

**Public Utilities Revenue Bond Oversight Committee
City Services Auditor Working Group**

AGENDA

July 7, 2011

10:00 a.m.

1155 Market Street (between 7th & 8th Streets)

11th Floor Conference Room A

San Francisco, CA 94102

Committee Members

John Ummel, Chair
Ben Kutnick

1. Call to Order and Roll Call
2. Public Comment: Members of the public may address the City Services Auditor Working Group of the Revenue Bond Oversight Committee (RBOC) on matters that are within the RBOC's Jurisdiction that are not on today's agenda.
3. Discussion and Possible Action: Selection of projects to be audited for Task 1a and 1b. (see attached)
4. Discussion and Possible Action: "Observer" to oversee SFPUC Independent Review Panel's third review of the Water System Improvement Program (WSIP) – Role, Job Description, Qualifications, Possible Candidates, and Criteria for selection. (see attach description)
5. Discussion and Possible Action: Process for contracting with an "observer" to oversee SFPUC's Independent Peer Review Panel's third review of the WSIP program.
 - a. Would SFPUC employees/contractors be precluded from being an observer?
 - b. Would an observer be precluded from being assigned future task by the RBOC?
 - c. How would the observer be paid?
 - d. What contracting options may the RBOC utilize; at what dollar threshold?

6. Discussion and Possible Action: Potential Tasks that the SFPUC Independent Peer Panel and RBOC may engage on. (see attached)
7. Discussion and Possible Action: Approval of the Minutes of the RBOC City Services Auditor Working Group meetings for June 8, 2011 .
8. Discussion and Possible Action: Future Agenda Items/Meeting Dates
9. Adjournment

Note: Each item on the Regular Agenda may include explanatory documents, including reports and public correspondence. These items are available for review at City Hall, Room 244, Reception Desk.

Audio recordings of the meeting of the Revenue Bond Oversight Committee are available at:

http://sanfrancisco.granicus.com/ViewPublisher.php?view_id=97

For information concerning agendas, minutes and meeting information please contact:

Victor Young, Committee Clerk
City Hall
1 Dr. Carlton B. Goodlett Place, Room 244
San Francisco, CA 94102
Victor.Young@sfgov.org
(415) 554-7723

For information concerning SFPUC reports and documents please contact:

bondoversight@sfgov.org

(415) 487-5245

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Explanatory Documents: Copies of Explanatory Documents listed in this agenda, if any, and other related materials received by the Contracting Working Group of the Revenue Bond Oversight Committee after the posting of the agenda, are available for public inspection at 1155 Market Street, 5th Floor. Please call (415) 487-5245 to make arrangements for pick up or review.

Public Comment

Public Comment will be taken before or during the Committee's consideration of each agenda item. Speakers may address the Committee for up to three minutes on that item. During General Public Comment, members of the public may address the Committee on matters that are within the Committee's jurisdiction and are not on the agenda.

Disability Access

The Public Utilities Commission meeting will be held at 1155 Market Street (between 7th and 8th Streets), 4th Floor, San Francisco, CA. The Commission meeting room is wheelchair accessible. The closest accessible BART and MUNI station is the Civic Center Station at United Nations Plaza and Market Street. Accessible MUNI lines serving this location are: #6 #7, #9, #21, #66, #71, #5, N, J, K, L, M and the F Line to Market and 8th Street. For information about MUNI accessible services call (415) 923-6142. There is accessible parking behind 1155 Market Street.

The following services are available on request 48 hours prior to the meeting; except for Monday meetings, for which the deadline shall be 4:00 p.m. of the last business day of the preceding week: For American sign language interpreters or the use of a reader during a meeting, a sound enhancement system, and/or alternative formats of the agenda and minutes, please contact Mike Brown at (415) 487-5223 to make arrangements for the accommodation. Late requests will be honored, if possible.

In order to assist the City's efforts to accommodate persons with severe allergies, environmental illnesses, multiple chemical sensitivity or related disabilities, attendees at public meetings are reminded that other attendees may be sensitive to various chemical based products. Please help the City accommodate these individuals. Individuals with chemical sensitivity or related disabilities should call our accessibility hotline at (415) 554-6060.

Know your rights under the Sunshine Ordinance

Government's duty is to serve the public, reaching its decisions in full view of the public. Commissions, boards, councils, and other agencies of the City and County exist to conduct the people's business. This ordinance assures that deliberations are conducted before the people and that City operations are open to the people's review. For more information on your rights under the Sunshine Ordinance or to report a violation of the ordinance, contact the Sunshine Ordinance Task Force, City Hall, Room 405, 1 Dr. Carlton B. Goodlett Place, San Francisco, CA 94102 at telephone No.: (415) 554-7724; Fax (415) 554-7854; E-mail: soft@sfgov.org. Copies of the Sunshine Ordinance can be obtained from the Clerk of the Sunshine Task Force, the San Francisco Public Library and on the City's website at www.sfgov.org.

Cell phones, pagers and similar sound-producing electronic devices

The ringing of and use of cell phones, pagers and similar sound-producing electronic devices are prohibited at this meeting. Please be advised that the Chair may order the removal from the meeting room of any person(s) responsible for the ringing or use of a cell phone, pager, or other similar sound-producing electronic devices.

Lobbyist Registration and Reporting Requirements

Individuals and entities that influence or attempt to influence local legislative or administrative action may be required by the San Francisco Lobbyist Ordinance [SF Campaign & Governmental Conduct Code §2.100, et. seq] to register and report lobbying activity. For more information about the Lobbyist Ordinance, please contact the Ethics Commission at: 30 Van Ness Avenue, Suite 3900, San Francisco, CA 94102; telephone (415) 581-2300; fax (415) 581-2317; web site www.sfgov.org/ethics.

Suggested Projects to be Audited by CSA Per MOU with Revenue Bond Oversight Committee – July 2011

Task 1a: Audit three projects to determine if bond proceeds were (are being) used in accordance with bond resolutions, authorization, legislation, intended use, and Commission action.

1. **Project CUW 368.2.** Bay Division Pipeline Reliability Upgrade - Pipeline
Project Cost: \$207M **Status:** 70% complete **Contact:** Joseph Ortiz, 415 551-4541
Description: Installation of a "5th" pipeline in two segments, East Bay and Peninsula, built parallel to BDPL 1 & 2 and linked with the Bay Tunnel; provides redundancy and seismic reliability.

2. **Project CUW 309.1.** Lake Merced Pump Station Essential Upgrade
Project Cost: \$47M **Status:** 75% complete **Contact:** Howard Fung, 415 551-4642
Description: Replacement of the city's major pumping station which was built in 1953 and has exceeded its useful life.

3. **Project WW-405.** Mission & Mt Vernon Sewer Improvement
Project Cost: \$16M **Status:** Complete **Contact:** Bessie Tam, 415-554-1519
Description: Improve sewer drainage for wastewater collected and transmitted on Mission, Mt. Vernon, Ellington, and Foote streets in SF.

Task 1b: Audit two projects to determine if program management costs were (are being) allocated per best practices.

1. **Project CUW 361.5.** Pulgas Balancing Reservoir: Modifications to Existing Dechlor Facility
Project Cost: \$5.8M **Status:** 65% Complete **Contact:** Husam Masri: 415 551-4563
Description: Improve the process control system of the existing plant so that chlorine and ammonia can be removed before water is discharged into Crystal Springs Reservoir; brings the plant into compliance with water quality regulations.

2. **Project CUW 367.1.** Harry Tracy Long Term Improvements
Project Cost: \$276M **Status:** 10% Complete **Contact:** Calvin Huey: 650 808-3877
Description: Treatment plant upgrades that will allow sustained 140 mgd capacity following a seismic event.

Alternate Project: If CSA deems PM expenditure detail-to-date for CUW 367.1 is too small, impedes its ability to conduct a thorough review.

Project CUW 381.1. Sunol Valley WTP Expansion & Treated Water Reservoir
Project Cost: \$126M **Status:** 40% Complete **Contact:** Ravi Krishnaiah: 415 554-0710
Description: Treatment plant upgrades that will allow sustained 160 mgd capacity during an outage and new treated water reservoir to maximize system operations.

Background and "Job Description" for RBOC Observer

DRAFT

Introduction: The SFPUC, with assistance from Parsons, created an Independent Peer Review Panel (currently comprised of four industry construction management (CM) professionals*) to conduct reviews of the WSIP program, specifically construction management. Two reviews have taken place thus far and a third and final one is contemplated for Fall, 2011. The first assessment (January 2010) looked at the WSIP organization, systems, reporting format, and risks to program delivery. The second assessment (January 2011) focused on various CM activities. A separate report by Parsons looked at schedule compression and execution issues raised by the Commission and the Bay Area Water Supply and Conservation Agency (BAWSCA). Generally speaking, though there were certain aspects of the program that were extremely challenging and could impact program delivery timelines, the two reports by the Panel and one by Parsons found no inherent weaknesses or serious red flags and gave the SFPUC's CM/PM organization high marks.⁽¹⁾

The Regional Bond Oversight Committee (RBOC) - established via Proposition P and approved by voters in November 2002 - has broad oversight responsibility to ensure that proceeds from bonds for improvements to the Water, Waste Water, and Power enterprises are expended in accordance with bond resolutions and intended purpose. RBOC has contracted for various audits in the past and recently engaged the Controller's Office to conduct another financial-type audit. RBOC has also been discussing the need to conduct a review of various aspects of the WSIP program.

WSIP Director, Julie Labonte, offered RBOC the option of using the Panel to advance its own oversight responsibilities. On June 20, 2011, RBOC formally accepted this offer with the proviso that RBOC can appoint a person of its own choosing to be an "observer" of the Panel's third assessment. The work plan for the panel's third review will be developed by RBOC and/or its consultants with assistance from the SFPUC. RBOC desires to contract with an individual with the requisite background and experience to be a fifth member or "observer" of the Panel during a one week engagement in the Fall, 2011.

Job Duties: The basic duties of the observer include, but are not limited to, reviewing reports or studies provided to the Panel in advance of the engagement, participating as an observer in any and all interviews between the Panel and SFPUC or WSIP staff during the course of the engagement, participating in any follow-up (end of the day) discussions with panel members, reviewing the Panel's draft report and making separate, written comments regarding the Panel's findings and recommendations, providing an oral report to RBOC, and commenting on further audits or reviews, if warranted, for RBOC to pursue.

(1) A key recommendation coming from the first assessment was that the SFPUC conduct periodic performance reviews of the CM program starting in mid-to late -2010. The stated role of the Panel with respect to CM activities was to "review the performance of the overall CM program, assess the CM teams' adherence to the CM plan, business process and systems, determine effectiveness and efficiency of the CM organization in managing WSIP construction, and identify areas that may require improvements".

RESUME

NAME: Galyn G. Rippentrop

POSITION: Director, Frontier-Kemper Constructors, Inc.
Consultant

EDUCATION: B. S. Civil Engineering
South Dakota School of Mines and Technology
1974

SUMMARY OF EXPERIENCE:

EMPLOYMENT

Retirement / Consultant
July 5, 2008 - Current

Director
Frontier-Kemper Constructors, Inc.
Evansville, Indiana
December 1999 – Current

President & CEO
Frontier-Kemper Constructors, Inc.
Evansville, Indiana
December 1999 – July 4, 2008 (retired)

Project Manager/Project Executive
Peter Kiewit Sons, Inc.
Omaha, NE
1997 – 1999

Project Manager
Peter Kiewit Sons, Inc.
Omaha, NE
1994 – 1997

DUTIES AND RESPONSIBILITIES

Consulting on a limited basis.

Served as Chairman of the Board through April 2008.
Currently serving as a Director.

Implements the directives of the Board of Directors, sets and approves company policy, oversees marketing efforts and selects candidate projects for bidding, approves major equipment acquisitions, participates in estimating, project risk analysis, proposal preparation and presentation, negotiates and approves contracts, arbitrates disputes within staff and with clients, advises on construction methods and contractual vehicles, coordinates intercompany communications. Calls and presides over regular and special meetings regarding matters requiring shareholder, Board, or management level decision.

Principle on-site Manager of the Rio Piedras Project for Tren Urbano in San Juan, Puerto Rico. Responsible for overall project management including on-time completion, quality control, financials, safety and environmental; project staff personnel, including employee relations and training; Owner relations; and community relations.

Responsible for overall project management on the Congress Heights and New Hampshire Avenue Tunnels in Washington, D.C. for the Washington Metropolitan Area Transit Authority. The Congress Heights Tunnels were twin-bore EPBM subway tunnels, 850 meters by 6.25 meter diameter. The New Hampshire Avenue Project consisted of 2,000 meters of open-face shield tunnel excavated in sands and clays including dewatering and chemical grouting. In addition, 1,810 meters of soft-ground NATM tunnels were driven under a highly sensitive historical cemetery.

Area Tunnel Manager
Peter Kiewit Sons, Inc.
Omaha, NE
1990 – 1994

Responsible for the supervision of concurrent EPBM excavations of twin-bore rail transportation tunnels totaling 8 kilometers connecting the mainland of Denmark with the Island of Sprogue. The tunnels were 8.77 meters in diameter and were driven at grades up to minus 2 percent and under water pressures of up to 6.5 bar under the Great Belt Channel.

Project Manager
Peter Kiewit Sons, Inc.
Omaha, NE
1985 – 1989

Assigned to the Bad Creek Hydroelectric Project near Salem, SC. Construction activities included excavation and lining of a major underground powerhouse, 3,350 meters of 10.7 meter diameter power and access tunnel and 427 vertical meters of 9.15 meter diameter shaft. All phases of the project were completed on time allowing the client to begin power generation as scheduled.

Project Manager
Peter Kiewit Sons, Inc.
Omaha, NE
1983 – 1984

Responsible for all project operations and performance on the Wenatchee Gold Project near Wenatchee, WA. Underground construction activities included 183 vertical meters of 5.5 meter diameter shaft and 2,530 meters of 4.6 meter horseshoe tunnel driven down a minus 15 percent grade. On the surface, a 107 meter high tailings impoundment dam was constructed using 2.45 million cubic meters of selected materials.

