should enhance constructability reviews as part of the construction project design phase with the addition of independent subject matter experts to the review team.



# Recommendations

## Recommendations:

3. To add and enhance support structures to aid project and construction managers in delivering capital projects, the CEO should enhance the review and approval process for change orders (including potential change orders, contract change orders, and directed change orders) on capital construction projects that are new to Valley Water and/or whose project costs exceed \$100M. Options include:

a. Add external subject matter experts to the existing CIP Committee and meet on a frequent schedule to review project progress and make recommendations to the Board of Directors on all change orders.

Or,

b. Create a Project Steering Committee for each new project to review project progress and provide authority to review and approve change orders. The Committee should include a Board of Director member, Valley Water management, project, and construction manager, external subject matter experts, outsourced legal construction contract counsel, and a representative from the Purchasing and Consulting Contracts Services Unit.

# Recommendations

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4. To further add and enhance project support structures, the CEO should create a PMO (or restructure the current Capital Program Planning and Analysis Unit) for all capital construction projects. The roles and responsibilities of the PMO will be to ensure consistent and uniform implementation of project management standards; manage and administer the change order process; consolidate, analyze, and disseminate lessons learned activities and historical project information for future project planning; coordinate projects and resources; and to serve as the information source for executive staff and committees.
5. To support the centralization of procurement activities, the CEO should transfer the responsibility to administer procurement activities on capital projects (i.e. RFP preparation and bid processing) from the Capital Program Planning and Analysis Unit to Valley Water's Purchasing and Consultant Contracts Services Unit. The PMO should assume responsibility for contract administration and change order management upon execution of the contract by the Purchasing and Consultant Contracts Services Unit. The Purchasing and Consultant Contracts Services Unit can also embed an employee into the PMO to oversee change order management or administer an oversight role in coordinating updated change order policies and procedures, and conduct spot audits to ensure change orders comply with contractual terms and conditions.

# Recommendations

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6. To promote uniform implementation of change order management and administration, the CEO should:
  - a) Develop and establish specific criteria for establishing contingency budgets for change orders that consider project complexity and size, such as \$0 contingency for capital projects less than \$100,000 ranging to an amount over \$1M for projects over \$500M eliminating the need for the Board of Directors to separately approve contingency budgets for each capital construction contract.
  - b) Update the Quality and Environmental Management System (QEMS) forms to:
    - Develop templates within the Capital Improvement Program Planning document to provide clarification on how the Quality Records should be completed.
    - Add a step in the Close-Out Checklist for the review of open change orders and potential change orders.
    - Enhance the Risk Management Process document to include a review of similar projects in the Capital Improvement Program Historical Information Retrieval (CIPHIR) tool to identify additional project risks and corrective actions that may not have been previously identified.
  - c) Enhance project management training to address change order management and administration, including negotiation, pricing analysis, and contract closeout activities.

# NEXT STEPS

August 28: Issue the draft report for formal agency comment to the recommendations.

15 working days for review.

October: Present the final report to the Board Audit Committee