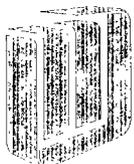


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**MWD**

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

*Barry E. Wolf*  
EXECUTIVE SECRETARY

January 13, 1994

(Engineering and Operations Committee--Action)  
*To:* Board of Directors (Finance and Insurance Committee--Action)  
*From:* General Manager  
*Subject:* Revision No. 6 to Appropriation No. 584 to Increase Funding  
from \$3,150,000 to \$5,669,000 to Finance the Expansion of  
Local Area Network (LAN) Services to the Field Facilities  
(Total Project Cost: \$9,154,000)

Summary

In 1989, an effort to upgrade the District's communications network, including the digital microwave, telephone, and data networks, was initiated with the approval of Appropriation No. 584. Through Revision No. 5, funding of \$3,150,000 has been approved for the microwave and wide area network communications upgrades.

Due to the immediate needs outlined by the Chief of Operations (see Report) and supported by the recommendations of the Engineering and Operations Peer Review Committee and Phase One technology teams, it is proposed to significantly expand the communications upgrade project. Accordingly, a \$2,519,000 increase in Appropriation No. 584, to a total of \$5,669,000, is now required for the field facility Local Area Network (LAN) expansion and upgrade project (new total project cost: \$9,154,000.) Funding of this increase for immediate implementation is requested. The breakdown of the total estimated costs for approved Revision No. 5 and proposed Revision No. 6 is shown in Attachment A.

Report

In 1988, the need to significantly upgrade the District's essential voice and data systems was identified. The microwave and communications upgrade project, which was approved under Appropriation No. 584 in 1989, includes the upgrade of the Digital Microwave Network, the Computer Branch Exchange (CBX) telephone system and certain data network components. Benefits of these upgrades include improved disaster recovery, establishment of a high-speed

data network between facilities, and enhanced water system monitoring capabilities. The total cost of the project was originally estimated to be \$6,635,000, and five appropriation revisions to the current level of \$3,150,000 have been approved by your Board.

In 1993, during the Phase One business software planning and implementation, a need to further expand the communications network was identified. The Phase One systems, along with critical Operations systems described below, require that Local Area Network (LAN) technology be implemented at all major sites. The LAN expansion to the field facilities will require an \$2,519,000 increase in the communications upgrade project to a total estimated cost of \$9,154,000.

Since 1987, the District has installed LANs in seven locations: three at the Headquarters facilities (Cal Plaza, Sunset, Pasadena); Sacramento; San Dimas; La Verne; and Domenigoni. LANs provide a high-speed communications system for computers to share applications, files, printers, and host and modem links. The seven LAN locations share information via the MWD Wide Area Network (WAN).

Additional funding is requested to: 1) expand LAN equipment and services to the field facilities listed in Attachment B, "Prioritized Proposed Locations," and 2) upgrade LAN cabling and equipment in San Dimas, La Verne, Cal Plaza, and Sacramento.

LAN installation and upgrade work is being accelerated to support the communications requirements of the ISSP Phase One Project (see Attachment C, copy of page 26 of September 17, 1993 Board Letter). Field Office LANs are also required for implementation of the Operations Maintenance Management System and automated systems for the Engineering, Water Quality, and Environmental Compliance divisions (see Attachment D, Memorandum from Chief of Operations dated October 26, 1993).

Benefits of field facility staff's increased access to current LAN systems is expected immediately. A more important long-term benefit will be the full participation of field facility staff in the utilization of future District-wide LAN systems, which include Operations Maintenance Management System, Fleet Management, and Phase One systems (Financial, Human Resources, Materials Management, Health Safety and Environmental).

The hardware and software selected for Phase One implementation conform to the industry-standard client-server computing model. This model requires that staff use LAN-connected workstations to access applications and databases stored on a UNIX host located in the MWD Data Center (see Attachment E, "Proposed Local Area Networks"). The client-server model also fills a fundamental need for field office staff to be concurrently connected to applications and data across a wide range of MWD servers and hosts.

The field offices are currently excluded from full participation in the MWD open LAN systems. Field office staff do have limited access to applications and data through modems. The cost of each modem link is expensive, therefore its availability is limited to one computer per field office. A modem connection, as an analog device, has inherently slow response times, and unreliable service, which limits staff productivity and ability to access data in a timely and predictable manner.

Installation of LAN equipment in each field office will provide the following benefits:

- Increase individual and group productivity by providing a file sharing system for routing documents and data files across all MWD facilities.
- Reduce expenditures for dedicated modem links and expensive peripherals. Printers, plotters, and modems can be shared via LAN.
- Reduce expenditures for the licensing, installation, administration, and support of packaged software.
- Provide a reliable, high-speed communications platform for future data sharing applications specifically designed to increase field operation productivity and effectiveness.