Construction Manager
Peter Kiewit Sons, Inc.
Omaha, NE
1978 – 1982

Assigned to C-b Shale Oil Venture project near Rio Blanco, CO. This project included the excavation and lining of three each, conventionally-sunk 580 vertical meter shafts ranging from 4.6 meters to 10.4 meters in diameter. Work also included station and level development plus installation of load-out systems and related shaft steel. All work was completed on schedule with an excellent safety record.

Project Engineer
Peter Kiewit Sons, Inc.
Omaha, NE
1976 – 1977

Assigned to Virginia Pocahontas Mine #5 and #6, Rowe, Virginia. Project consisted of three shafts, 22-ft. diameter, each 1,300 VF deep. Duties included construction design, CPM scheduling, project cost accounting, and subcontractor coordination. Monitored job progress, submitted pay estimates to the owner, handled all project correspondence, subcontractors and material suppliers.

Project Engineer
Various Projects
1974 – 1975

Various civil and mining underground excavation projects.

Donald B. Russell, CCM, FCMAA
Director, Vanir Construction Management, Inc.

Don Russell is a 40-year veteran of the Construction Management industry. He has worked both domestically and internationally, for both public and private sector clients. Don was the co-founder of Vanir Construction Management, Inc., in 1980. He served as its President/CEO for many years, and continues to serve on the company's Board of Directors. Don has also spent 15 years in the energy industry, as President of a three startup companies that became recognized developer/owner/operator of underground natural gas storage facilities in various parts of the country.

Don has been active in the Construction Management Association of America for more than 25 years, having joined as a corporate member in 1984. He served as Chairman of the Standards of Practice and Ethics Committees, as a member of the Association's Board of Directors and Executive Committee, and as President in 1994-1995. Don was selected as a member of the CMAA College of Fellows in 2002, and achieved the designation of Certified Construction Manager (CCM) in 2004. Don is a past-member of the Board of Directors of the CMAA Foundation, and served as Chairman of the Student Scholarship Selection Committee.

Don holds a Bachelor of Science degree in Industrial Engineering from Virginia Tech, and completed his Master's degree course work in Systems Engineering at the Georgia Institute of Technology. He and his wife Linda reside in the Sacramento area and have two children and three grandchildren.

GARY E. GRIGGS, M.S.C.E., P.E.

Consulting Professor
Civil and Environmental Department
Stanford University
473 Via Ortega, Suite 243
Stanford, CA 94305-4020
Date: 4/28/10

Experience Summary

Over 30 years of industry and academic experience in global infrastructure development and delivery.

Education

B.S., Mathematics; B.S. and M.S., Civil Engineering, University of Washington, Seattle, WA

Professional Affiliations

American Society of Civil Engineers (ASCE); American Public Transportation Association (APTA); Women's Transportation Seminar (WTS); Conference of Minority Transportation Officials (COMTO); Tau Beta Pi Engineering Honorary Society

Professional Registrations

California; Colorado; Illinois; Maryland; Massachusetts; Michigan; Nevada (Inactive Status); New York (Inactive Status); Ohio; and Washington

Academic and Professional Experience

Stanford University, Stanford, CA, 2009 to Present

Consulting Professor in Civil and Environmental Engineering responsible for developing a new graduate-level infrastructure program in project development and delivery. Courses address political, community, financing, planning, environmental, design, construction, and operations and maintenance aspects of global infrastructure projects in the communications, energy, public facilities, transportation and water sectors. Organized Global Infrastructure Projects Seminar. Participant in Collaboratory for Research on Global Projects. Graduate-level advisor.

Parsons Brinckerhoff (PB), New York and San Francisco, 1992 to Present

Served in varying positions including Chairman of PB Americas from 2006 to 2008 and President and Chief Operating Officer of Parsons Brinckerhoff Infrastructure (Parsons Brinckerhoff Quade and Douglas, Inc.) from 1996 to 2003. As President, was responsible for all business development, operations and projects throughout the Americas which comprised approximately 86 office and 1,700 projects including transit and rail systems, highways, bridges, tunnels, airports, marine ports, and water resources. During that period, also served as a Director on the boards of various subsidiary companies including PB Transit and Rail, PB Farradyne (the Intelligent Transportation subsidiary company), PB Ohio and PB Michigan. Also, served on the Global Management Committee and the Diversity Oversight Committee. The Americas operation is the oldest and largest of the entities comprising the PB group of companies which is now part of the Balfour Beatty Group.

Parsons Corporation (DeLeuw Cather), San Francisco and Wash., D.C., 1988 to 1992

Senior Vice President and Corporate Manager of Global Business Development responsible for worldwide marketing and sales activities including the identification of targeted projects and the preparation of strategic sales and marketing plans, proposals, and presentations.

Morrison-Knudsen Engineers (International Engineering Company), San Francisco, CA, 1973 to 1988

Served in varying positions including Project Manager on major global projects, Chief Engineer of the Transportation Infrastructure Division and South Korea Country Manager.

Other Selected Industry and Academic Activities

- 2003 Outstanding Public Transportation Business Member by the American Public Transportation Association for contributions to the advancement of the public transportation industry.
- Co-chaired fundraising (\$30 million) for the Public Transportation Partnerships for Tomorrow (PT2), a national campaign to increase awareness of the benefits of public transportation in the United States.
- Co-chaired Proposition 135 campaign fundraising to allow contracting-out of professional services in the State of California.
- Co-chaired Proposition 42 campaign fundraising to dedicate gas tax revenues to transportation uses in the State of California.
- Assisted in creation of the Women's Transportation Seminar Leadership Training Program at Rutgers University.
- Former member of Policy Board for the Voorhees Transportation Center at Rutgers University.
- Recipient of a National Science Foundation Grant for research on the "Viscoelastic Behavior of Pavement Systems" for the Asphalt Institute of America.

Selected Project Experience

Served in varying capacities on the following projects:

- San Francisco Municipal Transportation Agency, Central Subway Project, San Francisco, California: project manager and principal-in-charge for preliminary engineering and environmental planning services for the 1.5-billion, 1.7-mile predominantly underground light rail transit extension running from Fourth and King Streets to Chinatown in downtown San Francisco.
- BART Earthquake Safety Program, Bay Area, California: principal-in-charge of the seismic retrofit program for the San Francisco Transition Structure and Transbay Tube.
- BART Warm Springs Extension Project, Alameda County, California: principal-in-charge for a \$900 million design-build extension project that will add 5.4 miles to the existing system between the existing Fremont Station and a new station in Warm Springs.
- Doyle Drive Replacement Project, San Francisco, CA: principal-in-charge for the final design of the \$900 million replacement of the San Francisco approach to the Golden Gate Bridge on which PB is in Joint Venture.
- Cooper River Bridges Replacement Project, Charleston, South Carolina: principal-in-charge for a new \$531 million cable-stayed crossing of the Cooper River on which PB served as the lead design firm on the design/build team.
- Sacramento Regional Transit Downtown/Natomas/Airport Corridor Alternatives Analysis/Draft Environmental Impact Statement/Report, Sacramento, California: principal-in-charge of an AA/DEIS/R sponsored by the FTA and the Sacramento Regional Transit Authority.

- Hiawatha Corridor Light Rail Transit Project, Minneapolis, Minnesota: principal-in-charge for preliminary engineering and project management services during the design-build tender document preparation, contractor selection and award, and initial final design-construction phases of the Hiawatha Light Rail Transit (LRT) Project.
- East Side Access Project, New York City: principal-in-charge and chairman of the board of control of the joint venture for providing planning, preliminary and final design, and construction phase services for the \$3.5 billion project to extend Long Island Rail Road (LIRR) service from the borough of Queens to Grand Central Terminal on Manhattan's East Side. This is the largest single construction program ever undertaken by the New York Metropolitan Transportation Authority.
- San Francisco International Airport AirTrain, California: chairman of the board of principals for a three-firm joint venture that provided preliminary and final design services, contract document preparation, construction support services, and systems testing and commissioning for the \$400 million, 4.5-mile elevated automated guideway system developed as part of the \$2.4 billion expansion of San Francisco International Airport.
- Central Puget Sound Region Link Light Rail Facilities Design, Seattle, SeaTac, Tukwila, and Tacoma, Washington: principal-in-charge and chairman of the board of control of a joint venture responsible for conceptual and preliminary engineering and management of final design of a light rail line connecting the cities of Seattle, SeaTac, and Tukwila, and a starter light rail line in Tacoma.
- South-North and Interstate MAX Light Rail Transit Extensions, Portland, Oregon: principal-in-charge of preliminary engineering for a \$1.5 billion, 20-mile south-north extension of Portland's regional light rail system operated by the Tri-County Metropolitan Transportation District.
- Westside MAX Light Rail Line, Portland to Hillsboro, Oregon: principal-in-charge and lead member of the committee of principals for the PB-led consultant team that provided final design and construction management services for the \$668 million extension of the Banfield light rail system.
- Tasman West Light Rail Transit Project, Santa Clara County, California: principal-in-charge of the joint venture that provided general design consulting services for the Tasman West extension, which serves the cities of San Jose, Santa Clara, Sunnyvale, and Mountain View and comprises 7.6 miles, 12 stations, a park-and-ride lot, and a bus transit center.
- BART Extensions Program, San Francisco, California: alternate on the board of control for the joint venture providing general engineering consulting services for the expansion of the 75-mile heavy rail transit system consisting of the following extensions:
 - Pittsburg/Antioch: \$506 million, 7.8-mile extension connecting eastern and central Contra Costa County with two new stations.
 - Dublin/Pleasanton: \$514 million, 14-mile extension, linking Alameda County to Contra Costa County by advancing BART from San Leandro to Castro Valley and the cities of Dublin and Pleasanton.
 - Colma: 1.6-mile, one-station extension, the first leg of the extension to the airport.
 - SFO: general engineering consultant for the \$1.7 billion, 8.7-mile-long four-station San Francisco Airport Extension providing a direct BART connection to the Airport. The SFO project was selected by the FTA as a turnkey demonstration project to encourage application of the design-build contract

delivery method for transit system development. The project was completed under four design-build contracts and two traditional design-bid-build contracts. The BART SFO Extension was one of the first large-scale transit projects to be completed using a design-build delivery approach.

- First Avenue South Bridge, Seattle, Washington: principal-in-charge and chairman of the board of control for the design and construction-phase services for the rehabilitation and subsequent replacement of a four-lane movable bridge impeded by the convergence of 12 lanes of traffic.
- State Route 520 Corridor Improvement Project, Seattle, Washington: chairman of the board of the PB-led joint venture, Washington Transportation Partners, Inc. (WTP), which was selected by the Washington State DOT to develop a comprehensive corridor improvement program for SR 520—one of the most heavily traveled freeway corridors in the state. The 6-mile corridor, which includes one of three floating bridges crossing Lake Washington (the Evergreen Point Floating Bridge), is a primary link between Seattle and the Eastside cities of Bellevue, Redmond, and Kirkland. The \$550 million improvement program was conceived as a privately funded toll project proposed in response to Washington State's "New Partners" law, which sought innovative, self-financing transportation solutions from the private sector. Legislative issues affecting the New Partners law precluded the implementation of the toll road, which would have connected SR 520 to I-5. In addition to design and construction of the toll road, the other improvements envisioned by Washington Transportation Partners included seismically upgrading all SR 520 structures; implementing such noise-mitigation measures as noise-deadening pavement and low-profile noise walls for sections of the freeway; removing unsightly ramps in the Arboretum section; environmental improvements including covering selected sections of SR 520 with lids to create parks and reconnect communities; adding a bus/carpool lane in each direction as well as safety shoulders on existing lanes; and constructing a bicycle/pedestrian lane across Lake Washington.
- Federal Emergency Management Agency (FEMA) Disaster Response Services Technical Assistance, Western U.S. and Pacific Territories: principal-in-charge of technical support services deployed by PB within 48 hours of a federally declared emergency.
- Regional Planning Study, Seattle, Washington: business development manager for the preparation of the winning proposal and bid for a regional planning study in which four corridors were analyzed to rate their ability to accommodate a 103-mile, high-capacity transit system (heavy rail metro or light rail) serving the greater Seattle metropolitan area.
- Kaohsiung Mass Rapid Transit, Taiwan: business development manager for the marketing effort that won this design project. Estimated to cost roughly \$7 billion (U.S.), the KMRT system is comprised of four heavy rail transit lines totaling 50 miles with 71 stations serving the city and county of Kaohsiung.
- Los Angeles Metro Blue Line, California: project manager responsible for preliminary and final design of the traction power distribution system for the \$877 million, 22-mile, 22-station Blue Line between Long Beach-to-Los Angeles.
- Seoul Metropolitan Subway, South Korea: project manager for a joint venture of U.S. engineering firms and suppliers responsible for the design, supply, and installation supervision of the traction power distribution system for the \$3 billion extension to the Seoul Metropolitan Subway system. The extension added two lines that totaled

approximately 38 miles of double track, mostly underground, with 47 passenger stations and two yard and shop facilities.

- San Diego Trolley East Urban Line Jackson Drive Grade Separation, La Mesa, California: chief engineer of the consultant's infrastructure division responsible for preliminary and final design of a \$5 million, precast, post-tensioned concrete bridge for joint use by the light rail and freight trains operating on the East Urban Line trackage.
- Florida High Speed Rail: project engineer responsible for the preparation of cost estimates for the traction and electrification equipment of a proposed statewide high speed rail system utilizing French TGV technology, which operates at speeds of up to 185 mph on a dedicated right-of-way without any grade crossings. The system was to have been financed primarily by rider-based revenues supplemented by a small public subsidy.
- Pueblo Test Track Electrification, Colorado: project engineer responsible for the design of the overhead contact system for the Department of Transportation/Federal Railroad Administration test facility: a closed-loop, 13.5-mile railroad test track with a 2.2-mile train dynamics track.
- Northeast Corridor Improvement Project, Washington, DC to New Haven, Connecticut: civil engineer responsible for the development of structural design criteria for improving the traction power electrification system as part of the upgrading of intercity rail service between Washington, DC and New Haven, Connecticut.
- Iscor Railroad Electrification, South Africa: project engineer responsible for detail design and installation supervision of this design/build project, which involved a 50-kV overhead contact wire system for electrification of the 530-mile Sishen-to-Saldanha iron ore railroad in southern Africa.
- Santa Fe Electrification Study, New Mexico: lead civil engineer for the study of infrastructure reconstruction, including tunnels, bridges, and overpasses, for the electrification of 3,000 track-miles of the Santa Fe Railroad.
- EFVM Railroad Electrification Study, Brazil: civil engineer responsible for the civil and structural portion of a study to determine the feasibility of electrifying the 345-mile railroad.
- Ramona Airport Project, San Diego County, California: chief engineer for the final design of a \$4 million runway and taxiway improvement project.

