

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

July 9, 2002 Board Meeting

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8-3

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**Subject**

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Authorize \$3.126 million for preliminary design of Skinner Module 7 and completion of the Skinner Effluent Replenishment Tank Repair and Bypass Pipeline for the Skinner Improvements Program (Approp. 15365)

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**Description**

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Two Robert A. Skinner Filtration Plant (Skinner plant) projects are recommended to meet future water demands and ensure reliable plant operations.

**Skinner Module 7** (\$600,000): Record-high water deliveries in the Skinner plant service area during summer 2001 highlight the need to commence preliminary design for facilities required to meet future demands in the area and increase treatment reliability. Staff recently updated the Skinner area demand projections and concluded that Skinner Module 7 may be required as early as 2007. Site engineering studies and process design alternatives have been recently completed for Module 7. Environmental documentation for multiple facilities including Module 7, oxidation retrofit facilities (ozonation and/or chlorine dioxide), and other new facilities are being prepared. In order to meet the projected demands, it is necessary to begin preliminary design of Module 7 at this time.

**Skinner Effluent Replenishment Tank Repair and Bypass Pipeline** (\$2,526,000): Temporary repairs were made earlier this year to this tank's corrosion-damaged roof beams and plates. This project is necessary to repair the 25-year-old tank. All of the treated water from Skinner Plant 1 flows through this tank on its way to the Skinner finished water reservoir and distribution system. Construction of the bypass pipeline will allow Plant 1 to remain in operation while the tank is being repaired.

These projects have been evaluated and recommended by the Capital Investment Plan (CIP) Evaluation Team and have been included in the fiscal year 2002/03 CIP budget.

See [Attachment 1](#) for the Detailed Report and [Attachment 2](#) for the Financial Statement.

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**Policy**

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Metropolitan Water District Administrative Code § 5108: Capital Project Appropriation  
Metropolitan Water District Administrative Code § 8113: Construction Contract Award

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**California Environmental Quality Act (CEQA)**

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CEQA determinations for Option #1:

**Skinner Module 7**

The proposed action to fund the preliminary design of Skinner Module 7 is not defined as a project under CEQA because it involves government fiscal activities which do not involve any commitment to any specific project which may result in a potentially significant physical impact on the environment (Section 15378 (b)(4) of the State CEQA Guidelines). In addition, where it can be seen with certainty that there is no possibility that the proposed action in question may have a significant effect on the environment, the proposed action is not subject to CEQA (Section 15061(b)(3) of the State CEQA Guidelines).

The CEQA determination is: Determine that the proposed action is not subject to the provisions of CEQA pursuant to Sections 15378(b)(4) and 15061(b)(3) of the State CEQA Guidelines.

**Skinner Effluent Replenishment Tank Repair and Bypass Pipeline**

The proposed action to implement the Skinner Effluent Replenishment Tank Repair and Bypass Pipeline project is categorically exempt under the provisions of CEQA. The overall project activities involve the funding, final design, and repair of facilities within the existing public filtration plant along with the construction of minor appurtenant structures with no expansion of use and no possibility of significantly impacting the physical environment. As such, the proposed action qualifies under Class 1 and Class 3 Categorical Exemptions (Sections 15301 and 15303 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, the proposed action qualifies under two Categorical Exemptions (Class 1, Section 15301; and Class 3, Section 15303 of the State CEQA Guidelines).

CEQA determination for Option #2:

None required

**Board Options/Fiscal Impacts**

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**Option #1**

Adopt the CEQA determinations and

- a. Appropriate \$3.126 million in budgeted CIP funds;
- b. Authorize Module 7 preliminary design activities; and
- c. Authorize the Chief Executive Officer to have all work performed and delegate to the Chief Executive Officer the authority to award competitively bid contracts in an amount not to exceed \$1.5 million for the Effluent Replenishment Tank Repair and Bypass Pipeline Project.

**Fiscal Impact:** \$3.126 million of budgeted CIP funds under Appropriation No. 15365

**Option #2**

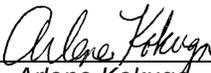
Do not perform all work as described and potentially risk a temporary loss of Skinner Plant 1, if the Effluent Replenishment Tank fails.

