

- **Board of Directors**  
**Engineering and Capital Programs Committee**

September 11, 2007 Board Meeting

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7-1

### **Subject**

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Appropriate \$915,000; and authorize post-filtration chlorination capacity increase at the Robert A. Skinner Water Treatment Plant (Approp. 15346)

### **Description**

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Metropolitan's five water treatment plants use conventional water treatment processes including coagulation, flocculation, sedimentation (omitted at Skinner Plant No. 2), filtration, and disinfection. Following the filtration process, chlorine and ammonia are added to the water to produce chloramines to provide a stable disinfectant residual within the distribution system.

Chlorine was originally used as the primary disinfectant at all five plants. In response to stricter water quality regulations, Metropolitan established the Oxidation Retrofit Program (ORP) to add ozonation at all five treatment plants to meet the maximum contaminant level and treatment technique requirements of the Disinfectants/Disinfection By-Products Rule. The conversion to ozone disinfection substantially lowers levels of disinfection by-products, such as trihalomethanes, and reduces the decay rate of chloramines in the distribution system. The Mills and Jensen ozone facilities became operational in March 2003 and July 2005, respectively. Studies show that these plants are using 17 percent less chlorine on average due to ozonation; similar results are expected at the Skinner, Weymouth and Diemer plants once ozonation is implemented. The Skinner ozone facilities are currently under construction, with completion schedule for early 2009. Final design of the Weymouth ozone facilities is complete, with Diemer nearing completion.

During the ozonation process, filters are allowed to become biologically active to remove nutrients that would otherwise be released into the distribution system and cause re-growth of bacteria. Following biological filtration, a chloramine disinfectant residual of 2.5 mg/L is required to limit bacteriological growth in the distribution system. To sustain this chloramine residual, the post-filtration chlorine dose needs to be increased from 4 to 6 mg/L to ensure this level of disinfectant can be maintained at high-flow conditions. In March and July 2006, the Board authorized increases to the post-filtration chlorination capacity at the Mills and Jensen plants, respectively. Work is currently underway at both plants.

#### **Skinner Chlorination Capacity Increase – Final Design, Procurement and Construction (\$915,000)**

An assessment of the existing chlorine feed system at the Skinner plant has been completed, and upgrades have been identified to achieve the recommended increase in chlorine dose. These upgrades include increasing the capacity of existing chlorinators serving the filter-outlet injection points, replacing existing chlorine ejectors with higher capacity ejectors, and extending service-water piping to the new ejectors.

This action appropriates \$915,000 and authorizes final design, procurement of materials, and construction to increase the filter-outlet chlorination capacity at the Skinner plant. All work will be performed by Metropolitan staff. The total cost of construction is estimated to be \$650,000. In addition to the construction, the appropriated funds include \$81,000 for final design; \$61,000 for project management, technical support during construction, and procurement; and \$123,000 for remaining budget. Construction is scheduled to be completed before the Skinner ozone facilities begin operation and the plant's filters are converted to biological filtration.

This project has been evaluated and recommended by Metropolitan's Capital Investment Plan Evaluation Team, and funds have been included in the fiscal year 2007/08 capital budget. See [Attachment 1](#) for the Financial Statement and [Attachment 2](#) for the Location Maps.

### **Project Milestones**

December 2008 – Completion of Skinner Chlorination Capacity Increase

### **Policy**

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Metropolitan Water District Administrative Code Section 5108: Appropriations

### **California Environmental Quality Act (CEQA)**

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CEQA determination for Option #1:

The proposed action is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The proposed action involves the funding, design, and minor alterations, reconstruction or replacement of existing public facilities along with the construction of minor appurtenant structures with negligible or no expansion of use and no possibility of significantly impacting the physical environment. Accordingly, the proposed action qualifies under Class 1, Class 2, and Class 3 Categorical Exemptions (Sections 15301, 15302, and 15303 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, the proposed action qualifies under three Categorical Exemptions (Class 1, Section 15301; Class 2, Section 15302; and Class 3, Section 15303 of the State CEQA Guidelines).

CEQA determination for Option #2:

None required

### **Board Options**

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#### **Option #1**

Adopt the CEQA determination and

- a. Appropriate \$915,000 in budgeted funds; and
- b. Authorize final design, procurement and construction of the Skinner Chlorination Capacity Increase project.

**Fiscal Impact:** \$915,000 of budgeted funds under Approp. 15346

**Business Analysis:** This project is necessary to reliably meet Metropolitan's water quality objectives and to comply with drinking water disinfection regulations after the new ozone facilities and the biological filtration process are operational.

#### **Option #2**

Do not authorize the Skinner Chlorination Capacity Increase project.

**Fiscal Impact:** None

**Business Analysis:** To maintain the required chloramine disinfectant residual within the distribution system during operation of biologically active filters, Skinner plant capacity would be limited during high demand periods.

