

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

September 12, 2000 Board Meeting

10-2

Subject

Inland Feeder Project Status Report for July 2000

Description

Arrowhead Tunnels (Redesign and Rebid) – Reaches 1 and 2

The Project Team is currently redesigning the Arrowhead West Tunnel and the remaining portion of the Arrowhead East Tunnel. It is estimated that the tunnels will be re-bid in October 2000 after review by the Board.

The proposed tunnel liner segments are currently being tested by the University of Illinois to verify that the structural strength and tolerances can withstand the high hydrostatic pressures present in the San Bernardino Mountains. A variety of gasket configurations are also being tested at Metropolitan's La Verne facility.

Metropolitan has continued coordination with the U.S. Forest Service (USFS) and the San Manuel Band of Mission Indians to resolve issues related to the lining of the City Creek heading, the rebidding, and eventual construction of the Arrowhead East Tunnel.

Metropolitan convened the newly formed Arrowhead Tunnels Technical Edit and Review Team for three days this month to review the 60 percent design package and provide comments.

Metropolitan has yet to receive USFS approval to tunnel the remainder of the Arrowhead Tunnels based on our proposal submitted to them earlier this year.

Arrowhead West Tunnel – Reach 1

Negotiations are proceeding over settlement of the remaining construction claim issues.

Arrowhead East Tunnel – City Creek Heading (Shank/Balfour Beatty) – Reach 2

Shunt flow collar installations have been completed. The tunnel boring machine (TBM) trailing gear is currently being removed. Immediately following the removal, a new ventilation system will be installed and final lining operations are scheduled to begin in August.

Ameron International has completed manufacturing approximately 30,500 feet of final impermeable tunnel liner for the Arrowhead East Tunnel. The contractor will use approximately 8,000 linear feet of the final liner in the City Creek heading. The remainder of the final liner will be relocated and stored so that it can be used to line the remainder of the Arrowhead East Tunnel at a later date. Approximately 25 percent of the pipe will be stored at Metropolitan's Etiwanda Reservoir facility. Metropolitan is currently investigating its options for the storage of the remainder of the pipe. These options include the purchase or lease of property and/or the utilization of Metropolitan facilities.

Highland Pipeline – Reach 3

The Highland Pipeline design is 90 percent complete. Once the design has been completed, the construction bidding will be placed "on-hold" until work on the Arrowhead Tunnels is scheduled.

Mentone Pipeline – Reach 4

The contractor completed mobilizing equipment and field offices on the site. Work was completed on clearing and grubbing, and installation of temporary fencing along the alignment. Limited excavation was performed within the Santa Ana River Wash. This project is scheduled for completion in fall 2001.

Riverside Badlands Tunnel – Reaches 5 & 6

In July 2000, the TBM progressed 3,968 feet, bringing the total through July 31 to 23,961 feet (see [Attachment 1](#) for a summary of tunneling progress). Tunneling continues at a high production rate resulting in a projected completion nine months ahead of schedule. Dewatering operations have been discontinued in San Timoteo Canyon.

Dewatering operations continue in Live Oak Canyon to lower groundwater levels in preparation for tunneling scheduled for early August. Tunneling rates will slow as the alluvial deposits within Live Oak Canyon are encountered, and then increase again as tunneling resumes in the harder rock formations. Two additional wells have been installed to lower the groundwater table below the tunnel elevation.

Pipeline Alternatives to Arrowhead Tunnels

Staff has begun its evaluation of pipeline alternatives through San Bernardino. Alternatives include replacement of the tunnels as well as an interim connection to the San Bernardino Valley Municipal Water District's Foothill Feeder. It is anticipated that staff will present results of this review to the Board concurrently with completion of the tunnel design and prior to competitive bidding of either alternative, which is scheduled for October 2000.