**Fiscal Impact:** \$0 for the current fiscal year 2002/03 budget. Project deferral will result in increased costs.

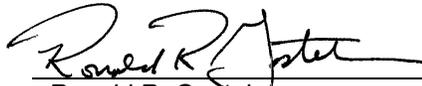
**Staff Recommendation**

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Option #1

  
 Arlene Kokug  
 Date 6/19/2002

for Roy L. Wolfe  
 Manager, Corporate Resources

  
 Ronald R. Gastelum  
 Date 6/21/2002

Chief Executive Officer

**Attachment 1 – Detailed Report**

**Attachment 2 – Financial Statement**

## Detailed Report

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### ***Background***

The Skinner filtration plant was brought into service in 1976 to supply treated water to Riverside and San Diego Counties. Skinner is operated as two distinct filtration plants (Plants 1 and 2). Plant 1 consists of three modules (Modules 1-3), each providing full conventional treatment, including rapid mix, flocculation, sedimentation, filtration, and disinfection. Plant 2 consists of three modules (Modules 4-6), providing direct filtration treatment, which excludes the sedimentation process. The Skinner Plant 2 was constructed beginning with Module 4 in 1985 and Modules 5 and 6 in 1991. Plants 1 and 2 have nameplate capacities of 240 million gallons per day (mgd) and 280 mgd, respectively, for a total rated capacity of 520 mgd (804 cubic feet per second, cfs).

The California Department of Health Services (CDHS) has on file a permit to operate the Skinner filtration plant at a capacity of 520 mgd (804 cfs) under normal operating conditions. Metropolitan may request that the Skinner filtration plant be allowed to operate above its rated capacity based on a number of factors including influent water quality, effluent water quality and filter loading rates. Metropolitan's member agencies that receive water from the Skinner filtration plant include Eastern Municipal Water District (EMWD), Western Municipal Water District of Riverside County (WMWD), and San Diego County Water Authority (SDCWA). With the exception of a small portion of EMWD's service area, which can receive water from the Mills filtration plant during non-peak flows, the Skinner service area is unable to receive treated water from any other Metropolitan treatment plant within Metropolitan's service area.

### **Skinner Module 7 Preliminary Design (\$600,000)**

**Peak Demands and Long-term Outlook** - From July 19 through July 21, 2001, plant water deliveries to the distribution system averaged 97 percent of the plant capacity. In addition, during the period of time when the peak demand occurred, the delivered flow was over the plant's capacity for nearly 20 hours.

**Reliability Considerations** - The existing modules at the Skinner plant have limited time available for preventive and corrective maintenance, since they operate for extended periods. During this past year, high demands required all modules at the Skinner plant to be continuously on-line for a period of 8 months. This mode of operation has narrowed the time frame when treatment modules can be taken off-line for maintenance and repairs.

**Related Work** - Site engineering studies and process design alternatives have been completed for the future Module 7, which will have a capacity of approximately 120 mgd. Three water treatment processes are being considered for Module 7: direct filtration treatment (similar to Plant 2), conventional treatment (similar to Plant 1), and ultrafiltration/microfiltration (UF/MF) membrane treatment. Detailed environmental documentation for Module 7, the oxidation retrofit facilities (ozonation and chlorine dioxide), and other new facilities is being prepared. The Final Environmental Impact Report (FEIR) is scheduled to be recommended to the Board for certification in the second quarter of 2003.

**Project Description** - The project consists of further evaluation of the Module 7 process design alternatives, including on-site testing of UF/MF membranes and life-cycle cost analyses. Impacts of treatment expansion on used washwater, sludge handling, and oxidation retrofit facilities will also be evaluated. Preliminary design activities will include, as appropriate: investigations of existing conditions; site-specific process criteria development; alternative process units' and facilities' sizing and siting; hydraulic analyses; utility supply analyses; major pipeline routing; detailed design criteria; cost estimating; identification of permits; and continuing input into the environmental documentation.

### ***Actions and Milestones***

- March 2003 – Complete Module 7 preliminary design activities

**Cost Estimate** - Attachment 2 shows the breakdown of the total estimated preliminary design cost of \$0.6 million. The recommended activities have been budgeted within the FY 2002/03 Capital Investment Plan (CIP) and recommended by the CIP Evaluation Team. Consistent with Metropolitan's approach of managing projects in the most cost-effective manner and providing opportunities for staff, Metropolitan forces will perform those tasks that are critical to overall program success including project management and preliminary design

activities. Supplemental process engineering activities will be performed by consultants obtained through a Request for Proposals (RFP) selection process for professional/technical service contracts. On-site testing and optimization of pilot-scale UF/MF membranes will be performed by qualified equipment suppliers.