**Staff Recommendation**

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Option #1

  
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Roy L. Wolfe  
Manager, Corporate Resources

8/21/2007  
Date

  
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Jeffrey Kightlinger  
General Manager

8/23/2007  
Date

**Attachment 1 – Financial Statement**

**Attachment 2 – Location Maps**

BLA #5289

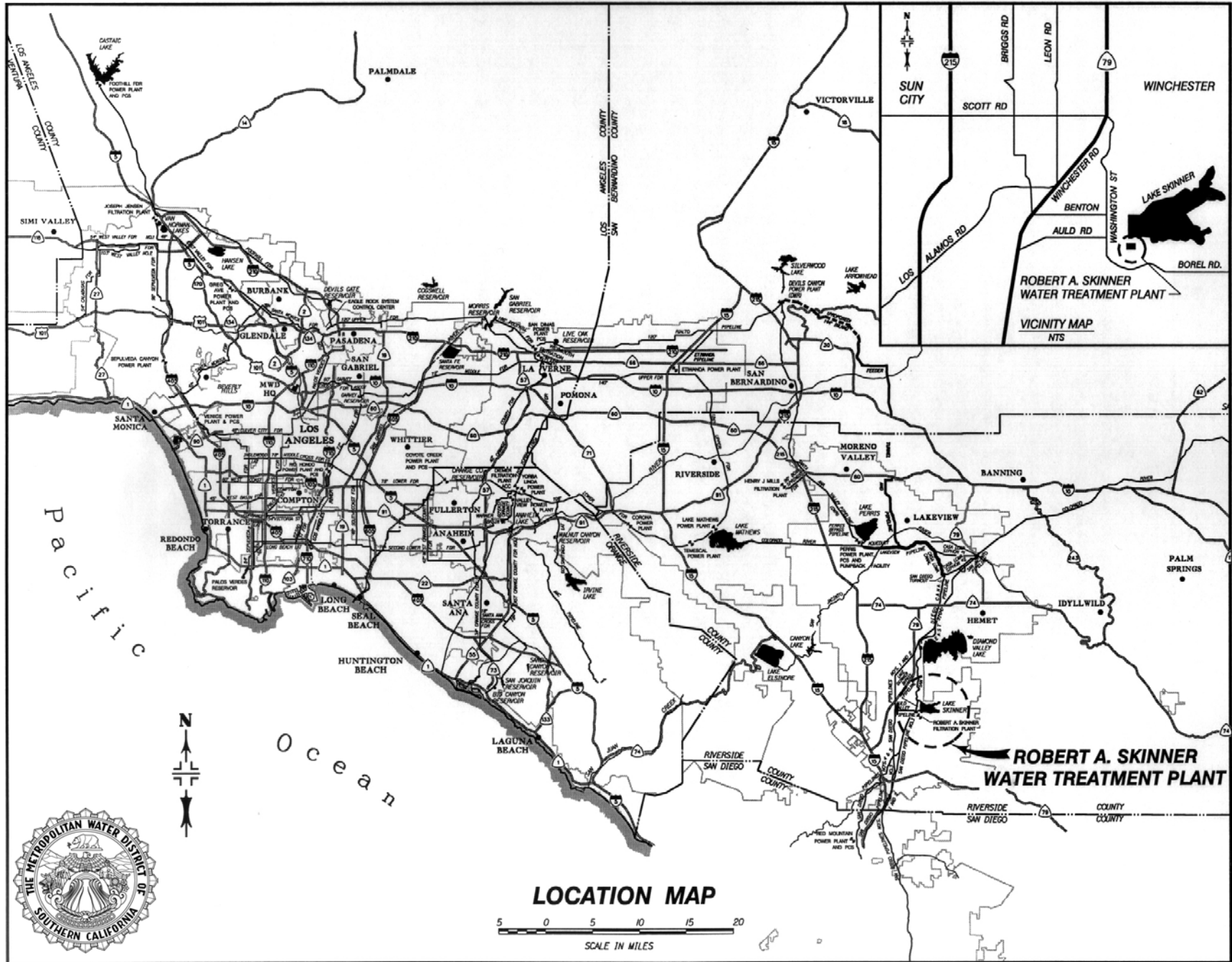
**Financial Statement for Chlorine Containment and Handling Facilities Program**

A breakdown of Board Action No. 14 for Appropriation No. 15346 is as follows:

	<b>Previous Total Appropriated Amount (May 2007)</b>	<b>Current Board Action No. 14 (Sep. 2007)</b>	<b>New Total Appropriated Amount</b>
Labor			
Studies and Investigations	\$ 840,000	\$ -	\$ 840,000
Final Design	1,711,650	79,000	1,790,650
Owner Costs (Program management)	3,097,400	61,000	3,158,400
Construction Inspection and Support	9,490,800	-	9,490,800
Metropolitan Force Construction	4,187,000	476,000	4,663,000
Materials and Supplies	2,539,129	18,000	2,557,129
Chlorine Piping and Equipment	562,000	122,000	684,000
Incidental Expenses	463,500	18,000	481,500
Professional/Technical Services	6,375,700	-	6,375,700
Right of Way Fees	118,000	-	118,000
Land Cost	7,050,000	-	7,050,000
Equipment Use	452,500	18,000	470,500
Contracts	69,324,000	-	69,324,000
Remaining Budget	13,917,321	123,000	14,040,321
<b>Total</b>	<b>\$ 120,129,000</b>	<b>\$ 915,000</b>	<b>\$ 121,044,000</b>

**Funding Request**

<b>Program Name:</b>	Chlorine Containment and Handling Facilities Program		
<b>Source of Funds:</b>	Revenue Bonds, Replacement and Refurbishment or General Funds		
<b>Appropriation No.:</b>	15346	<b>Board Action No.:</b>	14
<b>Requested Amount:</b>	\$ 915,000	<b>Capital Program No.:</b>	15346-W
<b>Total Appropriated Amount:</b>	\$ 121,044,000	<b>Capital Program Page No.:</b>	E-12
<b>Total Program Estimate:</b>	\$ 135,800,000	<b>Program Goal:</b>	W—Water Quality





# Skinner Water Treatment Plant

