APPROVED
By the Board of Directors of
The Metropolitan Water District
of Southern California
at its meeting held

FEB 13 1996

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MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

EXECUTIVE SECRETARY

8-4

January 30, 1996

To: Board of Directors (Engineering and Operations Committee--Action) (Finance and Insurance Committee--Action) (Information Systems Ad Hoc Committee--Information)

From: General Manager

Submitted by: Lambertus Becker
Chief Financial Officer

Subject: Appropriation 723 for Renewal of Joint Use Agreement with Southern California Edison and Upgrade of Desert Section Communications System.

RECOMMENDATION(S)

It is recommended that your Board approve Appropriation No. 723 and authorize initial funding of $2,549,000 from the Pay-As-You-Go-Fund to cover expected expenditures through the end of fiscal 1996-97. The program estimated cost is $4,808,000. This appropriation is needed to replace obsolete communications equipment and purchase new equipment to furnish adequate and reliable communications service to the Desert Branch. This initial funding will provide $1,790,000 for payments to SCE for work performed on Metropolitan's behalf under the Joint Use Agreement and $759,000 for design, necessary site improvements to Metropolitan's properties, and contingencies.

It is recommended that the General Manager be authorized to amend and renew the Joint Use Agreement between Metropolitan and Southern California Edison. The cost of materials and construction will be shared in accordance to terms of the Joint Use Agreement. Based on current cost estimates, Metropolitan's share of the total work and materials to be provided by Southern California Edison under the agreement are not expected to exceed $1,790,000.

CAPITAL FUNDING REQUEST

Project Name: Digital Microwave Upgrade		
Appropriation No.:	**Funding Request No.:** New	**Amount:** $4,808,000
Source of Funds: PAY-AS-YOU-GO-FUND		
FY 95-96 Budget: No ☐ Yes ☒ @ $660,700		**Capital Program: 5-0312-42** **Page No. Reference: 53, 59**

Project Justification and Type: (check all applicable)

- ☐ Meet Water Demands
- ☐ Mandated By Law
- ☒ Asset Protection/Risk Mgt.
- ☒ Cost Avoidance
- ☐ Other

- ☐ New Facility
- ☒ Improvement

- ☒ Replacement
- ☐ Expansion

PROJECT DESCRIPTION: (INCLUDE CLASSIFICATION AND PURPOSE)

This project is a change in scope for Program number 5-0312-42 page on 53 of the Capital Program Budget for 1995-96. It will now encompass the balance of the work identified, but not previously funded, under Data and Digital Microwave Network-Communications System Upgrade (Program number 5-5840-43, page 59). Upon the establishment of this new Appropriation No. 723, Appropriation 5-584 will be closed.

The purpose of this phase of the project is to replace the 12 year old analog microwave system in the desert with modern digital microwave. This will connect the Hinds, Iron Mountain, and Eagle Mountain pumping plants and Gene Headquarters to the Weymouth filtration plant in La Verne with a high quality digital communications system. In order to replace the system, which now provides primary voice communications and low speed data connectivity, it is necessary to upgrade the existing system to include the Weymouth facility.

The desert communications system is covered under the Joint Use Agreement with Southern California Edison (SCE), last amended November 7, 1986. Under the agreement, SCE and MWD share costs of all common facilities. MWD is responsible for all costs associated with sites where SCE has no interest, and SCE pays all costs where MWD has no interest. The total cost of work to be performed by SCE and MWD in this phase is estimated at $3,871,000, with a

completion date of first quarter 1997. MWD's estimated share of the project is $1,790,000. Accelerated work by SCE will provide the basic digital infrastructure between Gene Headquarters and the pump plants by September 1996, to meet the requirement for the Desert Supervisory Control and Data Acquisition (SCADA) project.

Future funding in the amount of $2,259,00 is anticipated for the eventual upgrade of Los Angeles metropolitan communications to the filtration plants, Lake Mathews, and Eagle Rock. Staff is analyzing the most cost effective method of upgrading these locations. Once the analysis is complete, the project will be presented to your Board for approval of that phase of the program.

Class: -- 2

BENEFIT:

In 1982, your Board approved Appropriation 443 to enter into a Joint Use Agreement with SCE to provide analog microwave communications to our Desert facilities. The Joint Use Agreement specifies how MWD and SCE would share costs of the project and the terms of use. Since that project was completed in 1984, Metropolitan has benefited from quality voice communications between all facilities. The District has computer networks at most locations where the microwave is installed. Analog microwave is not suitable for modern voice, data and video communications. The Digital Microwave Upgrade will provide a cost effective infrastructure for the District's implemented networks. SCE has been migrating to a digital microwave system for several years. The one area that has been delayed involves our desert facilities, which falls under the Joint Use Agreement with MWD.