The wiring components of the current LANs in the San Dimas, La Verne and Sacramento facilities do not conform to new MWD cabling standards for high-speed LAN implementation. The cabling and equipment upgrade will

allow conformance to these standards, and will resolve LAN system contention problems at those locations. The Phase I systems will require a minor upgrade of communications equipment in Cal Plaza.

#### Board Committee Assignments

This letter was referred for action to:

The Engineering and Operations Committee because of its jurisdiction over contracting programs and the ordering of equipment or materials and selection of consultants to be used pursuant to Administrative Code Sections 2431(b) and (h).

The Finance and Insurance Committee because of its responsibility to study, advise, and make recommendations with regard to authorization of appropriations pursuant to Administrative Code Section 2441(d).

#### Recommendations

#### **ENGINEERING AND OPERATIONS COMMITTEES FOR ACTION:**

It is recommended that your Board authorize the General Manager to have all work performed, other than work to be performed under competitively bid contracts and consulting contracts involving an expenditure over \$250,000, for the expansion of Local Area Networks (LAN) equipment and services to all field facilities, and the upgrade of LAN equipment in San Dimas, La Verne, Cal Plaza and Sacramento.

#### **FINANCE AND INSURANCE COMMITTEE FOR ACTION:**

It is recommended that your Board authorize an increase in Appropriation 584 from the Pay-As-You-Go Fund in the amount of \$2,519,000, to a total of \$5,669,000, to fund the expansion of the communications upgrade capital project to include the expansion of Local Area Networks (LAN) services to all field facilities.

  
John R. Wodraska

CC:sm  
Attachments

## Attachment A

## FINANCIAL STATEMENT

The breakdown of the total estimated cost to include Revision No. 6 to Appropriation No. 584 for Microwave/Communications and Local Area Network (LAN) expansions is shown below:

## Appropriation No. 584 Summary:

	Approved Revision No. 5	Proposed Revision No. 6
Labor		
Engineering	\$ 65,000	\$ 65,000
District Forces Construction	105,000	327,000
Total Labor	\$ 130,000	392,000
Professional and Technical Services	65,000	65,000
Administrative Overhead	57,000	179,000
Contracts	2,762,423	4,806,423
Contingencies	95,577	226,577
Total	\$ 3,150,000	\$ 5,669,000

Fiscal Impact Statement

## Estimated Funds Required:

Initial	231,000
Revision No. 1	440,000
Revision No. 2	714,000
Revision No. 3	350,000
Revision No. 4	794,000
Revision No. 5	621,000
Revision No. 6	2,519,000
Additional Funds	3,485,000
Total	9,154,000

Source of Funds: Pay-As-You-Go Fund

## Projected Expenditures of Funds:

Through	Fiscal Year 1992-93	2,946,157
	Fiscal Year 1993-94	2,975,424
	Fiscal Year 1994-95	3,232,419
	Total	9,154,000

## Capital Projects Program Fiscal Year 1993-94:

Estimated Total Program Cost	9,154,000
1993-94 Capital Program	2,700,000
Project Class: Three	

Projects that do not directly affect the delivery of water but demonstrate that economic savings outweigh project costs.

## ATTACHMENT C

Attachment "E" - Overview of Information Systems Strategic  
Plan Estimates and Completed Work

Original Andersen Estimate for ISSP	\$ 37.0 million
Phase Zero Project (completed)	5.8 million
Phase One Project (current proposal)	23.2 million
ISSP Projects remaining* (estimated)	7.0 million
Wide Area Network upgrades** (estimated)	.8-1.4 million

\* Projects in the ISSP that will be addressed subsequent to Phase One projects include an Executive Information System, Document Management, Property Management and other minor applications.

\*\* Staff anticipates that a portion of the planned work for implementing the wide area network at all facilities impacted by the Phase One Program may need to be accelerated. Funding for this additional work, if required, will be provided by a separate appropriation established for this purpose.

## MEMORANDUM

October 26, 1993

TO: Director, Information Systems

FROM: Chief of Operations

SUBJECT: Operations Local and Wide Area Network Requirements

1. For the past two years, the Operations Division has effectively utilized the MWD Local Area Networks (LANs) for sharing information between staff located in the Los Angeles Headquarters, La Verne, and San Dimas. LANs have enabled the staff to share application software, documents, spreadsheets, and high-quality laser and color printers.

2. Currently, the majority of field offices access the District's LAN indirectly, through modem and communications software. These offices have one computer with the appropriate hardware and software to access programs such as the Incident Reporting System and Material Safety Data Sheets. This method of communications, although cumbersome and noticeably slow, is acceptable since these applications are not accessed on a daily basis. However, with the implementation of Phase I and other Operations Division applications scheduled for next year, there is a need to provide field facilities with the equipment necessary for direct network access. LAN-based Phase I applications will provide the means for field staff to access cost, inventory, and personnel information in a timely fashion. This would translate into immediate increases in efficiency. The installation of field office LANs would also allow the sharing of data among all Operations Division staff as well as other divisions.