Schedule and Budget

The Inland Feeder Project is currently scheduled for completion in 2005; however, this date will be extended due to the revised construction work plan for the Arrowhead Tunnels. A new completion date will be established after USFS approval of the bolted and gasketed tunnel lining system. The project budget remains at \$1.188 billion, and the projected cost based on 30 percent of the Arrowhead Tunnels is \$981.5 million. Total expenditures through July 2000 are \$452.6 million (see [Attachment 2](#) for a financial summary and [Attachment 3](#) for a schedule summary).

RECENT DEVELOPMENTS**Riverside Badlands Tunnel – Reaches 5 & 6**

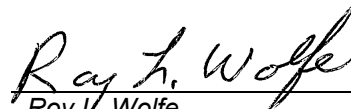
Tunneling on the Riverside Badlands Tunnel has advanced a total of 25,840 feet through August 11, 2000. Dewatering operations have been successful within the alluvial deposits of Live Oak Canyon, which allowed mining to proceed at a better than expected rate. Mining operations will be shut down for approximately one week for normal TBM maintenance, during the week beginning August 9.

Policy

Board Request.

Fiscal Impact

Refer to the attachments.


 Roy L. Wolfe
 Manager, Corporate Resources

8/22/2000
 Date


 Ronald R. Jester
 General Manager

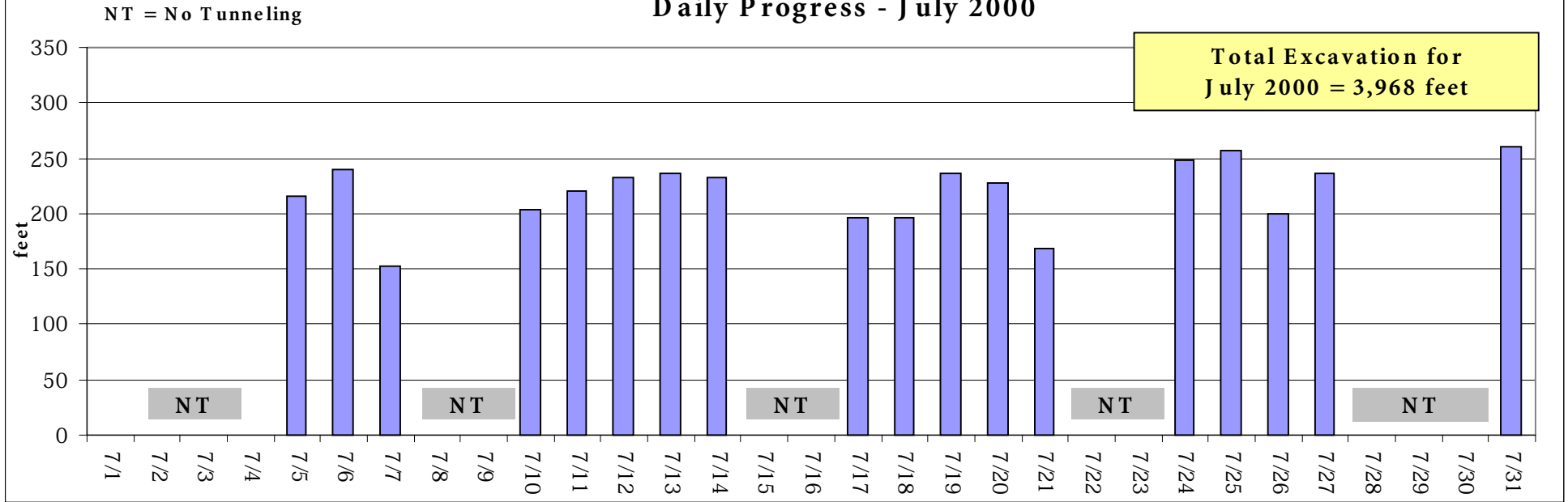
8/28/2000
 Date

[Attachment 1 – Riverside Badlands Tunnel tunneling progress](#)