Under Metropolitan's direction, SCE will provide for the design, purchase and installation of equipment and construction at sites belonging to Edison. This will upgrade the microwave communications system between Eagle Mountain, Iron Mountain, and Hinds pumping plants, Gene Headquarters, and the Weymouth filtration plant in La Verne. The installation of digital microwave will complete important communications routes for SCE and provide Metropolitan with updated primary communications to our desert facilities. Such improved voice and data capability supports the overall modernization of Metropolitan's infrastructure and reduces Metropolitan's overall cost of operation. Digital microwave will provide a high capacity route for voice, data (in support of the Oracle and other systems), video conferencing, adequate bandwidth for control system and automation functions, and connect Local Area Networks into Wide Area Networks.

The Northridge Earthquake Assessment Report recommended completion of the digital microwave network as a primary communications system which should continue to be available in emergency situations. All of the involved utilities and public agencies had to rely on private internal communications immediately after both the Northridge and Landers earthquakes. The digital microwave upgrade secures communications to the field sites which could provide basic communications in the event of another major earthquake or other emergency.

PROJECT PLAN:	Upgrade of Desert Section Communications System					
PHASE	**ESTIMATED COST**	**% COMPLETE BY 7/1/96**	**COST THRU 12/31/96**	**% COMPLETE BY 7/1/97**	**COST THRU 7/1/97**	
SCE Service Upgrade	$ 1,790,000	30 %	$ 1,790,000	100%	$ 1,790,000	
Site Upgrades (MWD)	$ 759,000	20 %	$ 759,000	100%	$ 759,000	
Analog Replacement	$ 1,581,000	0 %		100%	$ 1,581,000	
Eagle Rock/Jensen	$ 678,000	0%		100%	$ 678,000	
TOTAL	**$ 4,808,000**		**$ 2,549,000**		**$ 4,808,000**	

ALTERNATIVES TO PROPOSED ACTION

Meetings with the common carriers including Pacific Bell and GTE have determined that private (District owned) microwave is the best option for the Desert Branch. Engineering units of both carriers recommended private microwave communications. Studies from Arthur Anderson, Ernst & Young, the Northridge Assessment Team and telecommunications staff also recommend a privately owned primary communications system.

Satellite communications have been investigated and it has been determined to suffer from serious limitations of bandwidth, life of satellite transponders and expensive uplink costs. Transmission to the uplink site is usually over leased public carriers which are not reliable in an emergency such as a major earthquake.

The installation of a fiber optic system, estimated to cost between $7 and $8 million was also investigated and found to be considerably more expensive than the proposed digital microwave system.

Deferring the Digital Upgrade Project will result in failure to provide suitable communications bandwidth for the Desert SCADA project, video conferencing, and field office Local Area Network expansion projects. Future automation projects such as providing Internet access will be impaired by the current limitations.

Deferring the replacement of the remainder of the analog system will expose the District to increasing dependency on the public switched telecommunications system.

CEQA COMPLIANCE / ENVIRONMENTAL DOCUMENTATION

The proposed action is exempt from the provisions of the California Environmental Quality Act (CEQA), as it involves the minor alteration of existing facilities with no expansion of use beyond previously existing.

FINANCIAL ANALYSIS: (New Projects Only)

Evaluation Period: 7 years (nominal life projection)

A. Projected Costs (Capital and O&M):

	FY 95-96	FY 96-97			OUT YEARS	TOTAL
Labor/Additives	$ 99,000	$ 184,000				$ 282,000
Professional Services	$ 25,000	$ 26,000				$ 51,000
Other	$ 2,189,000	$ 1,839,000				$ 4,028,000
Contingency	$ 237,000	$ 209,000				$ 446,000
TOTAL	$ 2,549,000	$ 2,259,000				$ 4,808,000

B. Projected Savings:

	FY 95-96	FY 96-97	FY 97-98	FY 98-99	OUT YEARS	TOTAL
Labor/Additives						
Cost Avoidance - New Circuits	$ 300,000	$ 561,000	$ 561,000	$ 561,000	$ 900,000	$ 2,100,000
Other Leased Networks	$ 324,000	$ 324,000	$ 324,000	$ 324,000	$ 972,000	$ 2,268,000
TOTAL	$ 624,000	$ 885,000	$ 885,000	$ 885,000	$ 1,872,000	$ 5,151,000

C. Difference (B-A)	$(1,925,000)	$(1,040,000)	$885,000	$ 885,000	$1,872,000	$ 343,000

D. Cumulative Difference	$(1,925,000)	$(3,299,000)	$(2,414,000)	$(1,529,000)	$ 343,000	

Payback Period: Years 5

Estimated Life of Project: 2 Years Life of Equipment 7-10 Years

Assumptions: Payback period assumes present data requirements remain constant. ROI is accelerated if data and communications requirements increase.