Selected Presentations and Publications

- Presenter, "The Modern Rail Transit System – Technology, Innovation and Opportunity." Stanford University Collaboratory for Research on Global Projects Seminar, Stanford, CA, September 2009.
- Presenter, "Muni Central Subway." ACE Scholarship Breakfast Meeting, San Francisco, CA, June 2005.
- Presenter, "Success and Survival: Business Planning for Large Firms." ASCE Conference & Exposition, Houston, Texas, October 2001.
- Author, "Transportation: Yesterday and Today—Major Challenges, Dramatic Achievements." Engineering News-Record Executive Roundtable Supplement, June 2000.

- Presenter, "Innovation in Transportation Design." AASHTO Design Forum 2000/U.S. DOT National Transportation Awards Ceremony, Washington, DC, May 2000.
- Presenter, "U.S. Aspects of Public-Private Partnerships/Participation: Lessons Learned as Applicable to Latin America." Southern States-Central America Business Forum, San Juan, Puerto Rico, August 1998.
- Author, "Progress in Transportation Policy-New Ways to Maximize Tax Dollars." Engineering News-Record Executive Roundtable Supplement, March 1998.
- Keynote Speaker, "The Changing Role of the Consultant." Presented at the annual technical conference of the American Railway Engineering and Maintenance-of-Way Association (AREMA), Chicago, Illinois, 1997.
- Coauthor, "Design/Build for Public Works—Mass Transit." Paper presented at the 1997 Georgia Tech/DBIA Conference, Atlanta, Georgia, 1997.
- Panelist, "The Profession's Future: Public/Private Partnerships in Project Delivery." Panel session at the annual convention of the ASCE, Washington, DC, 1996.
- Moderator, "Design/Build Delivery Systems for Transit." Panel session at the APTA Rapid Transit Conference, Sacramento, California, 1994.
- Coauthor, "Traction Power System Design for the Long Beach-Los Angeles Rail Transit Project." Paper presented at the APTA Rapid Transit Conference, Miami, Florida, 1986.
- "Power to the Seoul Metro Trains." Paper presented at the Joint ASME/IEEE Railroad Conference, Norfolk, Virginia, 1985.
- "Pueblo Transportation Test Center Electrification Project." Paper presented at the Joint ASME/IEEE Railroad Conference, Chicago, Illinois, 1982.
- Coauthor, "Start-up at the Transportation Test Center." Paper presented at the First Rail Systems Technology and Operations Symposium, Pittsburgh, Pennsylvania, 1981.
- "Hard Alloy Aluminum in Contact Wires - An Engineering Feasibility Study." Paper presented at the Joint ASME/IEEE Railroad Conference, Chicago, Illinois, 1981.
- "Viscoelastic Behavior of Pavement Systems." Research paper prepared for the Asphalt Institute of America, University of Washington, 1972.

GLENN C. SINGLEY

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111 North Hope Street, Room 1336
Los Angeles, California 90012-2694
(213) 367-0866
FAX: (213) 367-3775
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EXPERIENCE

- City of Los Angeles Department of Water and Power
- July 1999 - Present
Director of Water Engineering & Technical Services Division
Responsible for all major Water System Capital projects, with current-year budget of \$550 million. Division provides planning, design, project management, construction management, survey, geotechnical, materials testing and Geographical Information System mapping services for the Water System. Current Division staffing: 330.
- December 1992 - June 1999
Northern District Engineer – In charge of Aqueduct Division, Northern District. Responsible for maintaining and operating the Los Angeles Aqueduct and managing over 300,000 acres of property in Inyo and Mono Counties.
- April 1988 - December 1992
Waterworks Engineer – Coordinated LADWP's work with the State Water Resources Control Board, El Dorado Superior Court, and various interest groups to address the public trust balancing issues involving water exports from the Mono Basin.
- October 1986 - April 1988
Associate Civil Engineer – Supervised preparation of large-diameter pipeline designs, plans, specifications, and cost estimates.
- June 1984 - September 1986
Supervisor of Water Resources Management Group
Coordinated water conservation activities and environmental document preparation.

EDUCATION

- Master of Business Administration,
University of LaVerne, May 2001
- Master of Engineering Degree in Civil Engineering with emphasis in Water Resources and Sanitary Engineering,
Brigham Young University, June 1981
- Bachelor of Science Degree in Civil Engineering,
Brigham Young University, April 1980

REGISTRATION

Civil Engineer, California, No. 37215

AFFILIATIONS

Member, American Water Works Association
Board of Directors, Western Council of Construction Consumers

ROY W. BLOCK

Mr. Block has over 19 years experience in the construction industry in his current capacity as President of R W Block Consulting, Inc. previously as Director in PricewaterhouseCoopers LLP, and working as a project manager for Perini Corporation, for a top 30 ENR general contractor.

Mr. Block is experienced in many facets of the construction industry, including construction auditing, compliance reviews, project and program management, cost evaluation and litigation support, strategy, design, scheduling, manpower management, production analysis, cost reporting, estimating and as an industry specialist supporting systems implementation.

Mr. Block has specific infrastructure/water-sewer capital development experience working to provide program oversight, compliance reviews, construction audits and project management. In 1992, Mr. Block started his career in construction as a project manager on a \$190 million waste treatment facility in Deer Island, MA. Most recently Mr. Block completed a program management review of a \$300 million water / sewer improvement program in Seminole County, FL.

R W Block Consulting, Inc. (2002-Present)

As president of RWBC, Mr. Block has performed over 100 engagements in the US and abroad. Mr. Block oversees a wide range of engagements in various industries. Selected highlights are provided below:

- San Francisco Public Utilities Commission: part of team that performed a review of Sunset Reservoir – North Basin Project on behalf of the Revenue Bond Oversight Committee including processes, procedures, overhead, change orders and construction expenditures
- Seminole County, FL – Department of Environmental Services: engaged to review project and program management activities on a \$300 million capital improvement program funded by a bond issue. Analysis included review of staffing costs versus work accomplished, contract compliance, schedule reviews and benchmark of fees to industry standards.
- San Francisco International Airport – Terminal 2 Rehabilitation: performed independent financial and construction risk assessment on this \$383 million design/build project. Services included independent cost to complete estimates, schedule reviews, change order reviews, and construction contract negotiation support.
- Broward County Department of Public Works – compliance review and construction audit \$800+ million capital program

- San Diego County Regional Airport Authority – Greenbuild Program – construction auditor to \$864 million capital program which is funded by a combination of revenue bonds, grants and local funds. Services provided include compliance review of program expenditures, compliance review to bond documents and Federal financial regulatory requirements, review of construction progress including field inspections and schedule reviews.
- Port of Oakland – construction audit and compliance review of \$120 million airport terminal rehabilitation
- Greater Orlando Aviation Authority – in support of Authority’s on-going \$800+ million on-going and planned construction activity: audit of unit price, lump sum and cost reimbursable contracts. Disaster recovery review of reconstruction costs. Litigation support and expert witness services on various construction litigation matters. Compliance reviews of ARRA construction expenditure funds and DOT funds.
- Blue Cross Blue Shield of Florida – construction audit and owner representative services on \$30 million data center construction and \$110 million campus expansion including construction of elevated parking and conference center
- Citrus Hospital – construction audit of \$7 million open heart surgery wing expansion
- Palm Terrace of Clewiston – construction audit and litigation support services on \$10+ million of disaster recovery work after 2004-2006 hurricane seasons
- Broward County Department of Aviation – compliance reviews and risk assessment reviews of capital development function about to undertake \$1+ billion in capital development
- Biloxi Public School System – construction audit of \$70+ million school improvement and reconstruction program pre and post Katrina
- City of Milwaukee – audit of public works department’s pavement management program including verification of adequacy whether planned construction would meet street condition requirements of City.
- Mississippi Emergency Management Agency- state wide reviews of FEMA’s public assistance reconstruction program in the aftermath of hurricane Katrina. Reviews include over 800 applying public entities and \$2+ billion in reviewed costs
- Mississippi Development Agency – state wide review of HUD long term rental program including compliance reviews of construction costs on over \$300+ million of expenditures
- Louisiana Department of Administration – compliance and risk assessment review of departments ability to implement sound anti-fraud and compliance practices in reconstruction efforts post hurricane Katrina
- State of Pennsylvania Central Services – developed and delivered three day construction audit seminar for a class of 70 state auditors
- Phoenix SkyHarbor International Airport – compliance services on implementation of \$1.5 billion capital program

- Salt Lake City International Airport – developing compliance procedures and review of existing capital development activities on planned \$1+ billion capital program

PricewaterhouseCoopers LLP – (1996-2002)

As a Director in the Engineering and Construction Practice for PricewaterhouseCoopers, LLP, Mr. Block served as project manager for clients in the private and public sectors. He provided a variety of services, including project management oversight, evaluation and analysis of construction process, preparation of a detailed analysis of a regional construction market for a major developer. In 1996, he became project manager of construction related services provided to the Orlando International Airport, and participated in the development of improved processes and procedures, change order review and construction claim litigation.

Rollins College, Winter Park FL (1995-1996)

Attended graduate school and received Masters in Business Administration from the Crummer Graduate School of Business, Rollins College.

Perini Corporation (1992-1995)

While employed by Perini Corporation, a TOP 30 ENR construction company, Mr. Block was a project manager on a \$190 million water and sewer contract at Deer Island, MA, responsible for supervising crews, procuring materials, updating schedule/verify progress, as well as claims and change order preparation. This project was part of the Boston Harbor Cleanup Project aimed at improving water quality in the city.

Mr. Block was the utility engineer on a \$380 million cut-and-cover tunnel construction project in Boston, Massachusetts, where he planned and executed all facets of utility construction and relocation, including critical path analysis, manpower production targets, value engineering proposals, claims preparation, material procurement and crew supervision. Mr. Block was also a member of a team of engineers that organized and prepared the 1000+ activity CPM schedule for the entire project.

EDUCATION:

MS, IT Management, Ransselear Polytechnic Institute, Troy, New York

MBA, Rollins College, Winter Park Florida

MS, Civil Engineering, Columbia University, Fu School of Engineering (Candidate 2012)

BS Civil Engineering, Colorado School of Mines, Golden Colorado

CERTIFICATIONS:

Certified Construction Auditor (CCA), National Association of Construction Auditors

Construction Control Professional (CCP), National Association of Construction Auditors

BOOKS:

"Industry Best Practices for Assessing Construction Risk", ISBN-13: 978-0-9754041-1-9, Jan. 2007.

"Industry Best Practices for Managing Capital Investment", ISBN #0-9754041-2-1, to be published in April 2004.

ARTICLES & PRESENTATIONS:

"Change Order Management: The Right Approach Can Make Change for the Better", Owner's Perspective magazine, Fall 2003

"Impact of Implementing a Pre-Audit Change Order Review Process, 2000-2003", American Association of Cost Engineers (AACE).

"Auditing the Construction Project", New Perspectives: Journal of the Association of Healthcare Internal Auditors, Fall 1997

On-going column in "Owner's Perspectives" the national publication of the Construction Owners Association of America.

TRAINING:

State of Pennsylvania central services, construction auditing and risk assessment training, June 2008

Construction Auditing and Capital Project Risk Assessment, Association of Local Government Auditors, June 2007

Preparing for the Financial Aftermath of a Disaster, GFOA, Summer 2006, Montreal Canada

Construction Auditing for Emergency Recovery Projects, Florida Audit Forum August 12, 2005 in Tampa, FL

Auditing Change Order Labor Burden Rates on Construction Projects, Florida Institute of Public Accountants (FICPA), Spring 1998

Risk Assessment and Auditing Approaches to Construction Projects, FICPA, Summer 1998

Construction Auditing, Greater Orlando Aviation Authority, Spring 1999

Controls Over Airports' Capital Improvement Programs, Crummer Graduate School of Business-Rollins College, Spring 1999

Airport Improvement Program, Greater Orlando Aviation Authority, Winter 1999

Risk Assessment on Construction Projects, Florida Government Finance Officers Association (FGFOA), Spring 2000

Negotiating Change Orders on Construction Projects, Summer 2000

Airports Council International, Evaluating Construction Risk on Special Facility Revenue Bonds, Winter 2001

Forbes E-Business Conference, London, UK-Panelist "Project Collaboration for the 21st Century",
Fall 2001

Forbes Utilities E-Business Conference, San Francisco, "Addressing Collaboration Trends in the Power Generation Industry", Spring 2002.

Industry Best Practices for Construction Management Information Systems-eConstruction, Summary 2003.

LANGUAGE:

Native speaker-Spanish

REFERENCES:

Maureen S. Riley, Executive Director – Salt Lake City Department of Aviation
Tel (801) 575-2408, email: Maureen.riley@slcgov.com

Stan Thornton, Greater Orlando Aviation Authority
Tel (407) 825-7826, email: sthornton@goaa.org

TERRY E. ROBERTS
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eterryr@msn.com

President, Terry Roberts Consulting, Inc. (2006 to Present)

Provide project management services to public and private sector clients. **Bay Area Water Supply and Conservation Agency (BAWSCA):** Program/project management advisory services for San Francisco's \$4B Hetch Hetchy water system upgrade. Closely track project schedules, budgets, work scopes, change orders, and contingency funds. Review plans, reports, and other elements of project delivery. Evaluate and report findings to BAWSCA using best practices and my extensive PM experience. With BAWSCA, meet with top SFPUC managers to review program performance and recommend improvements to project delivery and CM policies. **Consultant to Aviation Director, San Jose International Airport (SJIA):** Leader of team that negotiated a complex \$650M design-build airport construction contract. Provide high-level expertise in contract negotiations, project management and cost control. **Gilbane Building Company:** Program/ project management services for new \$350M Terminal Concourse at SJIA.

