

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

November 20, 2007 Board Meeting

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**9-1**

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**Subject**

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Status report for the Inland Feeder Program for activities through September 2007

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**Description**

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**Work Completed to Date**

The Inland Feeder Program consists of 44 miles of pipelines and tunnels that will enable Metropolitan to convey up to 1,000 cubic feet per second of State Water Project (SWP) supplies from Devil Canyon Afterbay to Diamond Valley Lake (DVL). To date, eight of nine construction contracts totaling \$542 million have been completed. These completed contracts represent 36.3 miles or 82 percent of the Inland Feeder's length. Remaining program work includes completion of the Arrowhead East and West Tunnels, which are presently under construction by a joint venture of Shea/Kenny.

The completed portion of the Inland Feeder has been in service since 2003 via an interconnection that was constructed between the Inland Feeder and San Bernardino Valley Municipal Water District's Foothill Pipeline. This connection allows Metropolitan to convey SWP supplies from the East Branch of the California Aqueduct to the Inland Feeder for delivery to DVL. Over 586,000 acre-feet of SWP water have been delivered to DVL to date through this connection.

**Arrowhead Tunnels**

**Arrowhead East Tunnel** – In September, the contractor continued to make good progress as ground and groundwater conditions remained favorable. The tunnel boring machine (TBM) was able to advance 895 feet in September and another 300 feet during the first two weeks of October. At present mining rates, staff anticipates that the TBM hole-through into the completed section of the Arrowhead East Tunnel will occur in the first quarter of 2008. The contractor is currently mobilizing efforts to open the City Creek tunnel portal in anticipation of the hole-through. The total length of tunnel mined to date is 20,540 feet (91 percent of the tunnel's length).

**Arrowhead West Tunnel** – Stable geologic conditions continued through September and into early October, which resulted in good mining progress. While ground conditions remained favorable, the contractor continued to encounter relatively high groundwater inflows which required increased levels of grouting. The TBM advanced 710 feet in September and another 375 feet in the first two weeks of October. On three of the days, the TBM tied the Arrowhead West Tunnel's one-day mining record of 80 feet. The total length of tunnel mined to date is 14,190 feet (71 percent of the tunnel's length).

**Program Management**

Staff and the U.S. Forest Service (USFS) continued to coordinate activities related to monitoring and minimizing tunnel water inflows into the Arrowhead East Tunnel in September. In October, Metropolitan's Board authorized amendment of the collection agreement between Metropolitan and the USFS to increase the maximum amount payable and to extend the term of the agreement. The Board also authorized a similar amendment to a professional services agreement with Psomas for environmental mitigation and monitoring services. Both amendments reflect the updated project completion date of September 2010 for the Arrowhead Tunnels.

**Budget and Schedule**

Following board authorization of a settlement agreement and contract amendment with the Arrowhead Tunnels contractor in August 2006, staff conducted a complete review of the program budget to estimate the total

projected cost to complete the Inland Feeder Program. Based on the revised September 2010 completion date of the Arrowhead Tunnels as presented to the Board in August 2006, the updated total projected cost for the Inland Feeder is estimated to be \$1.138 billion. Total expenditures through September 2007 are \$959.7 million (see [Attachment 1](#) for the Projected Cost/Expenditures). Staff will continue to report on the status of ongoing discussions with the San Manuel Band of Mission Indians and of litigation with Campus Crusade for Christ. The board-approved budget for the entire program remains at \$1.186 billion. [Attachment 2](#) shows the actual mining progress and cash flow on both tunnels compared to the planned progress and expenditures set forth in the August 2006 contract amendment.

The payments on the contractor's incentive/risk program are discussed with the Board on a regular basis at the Engineering and Capital Programs Committee meetings. This incentive plan is part of the contract amendment approved by the Board in August 2006. The incentive payment to the contractor for the month of September 2007 is shown in [Attachment 1](#).

Upon completion of construction, environmental mitigation measures will continue along the Arrowhead Tunnels alignment for up to two years in accordance with the program Environmental Impact Report.

### Policy

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Submitted per request of the Board

### Fiscal Impact

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Refer to [Attachment 1](#).

  
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Roy L. Wolfe  
Manager, Corporate Resources

10/19/2007  
Date

  
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Jeffrey Kightlinger  
General Manager

10/31/2007  
Date

[Attachment 1 – Inland Feeder Program Projected Cost/Expenditures](#)

[Attachment 2 – Arrowhead Tunnels Actual vs. Planned Mining Progress and Actual vs. Planned Cash Flow](#)