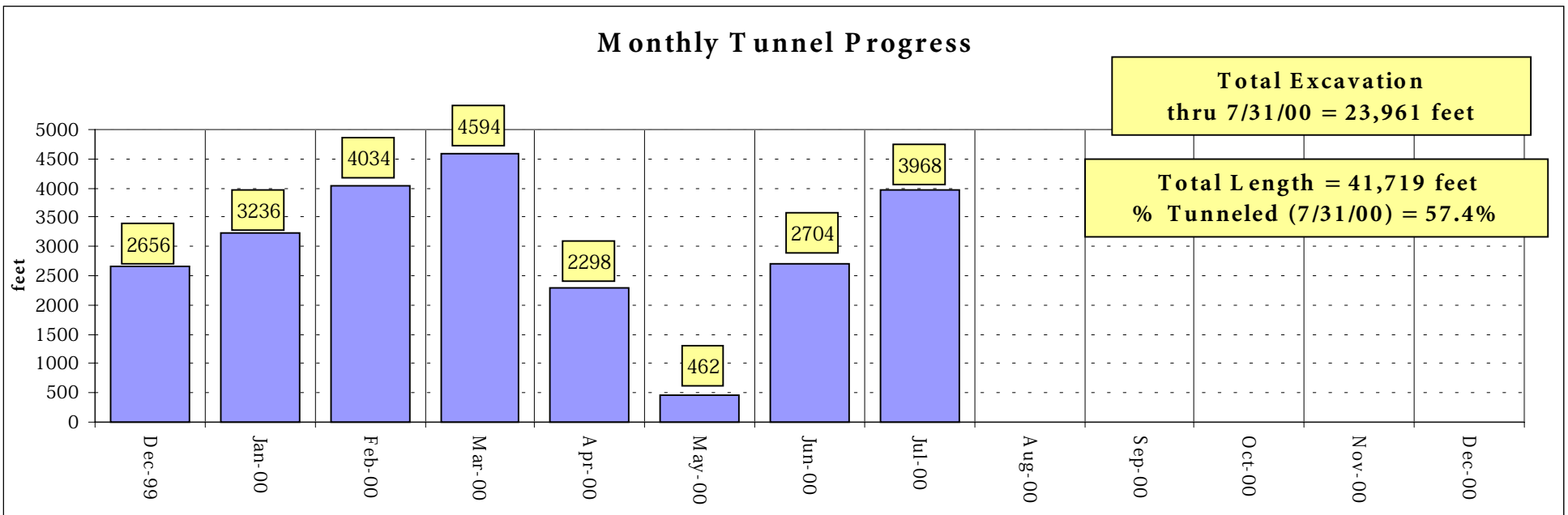
[Attachment 2 – Financial Summary](#)

[Attachment 3 – Schedule Summary](#)

