THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

BOARD ACTION

- **Board of Directors**
  Engineering and Operations Committee

November 10, 2009 Board Meeting

8-2

Subject

Appropriate $39 million; award $25.13 million contract to J.F. Shea Construction, Inc. for the Weymouth Power System Upgrades; and authorize amendments to existing agreements with Carollo Engineers and Tetra Design (Approps. 15369 and 15392)

Description

This action awards a construction contract for needed rehabilitation work at the F. E. Weymouth Water Treatment Plant, and authorizes professional services agreement amendments to support this effort. The work includes upgrades to the plant's electrical system to ensure plant reliability and meet the increased power demand of planned ozone facilities.

Timing and Urgency

Upgrades of the Weymouth electrical power system are needed because the aging electrical system relies on long-obsolete equipment which is difficult to repair, lacks redundancy, and has inadequate capacity to operate planned ozone facilities. Failure of a single electrical device could lead to an unplanned plant outage. In January 2009, Metropolitan's Board authorized an agreement with Southern California Edison to design and construct a new incoming 66 kV electrical service. Upgrades to the plant's electrical system are needed to connect with this new service.

This project has been reviewed with Metropolitan's updated Capital Investment Plan (CIP) prioritization criteria. Staff recommends award of the power system upgrade contract at this time to enhance plant reliability, to prepare the plant's electrical system for planned ozone facilities, and to take advantage of the current highly competitive bidding climate. This project is budgeted within Metropolitan's CIP for fiscal year 2009/10.

Background

The Weymouth plant was placed into service in 1941 with an initial capacity of 100 million gallons per day (mgd), and was expanded twice to its current capacity of 520 mgd. The Weymouth plant delivers a blend of waters from the Colorado River Aqueduct and State Water Project to Metropolitan's Central Pool portion of the distribution system.

Principal components of the electrical system at the Weymouth plant date to the plant's original construction. Since that time, the electrical system has been expanded and adapted for subsequent projects without changing the fundamental design of the original system. Many critical electrical components at the Weymouth plant are nearly 70 years old, and utilize an outdated distribution voltage and grounding system. Upon completion of the planned Weymouth Oxidation Retrofit Program (ORP), peak power demand at the Weymouth plant will increase from 1.85 MW to as much as 7.5 MW.

Many components of the electrical systems at the Weymouth plant have reached the end of their useful service life. As the equipment continues to age, its capability of operating safely and reliably will diminish. Further, much of the electrical equipment is unable to resist the seismic forces generated by a major earthquake. Specific examples of issues to be addressed in this project include:

- The ground fault protection system at the Weymouth plant is an outdated system which protects the faulted item and other connected equipment by shutting down the entire Unit Power Center (UPC) serving all connected equipment instead of isolating the faulted item alone. For example, a single 68-year old UPC provides electricity to the flocculation and clarification equipment in all eight basins, the filter valves in all 48 filters, the inlet chemical feed systems, the plant control system, the chlorine system, and Metropolitan's information technology hub. A single failure of an electrical component in this UPC could jeopardize operation of the entire Weymouth plant.
- Electrical load studies indicate that several circuits may be periodically overloaded and that several motor control centers and circuit breakers are undersized.
- The electrical system at the Weymouth plant employs an outdated 2,400-volt system to distribute power throughout the plant, whereas the current industry standard is 4,160 volts for main distribution equipment and large motors. Spare parts and voltage-compatible equipment for the 2,400-volt system, when available, are expensive and difficult to obtain.
- The existing emergency generator has inadequate capacity to supply the plant when operating at design flow during summer demands.
- The plant's electrical system is not compatible with the modern electrical system of the planned ozonation facilities, and has inadequate capacity to meet future power demands.

To remedy these shortcomings, this construction contract will upgrade the plant's aging electrical infrastructure. The work is budgeted under two capital programs. Of the total $39 million appropriated in this action, $28.1 million is allocated to the Weymouth Improvements Program (as Infrastructure Upgrade work), and $10.9 million is allocated to the Weymouth ORP (as a Water Quality improvement).

Weymouth Power System Upgrades – Construction ($28.1 million)

Metropolitan's current approach to treatment plant reliability is to ensure that a single random event will not cause the complete shutdown of a plant. When the Weymouth plant was initially designed, the electrical system was designed as a radial system, with power running through a single path to each local UPC for distribution to powered equipment. While standard at the time of Weymouth's construction, this practice of powering all the components of a critical system from a single electrical source leaves the plant vulnerable to a shutdown caused by a single failure in the power system.