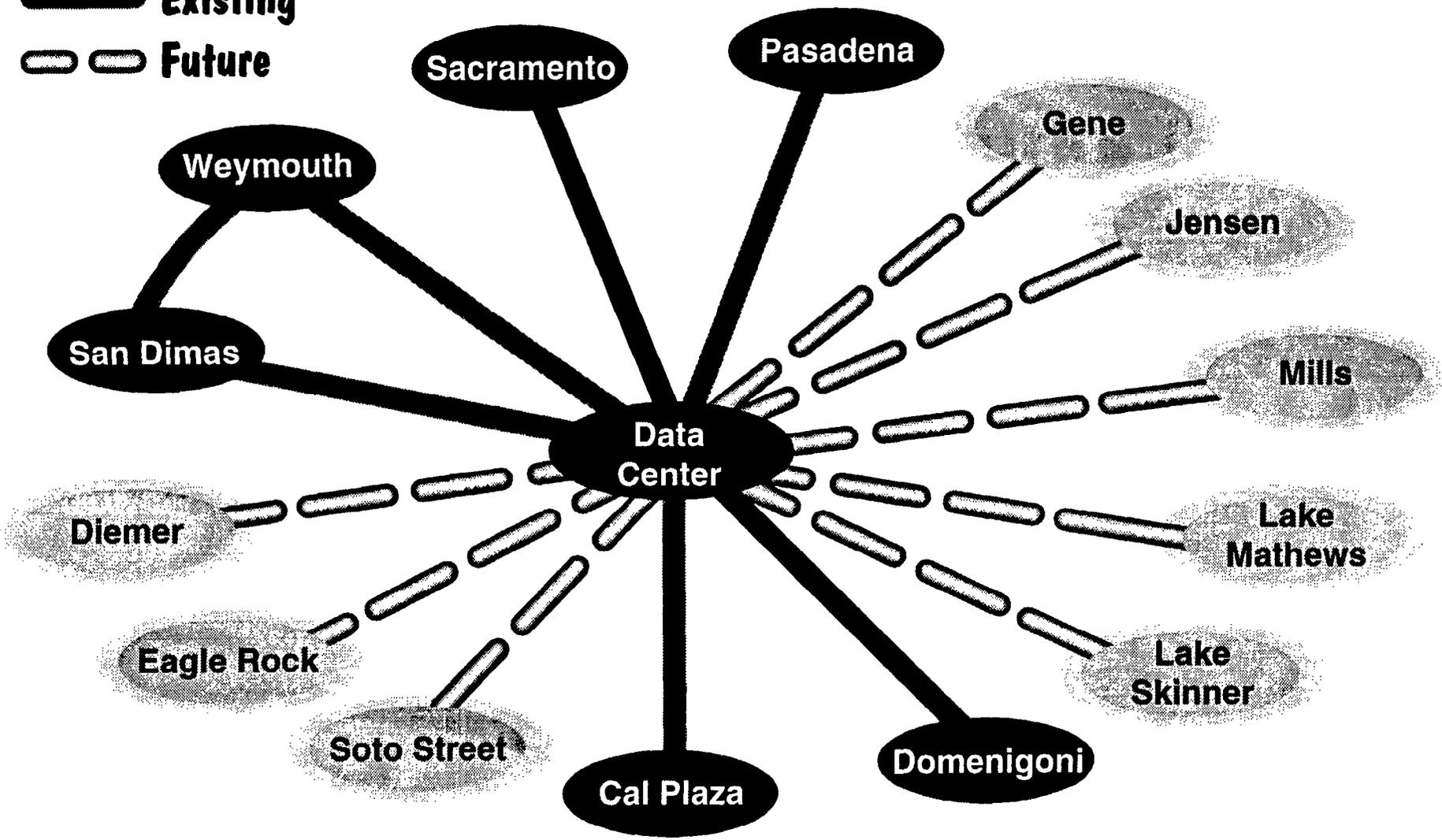
3. In addition to Phase I applications, the following Operations Division applications are planned for network implementation or would benefit from a network:

A. Equipment Maintenance System (EMS) - This system will replace Fleet Tracker, the Fleet Maintenance System. Currently, software is being evaluated and tested on the LAN. This system will be implemented at all District garages to manage maintenance of primarily mobile equipment. EMS utilizes a distributed database and most efficient use requires that each garage be linked to the District's LAN/WAN. Implementation is scheduled to begin in 1994.

B. Maintenance Management System (MMS) - This system will be used for managing all maintenance performed on primarily stationary equipment. A short list of software packages is being evaluated. This system will be used by all field staff. Implementation is scheduled to begin in 1994.

# Proposed Local Area Networks (LANs)

— Existing  
- - Future



ATTACHMENT E

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