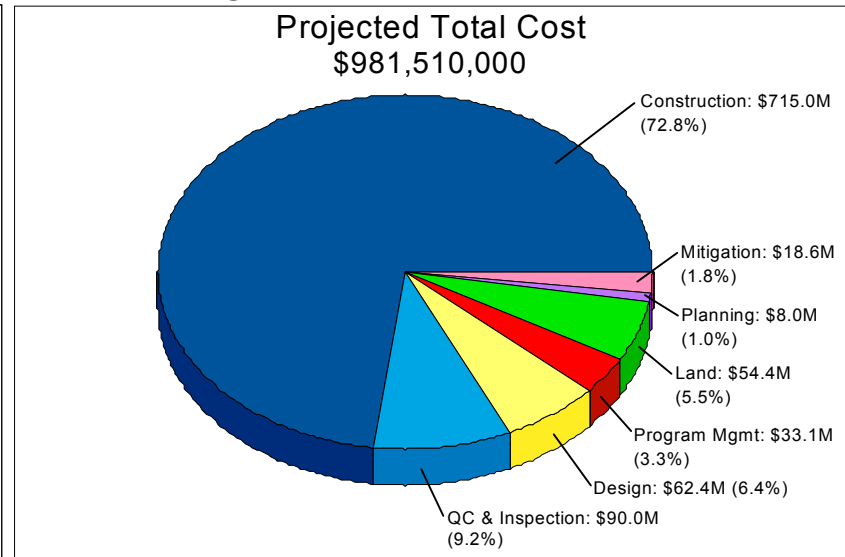
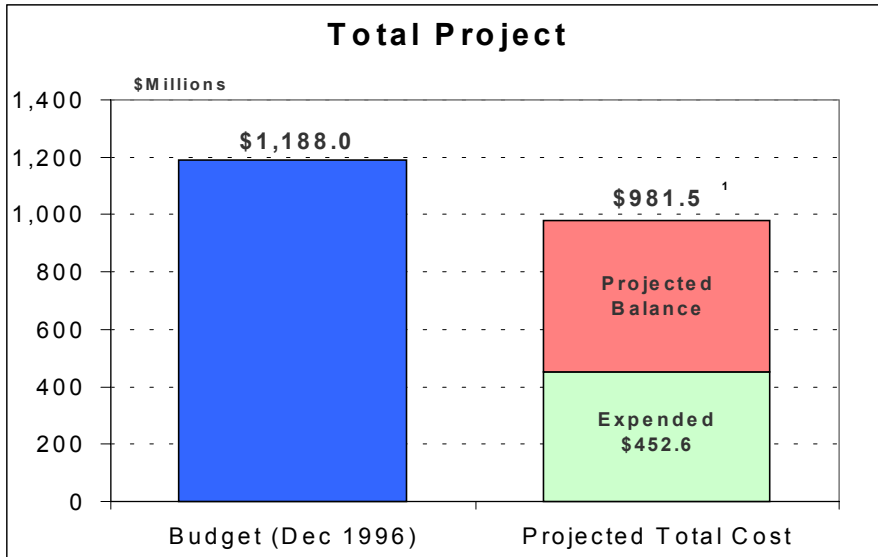
RIVERSIDE BADLANDS TUNNEL Daily Progress - July 2000