This construction effort includes the following upgrades to the electrical system at the Weymouth plant:

- Installation of four new UPCs so that critical process systems are powered by more than one source and to ensure that circuits are not overloaded;
- Replacement of motor control centers and circuit breakers that are undersized;
- Replacement of the existing 2,400-volt distribution system with an up-to-date 4,160-volt distribution system which will be consistent with the new ozone facilities;
- Addition of an emergency generator to replace two less-efficient generators operating at 2,400 volts and to ensure full plant operation in the event of a utility power outage;
- Electrical ductbanks and unit power centers to support the future addition of solar power generation facilities at Weymouth; and
- Upgrade of the grounding system to reduce the potential for plant shutdowns caused by electrical ground faults.

The new power system has been closely coordinated with the plant's inlet conduit relocation project (which is currently underway), the upcoming ozone facilities, and the new 66 kV incoming electrical service to ensure that all of these improvements are executed in a cost-effective manner.

Construction inspection of all work will be performed by Metropolitan staff. This effort includes numerous tie-ins to the plant's existing electrical facilities while the plant remains in operation.

Weymouth ORP Switchgear – Construction ($10.9 million)

Metropolitan has entered into an agreement with S.C. Edison for design and construction of a new incoming transmission line, which will terminate with a new plant transformer. The ORP Switchgear project includes components that will deliver electricity from the new S.C. Edison equipment to the planned ORP facilities. The project includes construction of the ORP Switchgear Building which will house the breakers and other electrical equipment to serve power from the new S.C. Edison transformer, an emergency generator, communication and security systems, and related facilities. Construction will be performed under the same contract as the Power System Upgrades.

Specific elements of the technical support during construction will be performed by Carollo Engineers and Tetra Design, under existing professional services agreements. Amendment of the existing agreements with Carollo and Tetra Design is described below.

Construction Contract Award

Specifications No. 1628 for the Weymouth Power System Upgrades was advertised for bids on July 27, 2009. The contract includes construction of the main plant switchgear facility, the ORP switchgear facility, unit substations, motor control centers, and a system of electrical cables throughout the plant. As shown in **Attachment 2**, nine bids were received on October 8, 2009. The low bid from J.F. Shea Construction, Inc., in the amount of $25.13 million, complies with the requirements of the specifications. The eight other bids ranged from approximately $25.78 million to $32.5 million. The engineer's estimate was $39.2 million. Staff believes the difference between the engineer's estimate and the group of low bids reflects the current highly competitive bidding environment. For this contract, Metropolitan has established a Small Business Enterprise (SBE) participation level of at least 25 percent of the total bid amount. J.F. Shea Construction, Inc. has committed to meet this level of participation.

This action appropriates $39 million in budgeted funds and awards a $25.13-million contract to J.F. Shea Construction, Inc. to construct the electrical system upgrades at the Weymouth plant. In addition to the amount of the contract, the appropriated funds include $2.38 million for Metropolitan force construction, which includes: installation of Remote Terminal Units; planning and execution of electrical tie-ins; pre-construction potholing; and procurement of materials and supplies. The appropriated funds also include $4.64 million for construction inspection; $2.23 million for technical support by the design team, including Metropolitan staff, Carollo Engineers (see below), and Tetra Design (see below); $720,000 for technical oversight of consultants, permitting, project management, and hazardous material handling documentation; $36,000 for mitigation monitoring by Environmental Science Associates (see below); $100,000 for labor compliance auditing required to qualify for any state or federal funding (see below); and $3,764,000 for remaining budget.

Metropolitan staff will perform inspection of the construction contract. For this project, the anticipated cost of inspection and support is approximately 16.8 percent of the total construction cost. Engineering Services' goal for inspection of projects with construction cost greater than $3 million is 9 to 12 percent. The inspection budget on this project exceeds the goal due to the complexity of the retrofit work, the large number of tie-ins to the plant's existing electrical plant systems, the extensive precautions to be taken to avoid interferences with plant operations, the duration of the construction effort, and the low bid amount.

Due to its comprehensive scope and broad work area throughout the Weymouth plant, staff has made extensive efforts with this contract to minimize disruption to the operating treatment facilities and other Metropolitan functions on the plant site. Further, to minimize contractor interferences, delays and claims, Metropolitan has performed extensive field investigations to accurately characterize site conditions, and has established contractual milestones and constraints to coordinate access between the contractors on site. However, due to the challenges inherent in rewiring a nearly 70-year old water treatment plant without a plant outage and with other construction work underway on site, staff anticipates that construction change orders on this contract may be higher than typically expected for new construction.