### **Skinner Effluent Replenishment Tank Repair and Bypass Pipeline (\$2.526 million)**

**Purpose** – The effluent replenishment tank is a 4-million gallon, above-ground, welded steel tank, measuring 150 feet in diameter by 33.5 feet high. The tank was placed into service in 1976 as part of the original Skinner Plant 1. In the original Skinner Plant 1 design, the effluent replenishment tank provided treated water storage for various plant uses and stabilized flows entering the distribution system. No tank bypass is available. In 1992, the Skinner finished water reservoir was constructed between the effluent replenishment tank and the distribution system. The finished water reservoir now typically stabilizes flows entering the distribution system. When the Skinner finished water reservoir is taken out of service for inspection and maintenance, however, the effluent replenishment tank stabilizes flows to downstream service connections and, in addition, provides the most cost-effective fire flow storage. Fire flow storage is required by the Uniform Fire Code to ensure sufficient water supply is available for fire fighting.

**Tank Inspection** - Internal inspection of the tank is scheduled every 5 years and was recently performed in winter 2002 during a Skinner plant shutdown. The inspection revealed that a roof beam that supports 9 other beams had failed at the welds, causing all 10 beams to hang from the ceiling at their remaining connection points. Temporary repairs were made to the tank roof in March 2002, but a more permanent repair is necessary. In addition, the tank lining is failing over a significant portion of the interior wall and floor area. The exterior coating is also experiencing weathering and staining typical of a tank in service for 25 years. Both the tank coating and lining have deteriorated to the point that there is no longer protection to the tank from corrosion; the lining and coating need to be reapplied. Construction of the tank bypass will provide greater operational flexibility by allowing maintenance in the future of the tank or finished water reservoir without a shutdown of Plant 1.

**Project Description** - Construct a bypass pipeline around the tank to allow Plant 1 to remain in operation while the tank is repaired. Once the bypass is on-line, remove the tank from service, repair the roof, and recoat and reline the tank.

#### *Actions and Milestones*

- July 2002 – Initial Board authorization and funding for all design and construction
- September 2002 – Complete plans and specifications for improvements
- December 2002 – Award contract for tank bypass pipeline
- March 2003 – Complete tank bypass pipeline tie-in
- November 2003 – Complete tank repairs, recoating and relining

**Cost Estimate** - Attachment 2 shows the breakdown of the total estimated cost of \$2.526 million. The recommended activities have been budgeted within the FY 2002/03 CIP and recommended by the CIP Evaluation Team. Consistent with Metropolitan's approach of managing projects in the most cost-effective manner and providing opportunities for staff, Metropolitan forces will perform those tasks that are critical to overall program success including project management, preliminary and final design activities, and construction inspection.

**Financial Statement for Skinner Filtration Plant Improvements Program**

A breakdown of Board Action No. 4 for Appropriation No. 15365 for the Skinner Filtration Plant Improvements described in this board action is as follows:

	<b>Previous Board Action No. 3 <u>(Nov. 2001)</u></b>	<b>Current Board Action No. 4 <u>(July 2002)</u></b>	<b>New Total Appropriated Amount</b>
Labor			
Studies and Investigations	\$ 805,000	\$ 280,000	\$ 1,085,000
Design and Specifications	320,000	160,000	480,000
Owner Costs (Program Management, Environmental Docs., Bidding Process)	240,000	145,000	385,000
Construction Management	295,000	310,000	605,000
Metropolitan Force Installation and Construction	180,000	0	180,000
Materials and Supplies	230,000	105,000	335,000
Incidental Expenses	15,000	41,000	56,000
Professional/Technical Services	975,000	175,000	1,150,000
Equipment Use	15,000	10,000	25,000
Contracts	2,305,000	1,500,000	3,805,000
Remaining Budget	810,000	400,000	1,210,000
<b>Total</b>	<b>\$ 6,190,000</b>	<b>\$ 3,126,000</b>	<b>\$ 9,316,000</b>

**Funding Request**

<b>Program Name:</b>	Skinner Filtration Plant – Improvements Program		
<b>Source of Funds:</b>	Construction Funds (General Obligation, Revenue Bonds, Pay-As-You-Go Fund)		
<b>Appropriation No.:</b>	15365	<b>Board Action No.:</b>	4
<b>Requested Amount:</b>	\$ 3,126,000	<b>Capital Program No.:</b>	15365-I
<b>Total Appropriated Amount:</b>	\$ 9,316,000	<b>Capital Program Page No.:</b>	E-62
<b>Program Estimate:</b>	\$ 122,000,000	<b>Program Goal:</b>	I-Infrastructure Reliability