Deputy City Manager, City of San Jose (2001-2006)

Responsible for implementing a \$3.5B, 5-year CIP including water, sewer, transportation, libraries, parks and community centers, police and fire facilities, \$1B in airport improvements, and a new \$350M city hall project. Reorganized and led capital project delivery teams to an on time/on budget culture. Developed nationally award-winning project management and tracking system. Completed over 800 projects in 5 years. Supervised the public works, environmental and utility services, transportation, and general services departments.

Director, Public Works Agency/ City Engineer, City of Oakland (1983-1999)

Director of agency with annual operating budget of \$100M and 700 employees. Managed citywide CIP. Established new on time/on budget CIP delivery unit. Projects included a \$170M city office building and plaza project, a \$100M post earthquake renovation and seismic upgrade of historic city hall, city lead in rebuilding the \$1B Cypress Freeway after its collapse in the 1989 earthquake, a \$90M airport roadway, a \$65M observatory and science center, and a \$400M sewer reconstruction program.

Other Positions

Director of Public Works, City of Daly City (1999-2001)
Assistant Public Works Director, City of Fresno (1980-1983)

PROFESSIONAL QUALIFICATIONS:

Bachelor's Degree - Civil Engineering, California State University, Fresno, CA
Master's Degree - Public Administration, Golden Gate University, San Francisco, CA
California Registered Professional Civil Engineer

AFFILIATIONS & AWARDS:

Received San Jose's 2006 award of excellence for capital project implementation
San Jose City Hall named best overall California construction project for 2005
National APWA 2004 innovation award for automated program management/project tracking system
Board of Directors, Chabot Space and Science Center, Oakland, CA, 1996-2001 (www.chabotspace.org)
Past President, Northern California Chapter - American Public Works Association
Caltrans award for Excellence in Transportation for my role in rebuilding the \$1B Cypress Freeway, 1999
Commendations from MTC, AC Transit and the Alameda County CMA for transportation advocacy, 1999
U.S. Army Commendation for Meritorious Service in Vietnam

PROFESSOR WILLIAM IBBS

William Ibbs is professor and group leader of the Construction Management program in the civil engineering department at the University of California at Berkeley. He teaches both undergraduate and graduate courses in construction management, including scheduling, construction cost management and accounting, and project management. He is a leading thinker, active researcher and writer on construction management subjects, including the management of large, complex public works projects.

As part of his research program he has studied hundreds of large projects around the world and benchmarked them to understand key success factors. This work has been supported by 100+ companies and now includes extensive data from 170 projects.

Dr. Ibbs has also been an active consultant on many projects, whether in a planning, an execution or a dispute resolution capacity. Planning work includes advising public agencies such as the Massachusetts Highway Department on Boston's Big Dig, the Panamanian Government on the Panama Canal restoration, and BAWSCA & SFPUC on the Hetch Hetchy WSIP. He studied project "soft costs" for a number of California water districts and Caltrans, in which he compared the indirect overhead costs that public agencies incur when performing design work in-house rather than with consulting firms.

His project execution work includes assisting owners on irrigation and pipeline projects in Illinois; and contractors on earthen dams, pipelines, reservoirs and treatment plants in California and Illinois. He worked with a large design firm on the risk management aspects of rebuilding a large water system.

In the construction dispute area Bill has served as both an expert witness and a project mediator. The expert witness work usually involves design, project management, cost and scheduling issues. He is a certified Dispute Review Board Foundation mediator and a certified AAA arbitrator. He was jointly retained by the City of San Francisco and Mitchell Engineers construction company to serve as a "project neutral" mediator on their 4th Street Bridge project dispute. Other clients include Bechtel, CH2M-Hill, the US Navy, EBMUD and utilities and agencies overseas.

One of his signature assignments was with the US Department of Energy on its \$12 Billion Hanford Waste Treatment Project. Because of his independence and communication skills he was selected to speak to a DOE administrative hearing on behalf of an independent review team. Dr. Ibbs has also testified about the SF-Oakland Bay Bridge to the California State Legislature.

Before starting his academic career in 1980, he worked in the private sector as a designer, an owner's project engineer (Kaiser Permanente) on hospital construction, and a construction contractor on water and wastewater treatment facilities.

In addition to his academic career Professor Ibbs is a very active consultant. He has served as an expert witness and project neutral, qualifying to testify in federal and state courts, and international arbitration. His work includes the impact project change has on labor productivity (both design and

construction labor), schedule, and cost. He has also testified on matters involving construction defect, personal injury, surety takeovers, standard of care, false claims and economic loss.

Professor Ibbs is active in and has received a number of awards various professional organizations such as AGC, ASCE, the Beavers and PMI. He has published 180+ journal and magazine articles and books.

Dr. Ibbs earned B.S. and M.S. degrees from Carnegie Mellon University and a Ph.D. from U.C. Berkeley, all in civil engineering with a construction management emphasis. He has minors in business and finance. He is a registered professional engineer.

More information and references can be provided upon request.

Agenda Item # 6.

Potential Tasks Involving the SFPUC's Independent Review Panel - as directed by RBOC

Note: RBOC developed the following criteria (1-5) for task assignments it would commission. Since RBOC has now elected to use the Peer Panel, an additional criteria (#6 below) is needed to ensure that the task is suited to this group.

1. Be relevant to current stages of capital projects or program
2. Not duplicate evaluations performed or planned by SFPUC or third parties
3. Result in cost savings or added value
4. Result in improving management practices
5. Follow recommendations from prior audits or studies
6. *Is within the capabilities and time constraints of the Peer Review Panel*

Key Task Areas That Have Been Identified and/or Discussed by RBOC:

1. Examine allocation of program management costs

Task: Evaluate the SFPUC's methodology for allocating program management costs among individual projects. Recommended by Robert Kuo, former RBOC auditor. **Status/Outcome:** The allocation aspect is being looked at by the Controller.

2. Reconnaissance review of most challenging projects

Task: Take two challenging projects and identify the successes and failures that the SFPUC encountered in bringing these projects on-line. Recommended by Robert Kuo, former RBOC auditor; also raised by Commissioner Moran, and supported by Julie Labonte as a possible task involving the Independent Peer Review Panel. **Status/Outcome:** The SFPUC completed such a review early in the year involving the Alameda Siphon 4 project, largely negating the need for RBOC to commission a similar review. However, the most challenging projects are currently in or will be under construction soon, suggesting RBOC may want to review a second challenging project at a later time. This may also be a subject of interest to the CSA.

3. Evaluate soft costs

Task: Determine the extent to which indirect capital costs contribute to the cost of individual WSIP and/or Waste Water projects. **Status/Outcome:** Prior reports by Robert Kuo, Raftelis, and BAWSCA did not reveal anything out of the ordinary though their analyses were more confined to overhead rates. The Committee was concerned that comparing WSIP soft costs (primarily, costs other than construction) against other agency programs or best practices would be difficult due to the nature of the projects within WSIP and the legal and environmental challenges unique to SF. Julie Labonte indicated that a review of soft costs is unlikely to alter current management practices; that the real "lessons learned" are probably in the CM area. The subject of soft costs, and CM in general, is of keen interest to RBOC; some aspect of which may be worthy of review.

4. Evaluate projects savings, change orders and contingencies

Task: Select a representative sample of projects and examine how the SFPUC manages change orders, contingencies, and project savings. **Status/Outcome:** Targeting change orders were high on the committee's list. In looking at change orders, high probability that use of contingencies would be analyzed as well. This subject area is within the realm of construction management and Julie Labonte indicated that this topic might be suited to the Independent Peer Review Panel. Note: this is an area that is closely watched by BAWSCA.

5. Perform selected construction audits or reconnaissance review of CSA

Task: Choose two projects and perform a construction audit OR evaluate the scope of work used by CSA in commissioning such audits. **Status/Outcome:** This task was given less urgency since the Controller's office conducted construction audits on Tesla Portal and East-West Transmission and may conduct other audits of this type in the future.

6. Evaluate adherence to risk management procedures and/or assessments

Task: Taking several most critical projects, review the SFPUC's capabilities for analyzing/mitigating risk as well as the ability to forecast risk. **Status/Outcome:** Though the 2007 report by Parsons noted significant risk in delivering the program, the SFPUC has revamped its risk assessment section and the committee felt that a detailed look at RM was not necessary. The Committee did discuss the possibility of conducting a reconnaissance review of RM. Question: would the background of the Panel members be suited to this task since RM is a specialized field?

7. Evaluate construction management program/system (CMIS)

Task: Assess the performance and utilization of the CMIS system by local and regional project managers and its potential for use by other enterprises. **Status/Outcome:** The Committee recognized that the SFPUC (and the Peer Panel) has examined the CM program extensively. The Jan 2011 review noted that CMIS was effective but the Committee remains interested in looking at some specific aspect of CM that, perhaps, have yet to be fully explored.

8. Assess use of alternative delivery methods

Task: Determine the extent to which alternative delivery methods were evaluated by the SFPUC as well as the factors or forces within the SFPUC that facilitate or hinder their use. **Status/Outcome:** WSIP projects have already been evaluated by Parsons for ADM. (Currently, Tesla Portal is the only ADM project.) The Committee felt that examining ADM at this time would yield no value. (Note: it was recognized that ADM may be more relevant with the upcoming Waste Water CIP.)

9. Review feasibility of Level of Service (LOS) goals

Task: Select a representative sample of projects and evaluate the level of service initially adopted for each project against that achieved at the completion of the project. **Status/Outcome:** Most, if not all, projects have already been designed with LOS goals and this subject was revisited in 2009 largely due to issues raised by BAWSCA. Such a task would yield little value.

10. Examine project expenditures and appropriations

Task: Using a representative sample of projects, determine whether WSIP and/or Waste Water project expenditures were in keeping with intended use, bond resolution, and Commission action. **Status/Outcome:**

Three projects are being audited by the Controller; one WSIP Regional Project, one Local project, and one Waste Water project.

11. Compare SFPUC's efforts with other large capital programs (BMPs)

Task: Compare and contrast (benchmark) the WSIP program with those of other large CIP programs using information from the Construction Industry Institute and industry's best management practices.

Status/Outcome: This task surfaced during discussions with professors from UC Berkeley. The Committee found such a task interesting but too ambitious and resource intensive (time and money). In addition, this might be something to consider at the conclusion of WSIP, not mid-stream. Question: is this task suited to the Panel?

Other ideas/study areas that have not been fully vetted by RBOC:

- Ask the Panel to come up with a list of specific tasks that RBOC could then consider for independent review.
- Examine procedures and processes used in close-out of projects (test and start-up, including submissions of as-builts); by SFPUC and contractors as well as record retention.
- Have the Panel review the start-up of the Sewer System Improvement Program (SSIP); identify key organizational and management aspects that are in-place or contemplated for future success. What are the "lessons learned" from WSIP that carryover to SSIP?
- Identify the SFPUC's plans to transition (de-staff /reassign labor, consultants, or CMIS) out of WSIP to SSIP. (Note: this subject was raised by the Panel in its January 31, 2011 report.)
- Identify the SFPUC's operational needs in a post-WSIP environment. What additional resources, if any, (and at what cost) are need to maintain and operate rebuilt and/or new facilities.
- Examine the latest changes in WSIP cost and schedule with emphasis on increased costs for program delivery.
- Revisit the contracting processes to determine lessons learned. Interview staff and contractors.
- Examine program/project permitting; lessons learned.

Panel Review # 1

**Independent Review of SFPUC's
Water System Improvement Program**

Prepared for San Francisco
Public Utilities Commission

Independent Review Panel:

Russell J. Stepp, P.E. (Panel Chair)
John W. Kluesener, Ph.D.
James G. Mueller, P.E.
Douglas A. Selby, P.E., Ph.D.
John E. Somerville, P.E.

January 19, 2010

Summary

The San Francisco Public Utilities Commission (SFPUC) hired a five-member independent panel to review its \$4.6 billion, multiyear Water System Improvement Program (WSIP) and answer six key questions

1. Is the WSIP organization adequate to deliver the program?
2. Are the systems, procedures, and business processes used to deliver the WSIP adequate?
3. Are the status and delivery performance of the WSIP being reported adequately and accurately?
4. Is the progress made to date on the WSIP reasonable?
5. What are the greatest challenges and risks that could impact program delivery?
6. What steps or actions does the panel recommend the Commission and/or upper management take to promote accountability, minimize risks, and guarantee success?

Conclusions

The panel's overall conclusions regarding the first four questions are as follows. This is followed by lists of the main risks and the panel's recommendations. These are discussed further in the panel's report to the Commission.

1. **WSIP Organization:** The WSIP Team appears to have an adequate framework to deliver the program. The WSIP Team has developed standardized procedures for its Construction Management (CM) Program; has delegated decision-making responsibility across the program, regional, and project levels; and has employed state-of-the-art tools for managing projects and staff.
2. **Systems, Procedures, and Business Processes:** The WSIP systems, procedures, and business processes seem adequate but are now in early implementation; they should be monitored and adjusted as construction activities ramp up. In addition to tools, face-to-face interaction will remain important throughout the regions and WSIP organization.
3. **Reporting of Status and Delivery Performance:** WSIP Management prepares and reviews various monthly reports that provide cost and schedule updates and highlight critical items. In the panel's view, the Quarterly Reports to the Commission are too lengthy and general and do not clearly convey progress and challenges.
4. **Progress Made to Date:** Given the constraints of municipal bidding, environmental reviews, stakeholder interests, and the diversity and complexity of the program, the panel concurs that the progress made to date is reasonable for a multibillion-dollar program for a large municipality.

Key Open Issues:

- Lines of authority and decision-making
- Sustaining the improved business practices established over the past few years
- Succession planning (backup plan and retention)
- Technology transfer across the SFPUC staff
- Does the Program Construction Management (CM) Advisor from AECOM have enough staff and is the role properly defined?
- Can the program scale up to support the magnitude of the future spending plan?