Carollo Engineers – Agreement Amendment

Carollo Engineers and its subconsultants prepared portions of the final design of the Weymouth ORP Switchgear. As the engineer of record, Carollo is recommended to provide technical engineering support during construction. These activities include review of submittals received from the contractor, responding to requests for information, and advising inspection staff on technical issues as they may arise. Carollo was selected through a competitive process via Request for Qualifications No. 719, and the design work was performed under a board-authorized agreement. Amendment of the existing Carollo agreement is consistent with the agreement's scope of work and with the planned approach for project implementation. For this agreement, Metropolitan has established an SBE participation level of 20 percent.

This action authorizes an increase of $500,000 to the existing agreement with Carollo Engineers, for a new not-to-exceed total of $12.2 million, to provide technical support during construction of the Weymouth ORP Switchgear Building.

Tetra Design – Agreement Amendment

Tetra Design and its subconsultants performed the architectural and structural portion of the final design of the Weymouth ORP Switchgear Building. As the architect and structural engineer of record, staff recommends that Tetra Design and its subconsultants be retained to provide technical support during construction. These activities include review of submittals received from the contractor, responding to requests for information, and advising inspection staff on technical issues as they may arise. Tetra Design was selected through a competitive process via Request for Qualifications No. 555, and work was performed under a board-authorized agreement. For this agreement, Metropolitan has established an SBE participation level of 20 percent. Tetra Design is an SBE firm and thus achieves 100 percent participation.

This action authorizes an increase of $100,000 to the existing agreement with Tetra Design, for a new not-to-exceed total of $2,558,000, to provide technical support during construction of the Weymouth ORP Switchgear Building.

Environmental Science Associates – No Action Required

Environmental Science Associates (ESA) is recommended to provide environmental monitoring services under an existing board-authorized agreement. Due to the specialized nature of these services, no SBE participation was established for this agreement. ESA was selected through a competitive process via Request for Proposals No. 763 to perform environmental planning and permitting support for the Weymouth ORP and related work. No amendment to the agreement is required at this time. The estimated cost for these services is $36,000.

Status of Proposition 50 Grant Funding

The Weymouth ORP Switchgear Building construction costs are eligible for Proposition 50 grant funding. In July 2007, Metropolitan's Board adopted a resolution to accept $20 million of state Proposition 50 "The Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002" grant funding for the Weymouth ORP. The California Department of Public Health (CDPH) and Metropolitan subsequently executed a Letter of Commitment to provide $20 million for grant-eligible Weymouth ORP activities, including design, ozone equipment procurement, inlet conduit construction costs, and ORP Switchgear Building construction costs.

In early 2009, the CDPH halted the pending execution of the Weymouth ORP grant funding agreement due to the unprecedented financial crisis in the state of California. At that time, CDPH informed staff that execution of the funding agreement and future payout of Proposition 50 grant funds could occur early next year. With the recent anticipated resolution of the state's financial crisis, staff will continue efforts with CDPH staff to execute the Weymouth ORP grant funding agreement.

As part of the Proposition 50 grant, Metropolitan is required to contract with a state-approved auditing firm to perform labor compliance monitoring of the contractor's prevailing wage payment practices over the course of the construction contract. Funds appropriated in this action include $100,000 for grant-reimbursable labor compliance monitoring of the Weymouth ORP Switchgear Building construction contract. When the grant funds are received from CDPH, the grant funds will serve to offset this appropriated amount.

Summary

This action appropriates $39 million, awards a $25.13 million contract to J.F. Shea Construction, Inc. and authorizes amendments to the existing agreements with Carollo Engineers and Tetra Design. All work has been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds have been included in the fiscal year 2009/10 capital budget. The work included in this contract has been budgeted within two Weymouth plant capital programs. See **Attachment 1** for the Financial Statements, **Attachment 2** for the Abstract of Bids, and **Attachment 3** for the Location Map.

This project is consistent with Metropolitan's goals for sustainability by enhancing the reliability of existing treatment facilities in order to maintain reliable water deliveries in the future.