Monthly Tunnel Progress

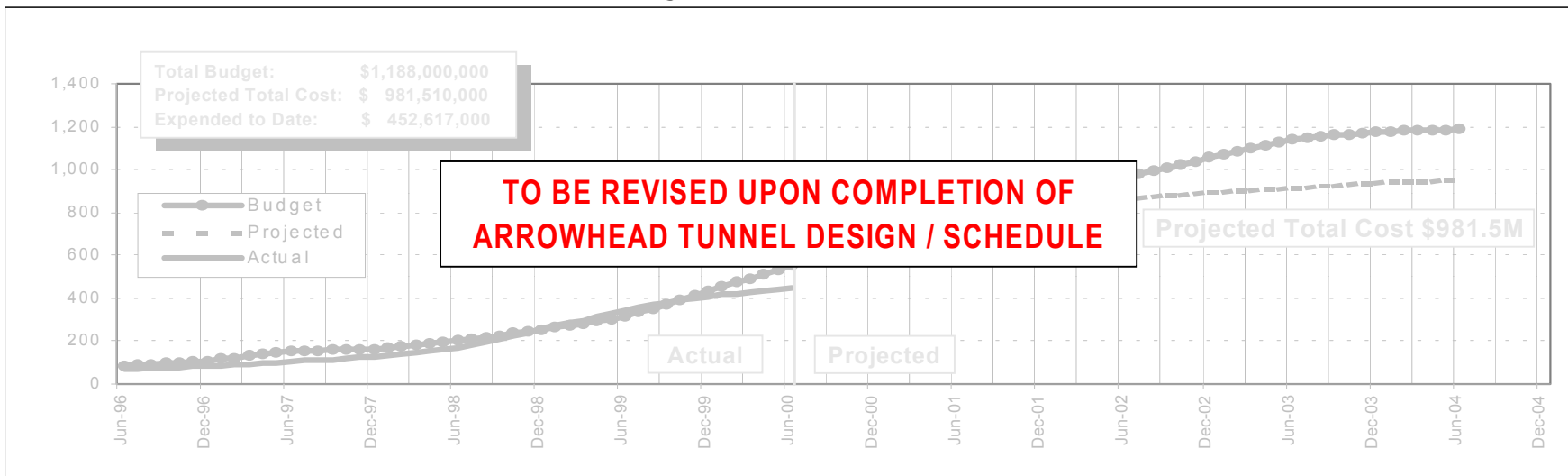


Financial Summary



1. Based on knowledge of current field conditions.

Project Cash Flow



Budget Comparison and Schedule Summary

	INITIAL AUTHORIZATION (DEC-96)	PRELIMINARY REBASELINE (JUN-2000) ⁽¹⁾	VARIANCE (JUL-00)	ACTUALS THRU (JUL-00) ⁽²⁾	PROGRESS		COMPLETION DATE		COMMENTS
					PLANNED	ACTUAL % COMPLETE (JUL-00) ⁽⁴⁾	CONTRACT (5)	FORECAST (JUL-00)	
Construction Reaches									
Arrowhead West Tunnel	\$ 200,450,000	\$ 211,728,000	\$ (11,278,000)	\$ 54,195,000	45%	25%	Dec-02	T.B.D.	On hold.
Arrowhead East Tunnel	\$ 184,550,000	\$ 281,607,000	\$ (97,057,000)	\$ 111,952,000	70%	38%	Jan-03	T.B.D.	On hold.
Highland Pipeline ⁽³⁾	\$ 95,230,000	\$ 57,199,000	\$ 38,031,000	\$ 6,670,000	0%	0%	-----	T.B.D.	In Design.
Mentone Pipeline	\$ 74,140,000	\$ 35,056,000	\$ 39,084,000	\$ 17,803,000	13%	14%	Mar-02	Oct-01	Under construction.
Riverside Badlands Tunnel	\$ 204,300,000	\$ 142,534,000	\$ 61,766,000	\$ 75,889,000	39%	52%	Aug-03	Apr-02	Under construction.
Riverside North Pipeline	\$ 106,840,000	\$ 57,984,000	\$ 48,856,000	\$ 55,204,000	100%	100%	Completed	Nov-99	Completed Nov. 99
Riverside South Pipeline	\$ 77,200,000	\$ 42,358,000	\$ 34,842,000	\$ 42,341,000	100%	100%	Completed	Aug-99	Completed Aug. 99
Construction Support									
Right-of-Way and Land	\$ 47,830,000	\$ 54,448,000	\$ (6,618,000)	\$ 38,337,000	-----	70%	-----	-----	-----
Environmental Planning/Mitigation	\$ 10,960,000	\$ 18,598,000	\$ (7,638,000)	\$ 10,219,000	-----	55%	-----	-----	-----
Owner Controlled Insurance Prog.	\$ -	\$ 38,889,000	\$ (38,889,000)	\$ 15,608,000	-----	40%	-----	-----	-----
Study/Initial Planning	\$ 8,024,000	\$ 8,024,000	\$ -	\$ 8,024,000	-----	100%	-----	-----	-----
Program Management	\$ 20,170,000	\$ 33,085,000	\$ (12,915,000)	\$ 16,377,000	-----	49%	-----	-----	-----
Projected Total Cost	\$ 1,029,694,000	\$ 981,510,000	\$ 48,184,000	\$ 452,619,000					
Remaining Budget	\$ 158,306,000	\$ 206,490,000							
Total Approved Budget	\$ 1,188,000,000	\$ 1,188,000,000	\$ 48,184,000						

(1) Based on 30% design for Arrowhead Tunnels

(2) Actuals for construction reaches include design costs

(3) Expenditure for design which is at 90%. Once design has been completed, construction bidding will be placed on hold once work on the Arrowhead Tunnels is scheduled.

(4) Based on work complete for construction reaches and \$ expended for construction support

(5) Based on original contract duration and approved extensions

Remaining Budget ¹