Observations

- The City's reputation among contractors has dramatically improved over the past few years. Contractors that have worked previously with the SFPUC recognize the new procedures around streamlining procurement and payment.
- The SFPUC is generally perceived as having a high level of professionalism; public support appears quite high, both from citizens and from regional providers. While the SFPUC continues to have its critics, the WSIP is providing an opportunity to create additional credibility with the SFPUC stakeholders.
- The Bay Area Water Supply and Conservation Agency (BAWSCA) recognizes significant improvement in the SFPUC's program delivery capability. BAWSCA is committed to assist WSIP in delivering the program.
- In 2010, construction work on the regional portion of the WSIP will be ramping up significantly. Based on the information that the panel reviewed, during FY 08-09, \$49.8M was expended (\$4.15M/month). This increases to \$196M for FY 09-10 (\$20.8M/month) and reaches a peak in FY 11-12 of \$685.6M (\$40.8M/month). The next few years are critical as the program ramps up from the current monthly expenditures to a five-fold increase for the coming fiscal year (FY 09-10) and doubles again in FY11-12.
- The historic program costs and associated changes, starting with the 2002 baseline budget and schedule through the current projections, should be documented by the SFPUC. Obviously, the historic and current program configurations and costs are of great interest and would provide continuity and clarification to the wide variety of SFPUC stakeholders.
- The SFPUC is among the very few utilities that have ever undertaken a program of this magnitude; consequently, reliance on previous programs' best practices is important.
- We believe the SFPUC has put a lot of thought into the organization, systems, and processes to accomplish the work. The SFPUC systems, processes, and staffing to meet the program needs are impressive, including the implementation that has occurred over the past few years.
- Overall, the program is well defined and, as discussed previously, well supported.

- Union relations are positive and engaged because of the SFPUC's efforts.
- Water system shutdowns are a major concern, but they are being comprehensively addressed by the SFPUC regarding level of planning; early notification; detailed processes; and pre-shutdown testing ("dress rehearsals") to verify condition of equipment, contingency planning, and overall coordination between construction and operational schedules.
- The Construction Management Information System (CMIS) that has been developed and put in place for the WSIP is impressive; it is on the leading edge for managing programs of this type. It is very visible in the industry and is of interest to other utilities as well.
- The effort to revise the Division 0 and Division 1 construction contract specifications is another indication that the SFPUC is working to make construction contracting more streamlined and consistent.
- Level of Service (LOS) goals have been established for the program and have been used to help justify the need for specific projects.
- Program staffing has improved, both from an internal and an external perspective, focusing on opportunities to improve staff development through successful participation on project work using the new procedures and tools developed for the WSIP. The SFPUC needs to continue to take advantage of these technology transfer opportunities
- Top talent has been hired in key SFPUC staff positions, which is critical to a program of this magnitude. The SFPUC has also ensured that consultants have put top staff into their key positions.

Risks and Challenges

Note: In the panel's view, the items listed here could present the greatest risks to the program. We recognize that the SFPUC is aware of and is actively addressing a number of these items. However, each of the items, if not adequately addressed, could present a major risk to the WSIP. The risks listed below are the highest priority risks that need to be monitored.

- **Management of water system shutdowns.** Failure of a planned shutdown can significantly delay other projects. Some shutdowns are critical and can only be performed once a year.
- **Construction delays due to environmental requirements or modifications.** For example, Crystal Springs shutdown and U.S. Fish & Wildlife Service modification approval.
- **Pre-construction environmental delays.**
- **Contractor performance, quality, and claims in a low-bid climate.** Due to the economic slowdown, contractors are bidding very competitively, resulting in very low bids. The contractors could potentially be very aggressive in attempting to cut costs or recover costs through change orders.

- **Seismic/weather/equipment (such as delivery of Owner-provided valves) factors have the potential to impact shutdowns.**
- **Failure of the field teams (both contractors and SFPUC) to accurately prepare and effectively use CMIS reports.** If data for CMIS is not entered in a timely manner or correctly, management and control on a program basis may be compromised.
- **Turnover of key program personnel, both from the SFPUC and its contractors/consultants.**
- **Maintaining the trust and support of long-term City employees who have been put in key assignments by providing the requisite level of support to help them grow and succeed.** This is another opportunity for the SFPUC to provide technology transfer opportunities.

Recommendations

WSIP Organization

1. Hold frequent, in-person status meetings between the Assistant General Manager–Infrastructure (AGM–Infrastructure), WSIP Director, WSIP Construction Deputy Director, Program Construction Management Advisor, and others (as appropriate). This could be further reinforced by co-locating the program management and construction management teams.
2. Clarify lines of authority and decision-making, particularly within the Construction Management Program. This may be in the Construction Management manual, but it needs to be made clear throughout the organization. As an example, where does the WSIP Construction Deputy Director’s authority stop and what decisions need to go to the WSIP Director for final approval?
3. Create and maintain a backup plan for key personnel replacement.
4. Give office engineers Construction Management professional development opportunities during program construction.
5. Evaluate capability, periodically, to staff the WSIP (both SFPUC and key consultants/contractors) over the length of the program.
6. Reinforce the use of improved business practices through continued standardization, training, and performance rewards.
7. Continually identify opportunities to enhance work relationships/interfaces between SFPUC and consultant staff.

Systems, Procedures, and Business Processes

8. Continue shutdown sequencing planning and implementation process.
9. Be responsive to construction issues to minimize the cost impacts of change orders.

10. Conduct an independent test/audit of the Construction Management organization and systems in mid-to-late 2010 to verify performance.
11. Continue to monitor staff performance against the established program procedures and metrics (CMIS).
12. The potential for delays related to permitting continues to exist. The SFPUC has had past success with program permitting and should increase these efforts to mitigate further delays.

Reporting of Status and Delivery Performance

13. Create periodic performance evaluations for consultants and contractors.
14. Communication with Commission:
 - Develop an orientation program for new Commissioners, and existing Commissioners as needed, where each Commissioner is offered a one-on-one program timeline briefing from 2002 to present to explain clearly the WSIP changes and budget adjustments.
 - Realizing that the WSIP has limited time with the Commissioners, ensure the dialog is maintained between the WSIP Team and the Commission. Continue to look for opportunities to improve communication, so that Commissioners maintain their understanding of the WSIP and can respond appropriately to constituent concerns.
 - Encourage informal meetings with individual Commissioners to brief them on current programmatic issues that may come up in bimonthly meetings.
 - Make CMIS presentations available to the Commission. The CMIS is a sophisticated program tracking system and these presentations will provide the Commission with system knowledge and confidence in the overall WSIP schedule and budget monitoring.
15. Review existing City fraud policies for applicability to WSIP.
16. Performance Reporting:
 - Report % complete in the monthly report by progress against schedule and budget (earned versus planned dollar amounts).
 - Make financial history of the program more transparent.
 - Keep Commissioners up-to-date using a monthly summary that informs them of achievements and the action status of pending issues or problems.
 - Prepare a rolling four-quarter look-ahead for WSIP Management and the Commission that keeps focus on the highest-priority items to be accomplished in upcoming quarter(s).
 - Review the existing Quarterly Report for its utility and value and consider modifying its format.

- Make sure presentations to the Commission cover accomplishments and challenges, as well as cost and schedule information.

Progress Made to Date

17. Maintaining “reasonable progress” can be monitored by establishing an independent audit panel that consists of industry experts in areas including project management, construction management, quality assurance, and project controls for mega-projects. Given the number of oversight bodies (local and state) already in place, this may provide a more streamlined review process if this panel were to forward its results to other existing oversight bodies. This panel should report to the General Manager and Commission two or three times per year. (Note: While this may seem to be a duplicate effort, this type of review is most useful during the next 12 to 18 months and will have served its purpose when the program reaches its 2012 peak in construction activity. Once the peak construction activity has successfully been reached, the audit panel’s efforts could be reduced or eliminated.)
18. Given the magnitude of the program and risks, the SFPUC should recognize that it might need a contingency plan for extending the schedule due to factors beyond its control. This should preferably result in a new forecast, and not a new baseline.

Panel Review # 2

**INDEPENDENT REVIEW OF THE
WSIP CONSTRUCTION MANAGEMENT PROGRAM**

Prepared by

**Glenn C. Singley, P.E., Panel Chair
Gary Griggs, M.S.C.E., P.E., Panel Member
Galyn Rippentrop, Panel Member
Donald Russell, C.C.M., F.C.M.A.A., Panel Member**

Prepared for

San Francisco Public Utilities Commission

January 31, 2011

BACKGROUND OF THE REVIEW

The San Francisco Public Utilities Commission (SFPUC) received a report on its Water System Improvement Program (WSIP) from a five-person Independent Peer Review Panel on January 19, 2010. One of the Independent Peer Review Panel's recommendations was to:

"Conduct an independent test/audit of the CM organization mid-to-late 2010 to verify performance. Because the CM organization is at the beginning of a steep ramp of work, it would be prudent for the SFPUC to commit to evaluate it shortly after the large projects have begun. At that time the organization can be adjusted to address any problems that have become evident once the organization has been put to the test."

With respect to that recommendation, the SFPUC authorized the WSIP Program Manager, Parsons, to contract with four senior-level Construction Management (CM) industry professionals to conduct a review of the WSIP's current CM Program. Parsons contracted with the CM Review Panel (Panel) members in October/November of 2010. The Panel conducted its first on-site review during the week of November 14, 2010, and prepared this Report for submittal to the SFPUC prior to the end of December 2010.

Follow-up reviews are to be conducted in September 2011 and June 2012.

The Panel is composed of:

Glenn C. Singley, P.E. (Panel Chair)
Gary E. Griggs, M.S.C.E., P.E.
Galyn G. Rippentrop
Donald B. Russell, C.C.M., F.C.M.A.A.

SCOPE OF THE REPORT

The Panel was given the latitude to comment on any aspect of the CM Program which they chose to examine, but was specifically asked to respond to eight questions posed by the SFPUC. Those questions are provided in this Report, followed by the Panel's responses. For purposes of the first review and with the concurrence of WSIP senior management, the Panel paid special attention to the following four areas: Safety, Contract Management, Risk Management, and Project Controls; i.e., the CM Information System (CMIS).

The Panel's comments on various aspects of the CM organization and the overall WSIP execution team are provided in the section identified as "Observations."

OBSERVATIONS

1. The WSIP is clearly one of the largest, most complex, and aggressive infrastructure improvement programs in the history of public works in our country. It is large in terms of planned capital expenditures and geographical breadth. It is complex in that it needs to execute a tremendous volume of construction while maintaining full water supply service to a major metropolitan area that is literally "stranded at the end of the pipe" if there is any interruption in service because there are no adequate alternative water supply sources. All this must happen right in the middle of one of the most seismically active areas in the country. Finally, the WSIP is aggressive with respect to the formidable challenges the WSIP's leaders face in completing this work while respecting the missions of public works agencies, labor organizations, environmental groups, and most importantly, the needs of the residents of San Francisco and the surrounding area. The WSIP team has, to date, performed in exemplary fashion, as evidenced by the successful completion of the first projects undertaken. Ramp-up to maximum workload is now required for the balance of the work.
2. The Commissioners and top management are very supportive of the WSIP and are willing to provide the leadership and funding to keep the WSIP successful.
3. The dozens of WSIP team members with whom the CM Panel met all exhibited a high degree of morale and pride in their work.
4. The WSIP team is a comprehensive blending of City and consultant staff that seems to be working well. We understand there are certain positions that must be filled by City personnel, especially those making financial commitments on behalf of the City. If that type of responsibility could be shared with the consultant personnel, there may be places where some streamlining of the organization could be effected; for example, at the Regional CM level.
5. The safety of all personnel associated with the CM Program is an absolute top priority. Although the approach of requiring a predetermined, detailed safety program structure while assigning risks for managing the safety program to the general contractors is not common, it is working well based on the superior safety record to date. The CM Program's achievement of more than a million man-hours worked with only one lost-time accident is outstanding. Furthermore, this approach also seems to be fostering an attitude by the contractors on the job sites of "this approach to safety has made us into a team."
6. The planning and coordination of system shutdowns is, as it must be, expected to be "100 percent defect-free." Such expectations are continuously relayed by senior WSIP management. Availability of SFPUC Operations personnel may have significant schedule implications.

7. The CMIS developed for the WSIP team is an extraordinary system in both depth and breadth. While similar in structure and function to systems developed for other large capital building programs, there are a variety of unique features, such as the report writing capability, that amplify the system's ability to support management's current and future needs at the WSIP and Regional levels.
8. The field teams are very happy with CMIS's ability to support fast performance of critical activities, such as quick turnaround of contractors' pay applications or rendering of critical decisions by Regional or Program-level managers — but they are slightly unhappy with the work required at the field site to support the system.
9. The very detailed work breakdown structure and number of scheduled activities for a project may be more than required to maintain adequate control. The large number of activities requires a lot of time and effort to maintain and increases the possibility of errors. Consideration should be given to simplifying future schedules when possible.
10. The incorporation of clear and unequivocal requirements for formal Dispute Review Boards and partnering in contract specifications has to date resulted in an absence of unresolved claims for contract modifications throughout the WSIP. This initiative is clearly a cost-effective and a best management practice.
11. The CM Plan and the CM Procedures are comprehensive and very well written. These basic "governing documents" comply with and in most cases exceed the standards set in the CM Association of America (CMAA) Standards of Practice, 2010 Edition.
12. Change orders, for the majority of projects, are well within the provided contingencies and are being processed within industry-standard time periods. The CMIS procedures for handling changes and tracking trends are well defined and transparent.
13. The CM organization, as with any major project, has several levels of management and decision making. It is important that negotiations with contractors be predetermined and consistent. One case was observed where the general contractor apparently received several different instructions from different levels of the organization. This situation can be avoided by establishing clear negotiation strategies, constant vigilance, and clear communications.
14. The WSIP has spent an unusually high percentage of preconstruction funding on the environmental permitting and community outreach process. However, the benefits of the time and effort spent can be clearly demonstrated when the WSIP's progress through the California Environmental Quality Act (CEQA) process is

contrasted with the normal experience of major public works projects that have such enormous potential effects on the environment.

15. The increase in the number of projects to be constructed in the last four years of the WSIP, when compared to the original schedule, does not appear to be a "compression" that generates higher risks of cost, schedule overruns, or safety concerns. Even though the dollar volume of construction is shown to increase, the number of projects does not significantly increase, which is probably the more critical factor in assessing resource requirements.
16. There will be a need to reassign large numbers of City staff as the WSIP winds down, which is projected to occur over nearly a one-year period. The reassignment plan is certainly deserving of close attention by the City's Human Resources directors, but does not appear to represent a significant challenge.
17. The WSIP has transferred more quality control responsibilities to contractors than has been the norm for the SFPOC. The quality assurance/quality control processes being followed are in line with industry best-practices.