Project Milestone

September 2012 – Completion of Weymouth Power System Upgrades

Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

Metropolitan Water District Administrative Code Section 8121: General Authority of the General Manager to Enter Contracts

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The Board certified the F. E. Weymouth Filtration Plant Ozonation Facilities and Site Improvements Program Final Environmental Impact Report (Final EIR) on April 12, 2005. The Board also adopted at that time the Findings of Fact, the Statement of Overriding Considerations, the Mitigation Monitoring and Reporting Program, and the project itself. Addendum No. 1 to the Final EIR was certified by the Board on January 9, 2007. On October 12, 2009, Addendum No. 2 to the Final EIR was prepared to document the proposed minor modifications to the approved project as detailed in this board letter.

CEQA and the State CEQA Guidelines require the preparation of an addendum to a previously certified EIR if changes or additions are necessary but none of the conditions described in Section 15162 of the State CEQA Guidelines calling for the preparation of a subsequent EIR have occurred (Section 15164 of the State CEQA Guidelines). The proposed modifications to the previously approved project also do not meet any of the conditions requiring the preparation of a supplement to an EIR (State CEQA Guidelines, Section 15163). Instead, the proposed modifications require only minor changes or additions to the evaluation in the certified Final EIR to make it adequate under CEQA. None of the proposed modifications would result in significant adverse impacts beyond those impacts already disclosed in the original Final EIR. Finally, the Board must certify that the addendum reflects Metropolitan's independent judgment and analysis.

The CEQA determination is: Certify that Addendum No. 2 has been completed in compliance with CEQA and the State CEQA Guidelines; certify that the Board has reviewed and considered the information contained in Addendum No. 2 with the Final EIR and find that there is no substantial evidence that the proposed modifications to the previously approved project will create any new significant impacts; certify that the addendum reflects Metropolitan's independent judgment and analysis; and certify Addendum No. 2.

CEQA determination for Option #2:

None required

Board Options

Option #1

Adopt the CEQA determination and

a. Appropriate $39 million;
b. Award $25.13 million construction contract to J.F. Shea Construction, Inc., for the Weymouth Power System Upgrades and ORP Switchgear Building;
c. Authorize increase of $500,000 to the existing agreement with Carollo Engineers, for a new not-to-exceed total of $12.2 million; and
d. Authorize increase of $100,000 to the existing agreement with Tetra Design, for a new not-to-exceed total of $2,558,000.

Fiscal Impact: $28.1 million of budgeted funds under Approp. 15369, and $10.9 million of budgeted funds under Approp. 15392

Business Analysis: This option would reduce the risk of a power failure at the Weymouth plant, and thus will enhance plant reliability. Since the ORP switchgear is necessary in order to retrofit the plant with ozone, this work is eligible for state Proposition 50 grant funding for the Weymouth ORP.

Option #2

Do not award the construction contract and re-advertise in an attempt to receive more favorable bids.

Fiscal Impact: Unknown

Business Analysis: This option may or may not result in a lower bid, and will delay completion of the Weymouth Power System Upgrades and Weymouth ORP.

Staff Recommendation

Option #1

Roy L. Wolfe 10/20/2009
Roy L. Wolfe *Date*
Manager, Corporate Resources

Jeff Kightlinger 10/28/2009
Jeffrey Kightlinger *Date*
General Manager

Attachment 1 – Financial Statements

Attachment 2 – Abstract of Bids

Attachment 3 – Location Map

BLA #6854

Financial Statement for Weymouth Improvements Program

A breakdown of Board Action No. 30 for Appropriation No. 15369 for the Weymouth Power System Upgrades Project* is as follows:

	Previous Total Appropriated Amount (Aug. 2009)		Current Board Action No. 30 (Nov. 2009)	New Total Appropriated Amount
Labor				
Studies & Investigations	$ 1,896,477		$ -	$ 1,896,477
Owner Costs (Project mgmt., envir. monitoring)	6,240,740	**	453,000	6,693,740
Final Design	6,847,641		-	6,847,641
Submittals review, O&M Manuals & As-builts	865,223		1,527,000	2,392,223
Construction Inspection & Support	7,689,704		3,240,000	10,929,704
Metropolitan Force Construction	4,593,680		1,382,000	5,975,680
Materials and Supplies	2,120,848		405,000	2,525,848
Incidental Expenses	239,400		104,000	343,400
Professional/Technical Services	12,340,032	**	-	12,340,032
Environmental Science Associates	-		36,000	36,000
Contracts	76,644,574	**	18,298,000	94,942,574
Remaining Budget	5,334,681	**	2,655,000	7,989,681
Total	**$ 124,813,000**		**$ 28,100,000**	**$ 152,913,000**

* The total amount expended to date on the Weymouth Power System Upgrades project is approximately $7,234,000.
** Includes previous reallocation of $829,834 from Remaining Budget to Owner's Costs ($140,000), Professional/Technical Services ($246,000) and Contracts ($443,834) for Weymouth O&M Building construction and Weymouth Junction Structure Seismic Upgrade constructability review and design.