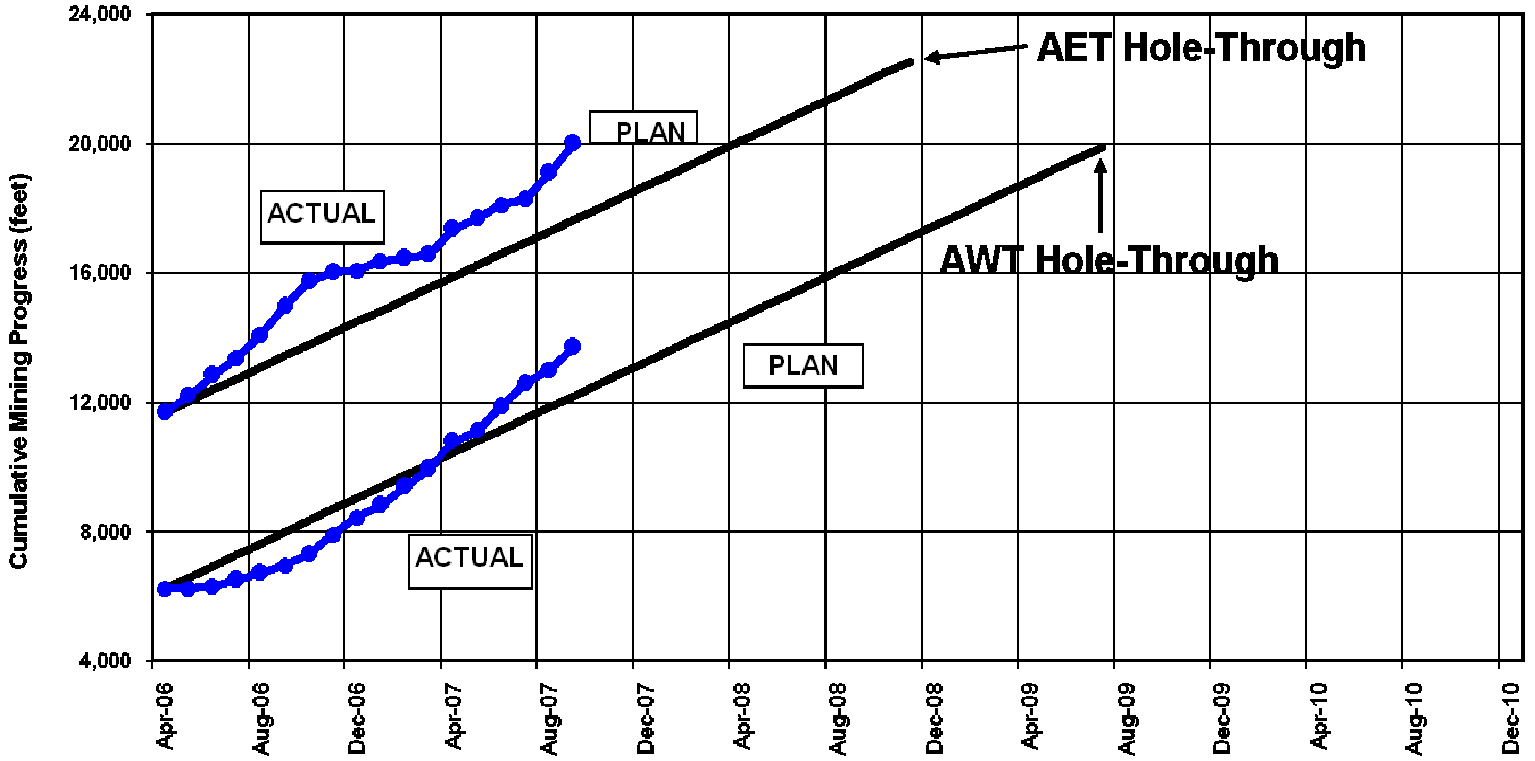
<b>Inland Feeder Program Projected Cost/Expenditures (\$ in Millions)</b>				
	Projected Cost To Complete (Updated Sep 2007)	Expenditures This Month (Sep 2007)	Expenditures To Date (Sep 2007)	% Complete Based on Expenditures (Sep 2007)
<u>Active Construction</u>				
Arrowhead Tunnels Const. Contract	\$ 397.0	\$ 5.3	\$ 244.0	61%
Construction Inspection and Support	\$ 58.0	\$ 0.2	\$ 39.6	72%
<b>Subtotal, Active Construction</b>	<b>\$ 455.0</b>	<b>\$ 5.6</b>	<b>\$ 283.6</b>	<b>63%</b>
<u>Other Components</u>				
Completed Projects	\$ 578.1	\$ 0.0	\$ 576.3	100%
Others (R/W, Env., Prog. Mgmt.)	\$ 105.2	\$ 0.2	\$ 99.7	97%
<b>Subtotal, Other Components</b>	<b>\$ 683.3</b>	<b>\$ 0.2</b>	<b>\$ 676.1</b>	<b>99%</b>
Expended To Date		\$ 5.8	\$ 959.7	81%
Subtotal, All Projects	\$ 1,138.3	← Projected Cost to Complete		
Remaining Budget	\$ 48.2			
Board-Authorized Budget	\$ 1,186.5	← Total Project Budget		
Length of Tunnels Mined Through 10/15/07				
Arrowhead East	20,540 ft	of 22,458 ft	(91%)	
Arrowhead West	14,190 ft	of 19,884 ft	(71%)	
Total	34,730 ft	of 42,342 ft	(82%)	

NOTE: Contractor invoices paid through September 2007 = \$241.0M  
Overall completion = 36.3 of 44.2 miles (82%)

<b>Inland Feeder Program – Arrowhead Tunnels Incentive Plan Payments</b>				
	East/West Tunnels Cumulative Feet Mined	East Tunnel	West Tunnel	Total
May 2006 - Aug 2007 (Previously Reported)	14,340	\$ 1,422,600	\$ 1,769,393	\$ 3,191,993
September 2007 (3)	1,540	\$ 142,800	\$ 142,200	\$ 285,000
<b>TOTALS</b>	<b>15,880</b>	<b>\$ 1,565,400</b>	<b>\$ 1,911,593</b>	<b>\$ 3,476,993 (2)</b>

(1): For Arrowhead West Tunnel, incentive program evaluation commenced in June 2006.  
(2): Percent of maximum possible combined incentive: 70% (61% Arrowhead East Tunnel, 80% Arrowhead West Tunnel)  
(3): Incentive Plan based on work performed during contractor monthly pay period from 8/26/06 to 9/25/07 (differs from progress in calendar month).

### Arrowhead Tunnels Actual vs. Planned Mining Progress



### Arrowhead Tunnels Actual vs. Planned Cash Flow