QUESTIONS AND RESPONSES

Question 1: Is the WSIP CM organization performing to the standards and requirements established by the CM Plan and procedures?

The CM Plan was reviewed by the Panel and found to be well written, consistent with the standard of practice and setting forth a comprehensive and clear set of procedures. The CM Plan appears to be up to date based on the modification dates of October 29 and November 4, 2010.

There does not appear to be a Configuration Management Plan whereby design changes made during the course of construction can be handled to ensure that there is review and approval by all elements of the project that could be affected by the change. There must be a controlled and well-defined process by which design changes are reviewed and approved, including a record of the review and approvals. Each time there is a design change, it must be circulated to a predetermined list of responsible managers who can have the change reviewed and confirm that the change does not impact their portion of the project or, if it does, determine the change cannot be implemented or develop a compromise solution.

The Panel met with various members of the organization representative of all levels of the organization and of varying roles and responsibilities.

Specific areas that were observed during this first review period were related to the following sections of the CM Procedures: Submittals, Meeting Minutes, Project Document and Correspondence Control, Construction Quality Management, Safety Reporting Procedures, Construction Schedule Management, Construction Change Management, Monthly Project Construction Progress Reports, Public Outreach and Weekly Project Construction Reports. The Risk Management Plan was also reviewed.

Based on a limited review of project documents, attendance at meetings and interviews with project staff, both at the home office and in the field, it appeared to the Panel that the organization is generally performing to the standards and requirements of the CM Plan and Procedures.

There is a potential concern by the Panel about the extremely detailed work breakdown structure and detailed schedule of activities. The large number of tasks and schedule items may make it difficult to provide complete and accurate progress updates on a monthly basis. One of the contractors interviewed complained about the number of schedule tasks required and questioned the need to break logical work items into multiple tasks. While this is only one case, it may warrant checking with others to see if this is a legitimate concern.

It is not clear that there is full compliance with the Risk Management Plan at the field level. One project CM team and their contractor stated that there was little value at the field level for the risk registers being generated, and they were probably of more use to senior management. There was also a concern expressed by project staff about discussing risk management issues with the contractor for fear of providing them with ideas about potential claims. Although this concern does have merit, the Panel recommends continuing to involve the contractor in the risk management process since the advantages of managing risk as a team with the contractor outweigh its disadvantages.

Question 2: Is the CM organization performing effectively and efficiently?

The CM organization is large, comprehensive, and impressive. It is part of the overall Program Management matrix organization and consists of five geographical regions under the Construction Deputy Director. It is made up of an integrated team of City and consultant staff.

The WSIP Deputy Director of Construction, Harvey Elwin, is a very strong manager and well respected throughout the organization. One concern is that he also manages the CM Bureau for the SFPUC, which could place unreasonable demands on him.

The Project Safety Program appears to be working very effectively. The latest safety report showed over 1 million hours worked with only one lost-time accident, and an

overall lost-time incidence rate of 0.2 against an industry national average of 1.7. The Panel met with four of the safety managers associated with the WSIP and found them to be effective and well respected by all team members including the contractors.

The review team attended a Biweekly WSIP CM Meeting led by the WSIP Deputy Director of Construction, Harvey Elwin, which addressed major issues and proposed actions. The meeting was very effective addressing major issues with reports provided by the City Regional Project Managers. The Regional Project Managers were very knowledgeable of their projects and issues. It was not clear how the issues being discussed were selected. In one case, the Panel had heard what appeared to be major issues discussed in the field that were not addressed in the meeting. It may be good to review how issues are identified for meetings like this to make sure the most serious issues are being brought forward. It should not be left to the reporting managers alone to determine what issues they wish to discuss.

The review team attended several weekly progress meetings in the field, which included City, consultant, and contractor representatives. The meetings were effective with issues clearly discussed and action items identified. In one case there were many people at the meeting who did not appear to be essential to it. As always, it is good to limit attendance to those required and try to limit those who are just observers and could be doing more productive things elsewhere.

Overall the organization appears to be very effective. However, in the integration of the City and consultant staff, there seems to be some overlap of duties that may lead to some inefficiency. However, we understand there are requirements of the City that make the overlap of City and consultant staff necessary.

The overall CM organization has a well-defined structure consisting of Program, Regional, and Project levels. As the project moves into a pure construction phase, there may be possible streamlining and perhaps leveling of the organization.

Question 3: Is communication within the organization and through the use of meetings and reports adequate and most efficient for the needs of the construction program?

Communication at all levels of the organization is strong. Issues are being raised and discussed in a timely manner through personal communication and the use of extensive meetings and reports. Most problems are being resolved quickly and are minimized by identifying key issues early and handling them at the appropriate level.

An extensive number of reports are generated for the Project, Regional, and Program levels. Dashboard reports contained within the WSIP Quarterly Report give top management and the public an overall view of the status of the WSIP and enough detail

to help them gain an understanding of the key issues affecting each project. Variances in project budgets and schedules are being reported in multiple project and regional reports. Other metrics being tracked for Regional and Project-level reports give a tremendous amount of information on turnaround times for submittals, requests for information, progress payments, change order processing, and other pertinent project details.

Project and Regional meetings are being held regularly with consistent agendas and meeting minutes, ensuring ongoing identification and tracking of all major issues. Unresolved issues appropriately remain on agendas until resolved.

Commissioners and top management communicate their backing of the CM organization by their verbal support and willingness to provide sufficient resources to keep the WSIP running well. The goals and objectives of this ambitious construction program are being communicated clearly throughout the organization. Personnel at all levels understand their roles.

The CMIS Program is a valuable communication tool. Though a significant amount of data is demanded of the contractor and project personnel, important information is input once at the lowest level and can be rolled up or summarized for review, minimizing duplication of effort. Critical project information is available electronically to all levels of the organization.

One concern the Panel had was the apparently large volume of email required to operate and maintain the system. There is also a concern about how emails are selected for inclusion in the CMIS. In one interview it was clear that the Project Construction Manager determined unilaterally what specific emails were to be memorialized in the system. The overall approach to selection of emails to be entered into the system needs to be reviewed. An appropriate protocol should be designed to provide the SFPUC with a clear and comprehensive history of WSIP activities, and an effective archive to support litigation and other types of activities, should they occur.

Communication with the public has been outstanding. The SFPUC website, with maps and descriptions of each project and up-to-date posting of WSIP Quarterly Reports, allows the public to keep abreast of the latest project news online. Ongoing blogs, public meetings, and tours keep the public involved. Public liaisons for each project help ease tensions with communities when construction becomes irritating.

Question 4: Are decisions being made timely and in the most efficient manner?

Decisions are being made in a timely manner as evidenced by the metrics being recorded in regularly published reports. Reports are showing excellent turnaround times for Requests for Information, Submittals, Proposed Change Orders, etc. Though there is some complaining by contractors about the amount of paperwork and data that is

required, they are quick to point out that submittals are returned quickly and invoices are getting paid in record times. The uniformity of the processes among all projects aids the efficiency tremendously.

Though the sheer number of reports being generated and meetings held is daunting, Program, Regional, and Project-level personnel are using reports and meetings effectively to maintain up-to-date knowledge of their areas of responsibility.

Competent professional CMs are ensuring good working relationships with contractors and the early handling of issues. Weekly project meetings focus on all current issues. The meetings that we attended were well run and addressed actions required for all outstanding issues. The fact that all issues to date have been resolved without having to elevate them to the Dispute Resolution Board is a tribute to the constant attention to outstanding issues.

Question 5: Is the status of construction being reported accurately, consistently and timely?

As part of the CM Program review process, members of the Project Review Team were able to attend several Project Weekly Meetings and site visits. Members were also able to observe a Quarterly Update Meeting and a CM Coordination Meeting.

Although there were a large number of attendees at the weekly meetings, the Project Construction Managers (PCMs) did a good job of controlling the flow of the meetings. Most comments were pertinent and to the point. The interaction between the CM staff and the contractor was professional and discussions appeared to be open as well as productive. The meetings are organized into approximately a dozen topics with attachments such as the "Look Ahead" Schedule and Coordination Meeting Matrix. Meeting notes keep a running history of open issues and are a good reference for meeting attendees.

Various "Ad Hoc" meetings/discussions were held following the Weekly Meeting to provide additional information and to exchange views. During several interviews that were held after the weekly meetings, CM staff members stated that they realized there was a large number of attendees but explained that the meeting gave everyone an opportunity to review the scheduled activities, ask questions, and provide comments. Issues are brought up in a timely manner at the meeting and both the CM staff and the contractor provide input for accuracy. Based on the Panel's observations, the meetings were well run and certainly well attended.

Panel members were also able to attend the CM Coordination Meeting. The status of construction at the various projects was presented by the Regional Project Managers (RPMs) along with a discussion of top issues related to each project. Although some topics differed from discussions we heard at the weekly meetings, it is the Panel's

understanding that the RPM decides which topics have the highest priority and will be added to the Biweekly Regional Update Report. Additional updates, including Safety, Quality Assurance, Shutdown Concerns, and Change Orders were presented to attendees and appeared to be consistent with information we were provided at the weekly meetings.

There are also a number of reports that are produced which are used as reference material for the meetings and, in some instances, are incorporated into meeting agendas. Reports such as Submittals/Requests for Information, Trends, Alert Reports, Supplier Quality Surveillance Status, and Average Payment Processing Time appear to be useful aids in providing and maintaining an accurate, consistent, and timely status of construction at the various projects. Although members of the Project Review team were only able to compare a few of these reports with observations made during site visits and related meetings, these reports did appear to accurately represent the status of the work. A much more in-depth review would be required to confirm this on a program wide basis.

Question 6: Is the CMIS being used effectively as a management and reporting tool?

The WSIP CM team has developed a comprehensive CMIS. The CMIS is based upon the commercially-available Primavera Construction Manager software program, which has become a top-quality standard of excellence in the industry. The CM Program is especially well suited for utilization in large, complex, multiproject capital construction programs. While the as-developed system has extensive capabilities, it is not "over-built" given the challenges of the task at hand for the WSIP team. One of the more significant and value-adding features of the system is the extremely flexible "report-writing" capabilities that the consultant has built in to the product.

As a management and reporting tool, the system is very effective. The CMIS provides managers at every level of the WSIP team with critical and invaluable Project-level information. While in many cases it is vital for WSIP senior management to examine program-wide trends and metrics, they cannot, and quite apparently do not, lose sight of the facts that problems and successes occur at the individual project level. The current CMIS is rigorous in its reporting on Project-level performance. Mid-level (e.g., Regional) and senior-level management of the WSIP clearly rely on selected reports from the CMIS in their decision-making processes concerning project activities.

At a macro-level, senior management relies on CMIS output to guide them in identifying potential problem areas or issues within the CM Program parameters that should be dealt with at the Project, Regional, or Program levels. The reporting requirements, all originating at the project level, are well thought out and rigorously enforced. There are a multitude of reports being generated, and it is doubtful that any one manager at any

level needs all of them. However, the CMIS developers believe that every report is important to, and being used by, someone in the management hierarchy. To maximize the efficiency and effectiveness of the system as a management tool going forward, it is recommended that this belief be verified by an independent review of the system.

The current status of the CMIS was judged to be as a fully functional and complete tool for management. However, the users' experience at all management levels has spanned a duration that has allowed many of the users to feel that a variety of "tweaks" would improve the value of the system. These suggestions for improvement in such a system are normal, to be expected, incredibly valuable to the overall success of the WSIP, and should be exploited with all dispatch — the "continuous improvement" process at its best. In these cases, the most productive suggestions will probably come from the individuals who really make the system work, e.g., the Project Engineers and Data System Coordinators. But the people that have to read the reports and act accordingly are equally important. In other words, "everybody." Historically, senior management needs to actively provide a neutral forum to retrieve these inputs. In the WSIP case this information should initially be sought on a quarterly basis until the volume of "suggestions" recedes, and perhaps semi-annually thereafter.

Management does have a challenge to deal with regarding the CMIS. That challenge is to ensure that the system does not grow to provide capabilities that are not essential to the proper management of the WSIP. Historically, when the basic program is so adaptable, the report-writing capabilities are so powerful, and the consultants are so expert, many large construction programs have suffered when the CMIS-type program kept expanding its output "just because we can." Then the system starts producing "information overload." Managers get so much information that they have difficulty focusing on important issues. The CM Review Panel was satisfied that this syndrome has not been an issue for the WSIP management, but it is a possibility for which they need to be ever vigilant to prevent. Any time a manager, at any level, can present a justifiable case to senior management that the CMIS needs to be expanded, there should be no question that the system should be improved. But the bar should be set high for adding reports or more detail.

Question 7: What are the greatest CM organizational challenges and risks that could impact program delivery?

1. The WSIP, as a result of its basic mission, is constantly challenged by having to maintain a fully-functioning water supply to the San Francisco area while completing a massive system upgrade.
2. Successful completion of the WSIP requires combining the talents and skills of public and private sector staffs. The success of the learning depends on careful selection of personnel, comprehensive training in WSIP processes and

procedures, and constant monitoring to ensure that smooth running teams are in place. As much as possible, distinguishing between City and consultant staff needs to be minimized so everyone feels part of the same team.

3. The WSIP requires the communication and interaction between WSIP staff at virtually every level with a myriad of external organizations numbering in the dozens. Maintaining effective, but controlled, communications and record-keeping thereof is a formidable challenge. When such activities are required in the relatively litigious world of construction, the challenges are even more intense.
4. The WSIP team has little or no control over the implementation of water supply projects. This could have direct impact on the team's ability to achieve its mission and WSIP completion goals.
5. WSIP has developed a tremendous data collection, management, and reporting system. Management will have to constantly guard against succumbing to pressures from the Information Technology professionals to constantly increase the number and focus of reports — "We have the system that can collect it and report on it, so let's do it". Also, the regular auditing of the inputs to the reports should be continued to make sure it is accurate and reliable.
6. Just as in every water distribution system upgrade program, one of management's biggest challenges is ensuring that shutdowns of portions of the system occur as planned. WSIP has established comprehensive shutdown plans and procedures. To date, performance has been nearly flawless. Constant vigilance and continuous improvement must continue to be applied to this critical facet of the work at every level of the organization. Potential resource constraints at SFPUC Operations also should be addressed.
7. The WSIP Deputy Director of Construction, Harvey Elwin, is a strong leader of the construction team. He also has other responsibilities within the City organization. A critical challenge for the WSIP Program Director will be to find ways to ensure that Mr. Elwin does not get pulled in so many different directions from outside the WSIP that this program is negatively impacted.
8. While the WSIP management group has a vital role in providing direction and resources necessary to complete the overall program, the Project level is where those resources get translated into physical reality. The needs of the individual projects must be addressed first and foremost, even at the expense of developing additional capabilities at the Program level.
9. The WSIP will have to maintain its strong support at the Commission and City levels. Such support is typically maintained by promoting the "successes" of the program. But since construction is a dynamic process with ever-changing

conditions, the definitions of "success" may properly need to be modified as a result of the ever-changing construction environment and society. Top management needs to ensure such understandings of the elected officials and policy drivers before such adjustments become necessary.