Funding Request

Program Name:	Weymouth Improvements Program		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment, or General Funds		
Appropriation No.:	15369	**Board Action No.:**	30
Requested Amount:	$ 28,100,000	**Capital Program No.:**	15369-I
Total Appropriated Amount:	$ 152,913,000	**Capital Program Page No.:**	249
Total Program Estimate:	$ 272,390,000	**Program Goal:**	I-Infrastructure & Reliability

Financial Statement for Weymouth Oxidation Retrofit Program

A breakdown of Board Action No. 7 for Appropriation No. 15392 for the ORP Switchgear component of the Weymouth ORP* is as follows:

	Previous Total Appropriated Amount (Sep. 2009)	Current Board Action No. 7 (Nov. 2009)	New Total Appropriated Amount
Labor			
Studies & Investigations	$ 661,000	$ -	$ 661,000
Owner Costs (Project mgmt., envir. monitoring & permits	4,284,400	267,000	4,551,400
Final Design	14,427,000	-	14,427,000
Submittals review, O&M			-
Manuals & As-builts	930,600	115,000	1,045,600
Construction Insp. & Support	2,691,600	1,400,000	4,091,600
Metropolitan Force Const.	313,000	197,000	510,000
Materials and Supplies	8,351,650	282,000	8,633,650
Incidental Expenses	290,000	10,000	300,000
Professional/Technical Services	11,308,100	-	11,308,100
Carollo Engineers	-	500,000	500,000
Labor Compliance Program	-	100,000	100,000
Tetra Design	-	88,000	88,000
Equipment Use	3,000	-	3,000
Contracts	13,869,800	6,832,000	20,701,800
Remaining Budget	2,581,850	1,109,000	3,690,850
Total	**$ 59,712,000**	**$ 10,900,000**	**$ 70,612,000**

*The Weymouth ORP Switchgear work is part of the overall Weymouth ORP program.

Funding Request

Program Name:	Weymouth Oxidation Retrofit Program		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment, or General Funds ($337,700,000) and Proposition 50 Grant ($20,000,000)		
Appropriation No.:	15392	**Board Action No.:**	7
Requested Amount:	$ 10,900,000	**Capital Program No.:**	15392-W
Total Appropriated Amount:	$ 70,612,000	**Capital Program Page No.:**	251
Total Program Estimate:	$ 357,700,000	**Program Goal:**	WQ/Compliance

The Metropolitan Water District of Southern California

Abstract of Bids Received on October 8, 2009 at 2:00 P.M.

Specifications No. 1628

F. E. Weymouth Water Treatment Plant
Power System Upgrades

The project consists of construction of two buildings containing electrical switchgear equipment, several unit substations, several motor control centers, yard conduits and piping, and modification of plant utilities.

Engineer's Estimate: $39.2 million

Bidder and Location	Total	SBE $	SBE %	Met SBE*
J.F. Shea Construction, Inc. Walnut, CA	$25,130,000	$7,146,002	28.44%	Yes
S.J. Amoroso Construction Co., Inc. Costa Mesa, CA	$25,777,000	N/A	N/A	N/A
Filanc-Southern JV Escondido, CA	$26,876,000	N/A	N/A	N/A
DJM Construction Co., Inc. Anaheim, CA	$26,900,000	N/A	N/A	N/A
Kiewit/Mass, A Jt Venture Santa Fe Springs, CA	$28,081,000	N/A	N/A	N/A
The Ryan Company, Inc. Taunton, MA	$29,150,000	N/A	N/A	N/A
Shimmick Construction Company, Inc. Irvine, CA	$30,649,000	N/A	N/A	N/A
Tutor-Saliba Corporation Sylmar, CA	$30,937,700	N/A	N/A	N/A
Mel Smith Electric, Inc. Stanton, CA	$32,540,000	N/A	N/A	N/A

*SBE (Small Business Enterprise) participation set at 25 percent

F.E. Weymouth Water Treatment Plant