10. Customers will almost certainly experience fatigue with continued rate increases and long periods of disruption by the massive construction effort. An ongoing challenge will be how to continue to publicly convey the value this critical program will bring to the area.

Question 8: What step or actions do you recommend the SFPUC Commission and/or Upper Management take to improve the organizational performance, promote accountability, minimize risks, and guarantee success?

Organizational Performance Improvement

1. Dedicate Harvey Elwin to his WSIP Management responsibilities and consider having someone else temporarily assume responsibility for other Bureau activities.
2. Have other senior management visit the project sites as frequently as possible to share their enthusiasm for the work and provide overall program perspectives and acknowledgements of performance.
3. Look for possible streamlining of the organization as the WSIP progresses into a purely construction phase and as the volume of work varies.
4. Ensure that contract CM and City personnel take a unified approach to contractor negotiations.
5. Review the work breakdown structure proposed for future projects to determine if simplification could result in easier maintenance and greater accuracy.
6. Senior management should authorize an independent, external review of the CMIS reports and their utilization. The review could be conducted by one individual from either City or the private sector. Purpose of the review should be limited to identifying all reports being generated, recipients of each report, and recipients' judgment of the need and functionality of reports received.

- e. Gather the Project, Regional, and Program Managers for a special meeting to review and discuss the SFPUC's expectations for WSIP performance.
2. WSIP senior management should conduct reviews with appropriate design, permitting, jurisdictional agencies, and operational and construction personnel on a project-by-project basis for all yet-to-start projects to examine and re-set (if appropriate) financial and schedule contingencies and adjust project completion strategies, if necessary.
3. Senior management should consider conducting semiannual Management Excellence Review Forums. Forums should include representatives of management at all levels and should focus on accomplishments in continuous improvement, development/maintenance of "best practices," lessons learned, and mid-course corrections of accountability and responsibility of managers when appropriate.

WSIP Schedule Compression Analysis

February 2, 2011

Water System Improvement Program (WSIP) Management requested Parsons evaluate schedule compression and execution concerns and address questions raised by the Commission and the Bay Area Water Supply and Conservation Agency (BAWSCA) resulting from project schedules extended into the last year of the Program. BAWSCA's concerns relate to their review of the SFPUC Fiscal Year 2009-10 Annual Report on the WSIP, dated September 1, 2010. The Annual Report was based on data as of July 1, 2010 for the Regional Program (June 2009 Revised Program). In order to address a complete resource analysis and the potential implications of the projects now scheduled to complete in the last year of the Program, this analysis includes both the Local and Regional Programs and is based on data as of October 3, 2010 (September 2010 Forecasted Program). In parallel with this analysis, a Third Party Construction Management Review Team convened in November 2010 and evaluated the SFPUC's ability to manage the program throughout the Construction Phase.

The Commission approved June 2009 Revised Program included two (2) projects scheduled to complete in 2015. These projects were CUW37401: Calaveras Dam Replacement (12/04/15) and CUW36801: Bay Division Reliability Upgrade – Tunnel (8/14/15). Currently, there are eleven (11) projects scheduled to complete in 2015:

	<u>Current* Forecasted</u>	<u>Current* Phase</u>
	<u>Completion</u>	
Regional Program		
• CUW35201: Upper Alameda Creek Filter Gallery	06/04/15	Design
• CUW36801: Bay Division Reliability Upgrade – Tunnel**	08/14/15	Construction
• CUW36302: System Security Upgrades	08/31/15	Multiple
• CUW36702: Peninsula Pipelines Seismic Upgrade**	08/31/15	Planning
• CUW36701: HTWTP Long-Term Improvements**	11/20/15	Bid and Award
• CUW 30103: Regional Groundwater Storage and Recovery	11/30/15	Environmental/Design
• CUW38802: Habitat Reserve Program	12/04/15	Multiple
• CUW37401: Calaveras Dam Replacement**	12/04/15	Environmental/Design

Local Program (Water Supply Projects)

- | | | |
|---|----------|----------------------|
| • CUW30102: San Francisco Groundwater Supply | 04/14/15 | Environmental/Design |
| • CUW30101: Lake Merced Water Level Restoration | 07/06/15 | Design |
| • CUW30201: San Francisco Westside Recycled Water | 11/17/15 | Environmental/Design |

* The term "Current" reflects data as of October 3, 2010

**Seismic Reliability Projects

Based on BAWSCA's letter to SFPUC dated October 13, 2010 and discussions with BAWSCA and Commissioner Moran, Parsons focused the evaluation on answering seven (7) key questions:

- Is the schedule compressed?
- Do the projects projected to complete in 2015 present additional risks or challenges to overall program completion?
- Are processes and systems in place to address construction issues in a timely and effective manner and being executed?
- Has the SFPUC planned for adequate resources to address the project schedule for construction and closeout?
- Can the SFPUC manage the cash flow to meet the project schedules?
- Can the SFPUC maintain system operations throughout construction and during the last year of the program?
- Can SFPUC retain the right people and resources necessary to complete the program?

Methodology

Parsons reviewed the schedules of the above-mentioned eleven (11) projects, resource loaded forecasts, and CM processes. We also reviewed overall WSIP spending comparisons and construction schedule comparisons between the June 2009 Revised Program and the September 2010 Forecasted Program. This comparison was similar to the analysis of the 2007 Revised Program and the June 2009 Revised Program reported to the Commission on December 14, 2009. In addition, discussions were held with Finance and Water Enterprise operations staff. We want to acknowledge the support and responsiveness of Mojgan Yousefkhani (WSIP Controls Manager) and the Program Controls staff in answering requests for data and information.

Is the schedule compressed?

Figure 1 is a comparison of cash flow by fiscal year for the June 2009 Revised Program Spending Plan and the September 2010 Forecasted Spending Plan for construction and construction contingency costs for Fiscal Year FY 10-11 thru FY 15-16. The peak spending year remains FY 12-13; however, the peak year spending has decreased by \$66 million (from \$819 million to \$753 million). Spending for the last calendar year of the Program (2015) increased by \$29 million (from \$8 million to \$37 million). The increase in construction spending for 2015 is relatively small considering the magnitude of the WSIP. To put the \$37 million for all of 2015 in perspective, twenty-four (24) construction projects were active in November 2010 and an average of \$31 million has been invoiced for the past 5 months.

Figure 1

**WSIP (Regional & Local)
June 2009 Revised WSIP vs. September 2010 Forecasted Construction Spending Plan**

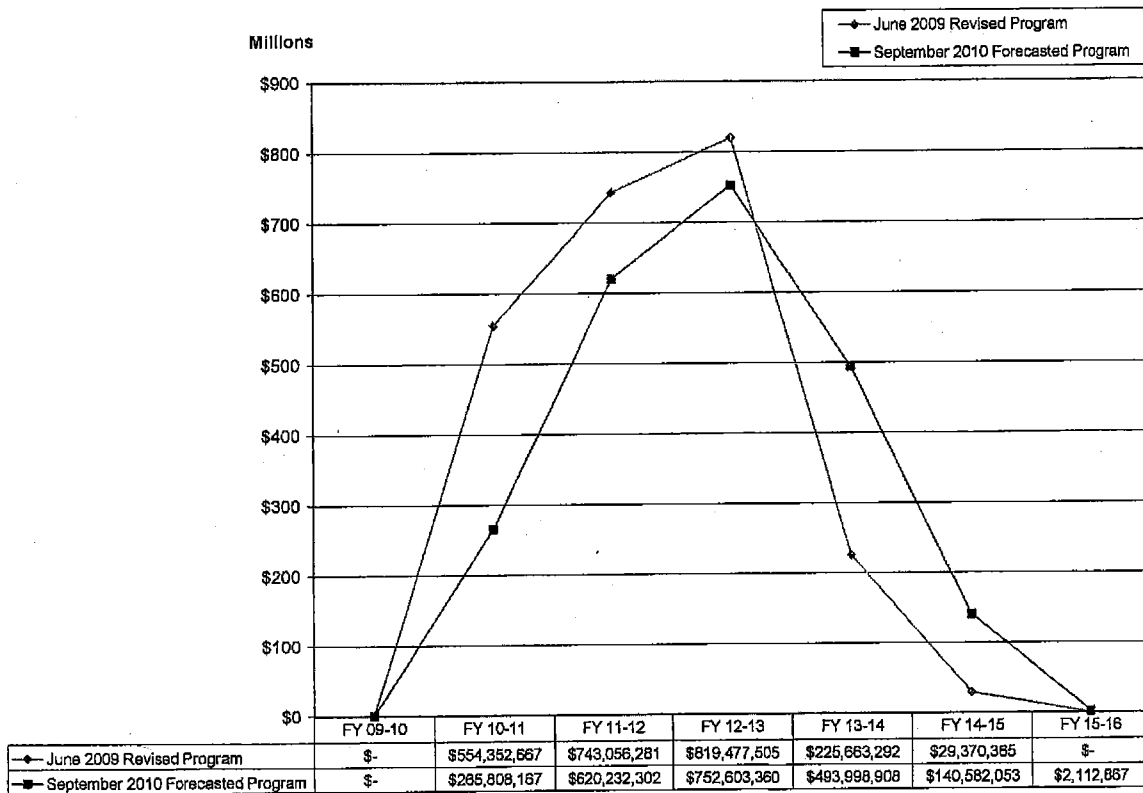


Table 1 compares the number of projects in construction, the cumulative planned construction expenditures, and planned percent complete of construction at 6-month intervals for the last five years of the June 2009 Revised and September 2010 Forecasted Programs. The peak number of projects in construction at one time is twenty-three (23) for the September 2010 Forecasted Program compared to

twenty-six (26) for the June 2009 Revised Program. The amount of construction completed prior to FY10-11 is essentially the same and the planned completion level 2 years before completion is higher (91% vs. 77%) for the June 2009 Revised Program.

Table 2 compares construction spending from FY 10-11 through FY15-16. For FY10-11 through FY12-13, spending for the September 2010 Forecasted Program is \$479 million less. For FY13-14 through FY15-16, spending increased \$382 million (from \$254 million to \$636 million). Of interest is that the total projected spending for FY10-11 thru FY15-16 has decreased by \$97 million (from \$2.370 billion for the June 2009 Revised Program to \$2.273 billion for the September 2010 Forecasted Program). This is primarily due to the competitive bidding environment of the past 18 months, which has lowered the overall forecasted cost for construction.

Table 3 illustrates there is little difference between the two programs in time (in months) to achieve two pre-determined progress levels, from 30% to 60%, and from 60% to 100%.

WSIP (Regional and Local)

TABLE 1: No. of Projects and Planned % Complete *

# of Years Before Program Completion	June 2009 Revised Program				September 2010 Forecasted Program			
	Time	# of Projects	Planned Exp. (\$)	Planned % Comp.	Time	# of Projects	Planned Exp. (\$)	Planned % Comp.
5 years	Jul 1, 2010	24	\$544	18.7%	Jul 1, 2010	22	\$530	18.9%
4.5 years	Jan 1, 2011	25	\$800	27.4%	Jan 1, 2011	23	\$633	22.6%
4 years	Jul 1, 2011	26	\$1,098	37.7%	Jul 1, 2011	23	\$795	28.4%
3.5 years	Jan 1, 2012	20	\$1,387	47.6%	Jan 1, 2012	20	\$1,055	37.6%
3 years	Jul 1, 2012	21	\$1,841	63.2%	Jul 1, 2012	17	\$1,414	50.4%
2.5 years	Jan 1, 2013	17	\$2,338	80.2%	Jan 1, 2013	18	\$1,782	63.6%
2 years	Jul 1, 2013	14	\$2,660	91.3%	Jul 1, 2013	15	\$2,167	77.3%
1.5 years	Jan 1, 2014	7	\$2,823	96.9%	Jan 1, 2014	14	\$2,454	87.5%
1 year	Jul 1, 2014	3	\$2,885	99.0%	Jul 1, 2014	11	\$2,661	94.9%
0.5 year	Jan 1, 2015	2	\$2,906	99.7%	Jan 1, 2015	8	\$2,766	98.7%
	Jul 1, 2015	0	\$2,914	100.0%	Jul 1, 2015	3	\$2,801	99.9%
Construction Complete					Sep 30, 2015	0	\$2,803	100.0%

TABLE 2: Construction Spending During Final Years of WSIP *

# of Years Before Program Completion	June 2009 Revised Program		September 2010 Forecasted Program		Delta (2010 - 2009)	Variance %
	Period	Planned Exp. (\$ M)	Period	Planned Exp. (\$ M)		
		A		B	C	C/A
5	FY10-11	\$554	FY10-11	\$265	(\$289)	-52.2%
4	FY11-12	\$743	FY11-12	\$619	(\$124)	-16.7%
3	FY12-13	\$819	FY12-13	\$753	(\$66)	-8.1%
2	FY13-14	\$225	FY13-14	\$494	\$269	119.1%
1	FY14-15	\$29	FY14-15	\$140	\$111	382.8%
1	FY15-16	\$0	FY15-16	\$2	\$2	
Total Expenditure for last 5 years before Program Completion		\$2,370		\$2,273	(\$97)	
Total prior expenditure as of 5 years before Program Completion		\$544		\$530	(\$14)	
Grand Total		\$2,914		\$2,803	(\$111)	

* - Includes Construction Contingency, but excludes Environmental Mitigation Costs.

TABLE 3: Planned % Complete

Planned % Complete	June 2009 Revised Program		Duration (Months)
	30% - 60%	Feb 2011	
30% - 100%	Feb 2011	Mar 2015	48
September 2010 Forecasted Program			
Planned % Complete	September 2010 Forecasted Program		Duration (Months)
30% - 60%	Aug 2011	Nov 2012	15
30% - 100%	Aug 2011	Sep 2015	49

Analyzing project schedule comparisons, we find that the number of projects now forecasted to complete in calendar 2015 increased from two (2) to eleven (11) while the Program completion date remains unchanged. Eight (8) of these projects are part of the Regional Program, and three (3) are Water Supply projects that are part of the Local Program. The construction of twenty-nine (29) projects is delayed (i.e., completion date now closer to WSIP overall completion date of December 2015) in

comparison to the approved June 2009 Revised WSIP Program. Eight (8) of these projects are part of the group of eleven (11) projects now forecasted to complete in 2015.

The schedule for CUW38802: Habitat Reserve Program includes 3-year monitoring periods after completing construction at each site. Construction is not a factor in 2015 and resources needed for monitoring should be minimal. The Water Supply projects require more intensive public and stakeholder involvement during pre-construction, which have contributed to their delay. One of these projects, CUW30101: Lake Merced Water Level Restoration is currently on hold while various options are being considered and negotiated with Daly City. These discussions have contributed to its schedule delay.

Thirteen (13) construction schedules have been shortened. These reduced construction schedules are for three (3) of the eleven (11) projects now forecasted for completed in 2015.

It is important to understand that the forecasted completion dates of these projects include scheduled time, after construction is complete, for project closeout. When considering construction completion, there are seven (7) projects now projected to complete construction in 2015, compared to two (2) in the June 2009 Revised Program.

Based on the above analysis, it is our opinion that the overall construction and closeout schedule is compressed compared to the June 2009 Revised Program. More projects will be completed in the last year of the Program (2015), spending will be greater the last three years, and a greater percentage of construction must be completed the last three years. In addition, twenty-nine (29) construction schedules will complete closer to the Program completion date and thirteen (13) construction schedules have reduced durations. Furthermore, several projects in 2015 have reduced time for the Closeout Phase. All of this is somewhat offset by \$97 million less spending required over the last five years of the Program, a slightly more gradual ramp up to peak spending, and a slightly more gradual ramp down in spending. A more gradual ramp up enables construction management (CM) teams to mobilize and learn procedures and systems at a more measured pace. A more gradual ramp down should benefit staff transition at the end of the program.

Do the projects projected to complete in 2015 present additional risks or challenges to program completion?

The eleven (11) projects forecasted to complete in 2015 are not related in ways that pose significant additional risks because of when they are now projected to be in construction. CUW36302: System Security Upgrades relies on the schedule of the last project in WSIP before it can be closed out. This requires close coordination to ensure the security components are integrated with the construction projects so as not to cause delays. With the exception of CUW37401: Calaveras Dam Replacement, which has construction completion in July 2015, the remaining project schedules show the heavy construction activities completing before 2015.

A risk with more projects finishing in the last year of the program is there are more opportunities for schedule delays. A common adage when managing programs is that the last 5% is the hardest to

complete. We are seeing several current construction schedules extended to deal with project completion issues. In addition, the ideal duration for the project Closeout Phase is 6 months, but the average actual time, excluding projects in litigation or for events outside of the SFPUC's control, has been 7 months. With several of the projects completing in 2015 having less than 6 months for closeout, schedule extensions to complete construction and delayed project closeout of those projects pose a greater risk for overall Program completion by December 2015.

Seven (7) of these projects are in pre-construction. Pre-construction issues can pose significant risks to the schedule. The three (3) Water Supply projects involve intensive, and often more lengthy, public and stakeholder input during pre-construction. With respect to these seven projects, any efforts to accelerate the completion of pre-construction and construction earlier could add time to the Closeout Phase of these projects. The largest project in pre-construction, CUW37401: Calaveras Dam Replacement advertised for bidding January 31, which is a significant milestone for the Program and moves this major project closer to completing pre-construction.

Are processes and systems in place to address construction issues in a timely and effective manner and being executed?

The current processes and systems for managing construction were well planned and thorough. They are being tested as construction under contract has exceeded \$1 billion and more than twenty (20) active contracts. These same processes and systems will serve the Program through completion in 2015. Significant issues, such as the archeological sites, contaminated groundwater, and tunnel boring machine (TBM) extraction on CUW36802: Bay Division Reliability Upgrade – Pipeline and the TBM extraction on CUW35902: Alameda Siphon No. 4, are being elevated in a timely manner and WSIP Management has demonstrated prompt decision-making and resolution. Further, the bi-weekly Issues Meeting established by the Deputy Director for Construction provides a venue to elevate issues to management's attention.

However, while the current number of projects in construction is as high as it will be for WSIP, the value of construction taking place will more than double for the next two years and average monthly spending will exceed \$60 million. More dollars spent can mean more issues. The increase in spending over the next two years is primarily due to four (4) projects. These four projects, CUW35901: New Irvington Tunnel, CUW36701: HTWTP Long-Term Improvements, CUW37401: Calaveras Dam Replacement and CUW37301: San Joaquin Pipeline System total \$1 billion in construction. It is incumbent on the entire WSIP organization to maintain the diligence they have demonstrated in identifying, elevating and resolving construction issues.

Has the SFPUC planned for adequate resources to address the project schedules of construction and project closeout?

Resources for construction and project closeout are categorized as project management, design support, construction management and program management. City staff resources and consultant contracts are generally adequate to handle the current construction workload that has now reached the

peak for the number of projects in construction. We see nothing that should interfere with that continuing through the completion of the Program. Certainly, from time to time, staff may need to reach out for additional resources through existing contracts but the resource and contracting infrastructure is in place and the Commission has shown support for consultant support when needed.

We looked closer at the resources planned for the eleven projects completing in 2015. Seven of these projects are currently in pre-construction, one is being bid for construction, one is in construction, and two have pre-construction and construction occurring simultaneously. While we would expect resource plans for project phases underway to be more refined than for future phases, the resources for project management, design support and construction management are generally reflected in current work plans.

We did find a wide range of hours planned for Project Management during Construction and for the Closeout Phase between projects. Project Management resources during construction range from a low of 23 hours per month to a high of 451. Resources for Closeout range from a low of 44 hours per month to a high of 575. While one would expect some variation based on the project, it would be helpful to re-evaluate future resource forecasts based on actual experience for completed projects. This would confirm sufficient resources for Closeout are planned for, while avoiding over-planning which increases cost projections. The program revision effort planned for later this year would be a good opportunity to re-visit these resource plans.

Can the SFPUC manage the cash flow to meet the schedules?

Discussions with SFPUC Finance staff indicate the capital funding activities have been well coordinated with the WSIP's cash needs. The monthly program cost and schedule forecasting process ensures cash flow projections are timely and up to date. The WSIP Program Team communicates these updates to Finance, including the monthly cash flow obligations and the encumbrance amount Finance needs at the time of construction contract approval. For example, the current cash flow forecast shows \$300 million needed in August 2011 for the encumbrance of the Calaveras Dam Replacement construction contract. SFPUC will have cash on hand, or available commercial paper capability, at the beginning of each construction contract to fund the total construction cost. This mitigates the risk of the SFPUC not having funds available in 2015 to fund the completion of the program's last eleven projects.

Funding for WSIP through the sale of revenue bonds has been smooth and timely, and beneficial to ratepayers with low generational borrowing rates. SFPUC sold approximately \$2.7 billion of bonds in eight individual placements since 2006. SFPUC makes contract payments in a timely manner and we see no reason, absent a capital market collapse, that WSIP cash management requirements will not be met. Decisions related to the timing and amount of a bond sale or use of commercial paper is dependent on many factors in addition to the program cash needs (i.e., interest rate projections, debt coverage ratios, water rate analyses).

Can the SFPUC maintain system operations throughout construction and during the last year of the program?

Two projects will have the greatest impact on maintaining system operations in 2014 and 2015.

CUW36701: HTWTP Long-Term Improvements will have one partial and two full plant shutdowns in 2014 and 2015 and CUW36801: Bay Division Reliability Upgrade - Tunnel will require the commissioning and shutdowns of Bay Division Pipelines (BDPLs) #1 and 2. Discussions with Mr. David Briggs, Director of Water Supply and Treatment Operations, confirmed that advance planning is underway to manage the shutdowns and commissioning activities for these projects. Although the HTWTP and BDPL shutdowns are not inter-related, the nature of these facilities poses risks to achieving these shutdowns as planned and the regional system's overall reliability.

CUW36701: HTWTP Long-Term Improvements is a major and complex upgrade to an existing operating facility. With five (5) partial and six (6) full plants shutdowns needed during construction, delays during construction could cascade through the schedule and push the last shutdowns past the winter 2014/2015 low demand period. Should that occur, the project completion could extend past the current Program completion date of December 2015.

CUW36801: Bay Division Reliability Upgrade - Tunnel must be commissioned before BDPL #1 and #2 can be taken out of service in the winter of 2014/2015. Tunnel construction is susceptible to increased risks associated with geological conditions. Certainly, many tunnel projects complete with no delays.

CUW37201: New Crystal Springs Bypass Tunnel is an example of a tunneling project that has gone extremely well and is on schedule. But unforeseen geological or groundwater risks are high for tunnel projects as recently experienced in Seattle and Las Vegas where extensive delays occurred.

What is noteworthy, however, is the impressive level of planning for project shutdowns, and the communication and documentation ongoing between WSIP Management, designers, construction contractors and SFPUC operations staff. System shutdown planning began in 2007 and remains a high priority for the WSIP team. The ongoing coordination of shutdown planning that addresses changes in schedules in "real time" is a model for how to do it right. This effort has largely been under the radar because it has been so successful. To date, forty (40) system shutdowns have been completed successfully. This level of planning and communication reduces operations risk throughout construction and for the last years of the Program.

Twenty-four (24) shutdowns are planned over the next six months, which will further test the SFPUC shutdown planning and execution efforts. However, it should be noted that calendar years 2010 and 2011 are the peak years for the number of system shutdowns. Midway through this peak period, Water Supply and Treatment Operations, through detailed resource planning to support system have, to date, have met every challenge. Mr. Briggs mitigated concerns regarding the retirements of several Operations Liaisons in 2010 through effective management and staff re-assignments. In addition, Water Enterprise staff has become more efficient through repeated success of as shutdown processes. It will be important to maintain a high priority for staffing system shutdowns through completion of WSIP.

With six (6) shutdowns planned for 2014 and one (1) for 2015, compared to over sixty (60) for 2010 and 2011, absent unforeseen schedule delays, the September 2010 Forecasted Program poses no additional concerns for maintaining system operations during the last year of the Program.

Can SFPUC retain the right people and resources necessary to complete the program?

As the program efforts wind down in 2014 and 2015, a legitimate concern is retaining the resources necessary to complete the program on time. The consultant resources should not be a concern, as the consultants have the ability to provide sufficient resources if contract authority is in place. With respect to City staff, the overlap of resource needs for the Sewer System Improvement Program with WSIP requires special attention to balance resources and ensure WSIP retains staff needed for closing out the projects in 2015. With both Capital Programs under the authority of the Assistant General Manager of Infrastructure, we are confident WSIP will receive the priority it needs.

In summary, while the current forecasted schedule is compressed compared to the June 2009 Revised WSIP Program, resources overall appear to be adequate to address the workload. Procedures and systems are in place for construction, issues are identified and elevated in a timely manner, and cash flow management processes are in place and functioning well.

The primary risks are that with more projects now scheduled to complete in 2015, there are more opportunities for schedule delays that could affect the Program's overall completion date of December 4, 2015, and there is, in some cases, less time for Project Closeout than has historically been required. Additionally, although CM procedures, systems and resources are proving adequate to deal with the current workload, the average monthly and annual spending will increase significantly for the next 3 years, potentially stressing the organization's ability to deal with more issues.

**Public Utilities Revenue Bond Oversight Committee
City Services Auditor Working Group**

MINUTES - DRAFT

Wednesday, June 8, 2011
4:00 p.m.
1155 Market Street (between 7th & 8th Streets)
4th Floor Conference Room
San Francisco, CA 94102

Committee Members

John Ummel, Chair
Ben Kutnick
David Sutter

1. Call to Order and Roll Call (*0.00.00)

The meeting convened at 4:08 p.m.

All members were noted present. There was a quorum.

2. Public Comment: Members of the public may address the City Services Auditor Working Group of the Revenue Bond Oversight Committee (RBOC) on matters that are within the RBOC's Jurisdiction that are not on today's agenda.

Public Comment: None.

3. Discussion and Possible Action: Draft MOU with the Controller's Office (*0.04.10)-

Issue/Action: Review of suggested changes to the draft Memorandum of Understanding (MOU) between the RBOC and the Controller's Office for purposes of assisting the RBOC with future audit assignments.

Mike Brown (SFPUC); Irella Blackwood (Controller's City Services Auditor); presented information concerning the matter and/or answered questions raised during the hearing.

Public Comment: None.

4. Discussion and Possible Action: Scoping Task Assignments (*0.04.25) -

Issue/Action: The City Services Auditor Working Group will discuss the proposed work plan for future RBOC audit assignments.

Mike Brown (SFPUC); Irella Blackwood (Controller's City Services Auditor); presented information concerning the matter and/or answered questions raised during the hearing.

Public Comment: None.

5. Discussion and Possible Action: Approval of the Minutes of the RBOC City Services Auditor Working Group meetings for May 4, 2011. (*0.50.00)

Member Sutter, seconded by Member Kutnick, moved to approve the minutes of the RBOC city Services Auditor Working Group meeting for May 4, 2011.

The motion passed by the following vote:

Ayes – Ummel, Kutnick, Sutter
Noes - None

6. Discussion and Possible Action: Future Agenda Items/Meeting Dates

No Action.

Public Comment: None.

7. Adjournment

The meeting adjourned at 4:55 p.m.

Audio recordings of the meeting of the Revenue Bond Oversight Committee are available at:

http://sanfrancisco.granicus.com/ViewPublisher.php?view_id=97
