



MWD

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

9-11

April 22, 1997

To: Board of Directors (Engineering and Operations Committee--Information)

From: General Manager

Submitted by: Gary M. Snyder
Chief Engineer

Edmund J. Meese
Gary M. Snyder

Subject: Executive Summary of Inland Feeder Quarterly Status Report for January through March 1997

RECOMMENDATION

For information only.

DETAILED REPORT

This Executive Summary of the Inland Feeder Project Quarterly Report summarizes progress and program highlights for the period from January through March 1997.

During this time, groundwater monitoring in the San Bernardino and Riverside tunnels continued; the construction contract for the Arrowhead East Tunnel was awarded; and construction of a portion of Mentone Pipeline adjacent to the Redlands Unified School District's new high school was begun. Also during this quarter, a land exchange ceremony was held with the United States Forest Service.

The project's overall design effort is approximately 90 percent complete.

In our continuing effort to manage and contain our project costs, we have significantly reduced the distribution of quarterly reports. Should you require additional information or a complete Quarterly Report, please contact Dawn Chin at (213) 217-6291.

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Attachment

SECTION 1 - BACKGROUND

The Inland Feeder alignment, which will extend from the foothills of the San Bernardino Mountains to the Colorado River Aqueduct in the Riverside community of San Jacinto, will be a vital link in Southern California's water delivery system. This 43.7-mile, 12-foot-diameter tunnel and pipeline system will traverse rugged terrain and involve construction of complicated crossings as a part of the system's infrastructure. Refer to Figure 1.1 for a general map of the Project.

Beginning at the Devil Canyon Power Plant's second afterbay in the San Bernardino Mountains, the first leg of the Inland Feeder will be an approximately .5-mile buried pipeline through Devil Canyon followed by a 3.8-mile tunnel through the San Bernardino Mountains to Waterman Canyon and Highway 18. Passing through Waterman Canyon is an .8-mile buried pipeline; the line will then enter another deep tunnel for 5.2 miles, 2,000 feet below the ridge line, and exit the mountains at a portal adjacent to Highway 330 north of the city of Highland.

From this portal site, the alignment will proceed as a 6.5-mile-long buried pipeline that will extend in a generally southeastern direction along City Creek, Boulder Avenue, and Abbey Way, before turning south on Cone Camp Road on the north edge of the Santa Ana River Wash.

The Inland Feeder will then be tunneled for .7 miles under the Santa Ana River Wash near Redlands Municipal Airport, and continue south for 2.5 miles as a buried pipeline along Opal Avenue in the community of Mentone. The alignment will then enter another tunnel and proceed for 8.2 miles in a southerly direction under the Crafton Hills and San Timoteo Badlands areas, exiting as a buried pipeline near Highway 60 and Gilman Springs Road in Riverside county.

The pipeline will resume through open lands for 15.7 miles in the eastern portion of the city of Moreno Valley. It will pass the eastern edge of Lake Perris, and tunnel under the Ramona Expressway, continuing in a southeasterly direction to end at the junction of the Casa Loma and San Diego Canals, and connects to the Eastside pipeline - currently under construction - near the city of San Jacinto.

When the Inland Feeder is completed, it will nearly double the water delivery capability of the East Branch of the State Water Project. The Inland Feeder will also help replenish local groundwater basins, improve the quality of Southern California's drinking water, and provide a continuous source of water to supply Metropolitan's reservoirs.

Careful planning and analysis of the alignment requirements has enabled Metropolitan to minimize the Program's environmental impact. In addition to developing appropriate mitigation measures, such as setting aside and cultivating revegetation areas to compensate for construction impacts, Metropolitan has purchased a parcel of

approximately 75-acres that is partially surrounded by the California Department of Fish and Game's San Jacinto Wildlife Reserve, in southwestern Riverside county; this land will complement and enhance the overall wildlife habitat.

These land purchases and mitigation measures are part of the overall Inland Feeder Mitigation Monitoring Plan to ensure that the Program will avoid or reduce significant impacts to the environment and historical landmarks.

The Project has been broken into eight specific geographical reach areas for planning, management, and control purposes. For summary reporting, these reaches are grouped together as follows. Reaches 1 and 2 comprise the San Bernardino tunnels. Reaches 3 and 4 refer to the San Bernardino pipelines. Reaches 5 and 6 define the Riverside tunnels. Reaches 7- 8 and 9 involve the Riverside pipelines. (The reaches' limits are also depicted in Figure 1.1.) Table 1.1, the Inland Feeder Program Characteristics Matrix, describes the length, size, project number, reach area and design consultant for each of the Project segments.

Specific Project activities have been divided into three execution phases that represent different timing elements and required activities in the performance of the Program. Phase I represents the preliminary planning, funding, and engineering portions of the Program and is effectively complete. Phase II, which began October 1994, and is scheduled through 1997, relates to the detailed engineering and all activities up to award of construction. As currently planned, the Program will be 100% complete in the year 2004.

This Quarterly Report discusses the issues and accomplishments for the months of January, February and March 1997. Future reports will provide the reader with progress updates, as well as the projected goals for the upcoming periods.

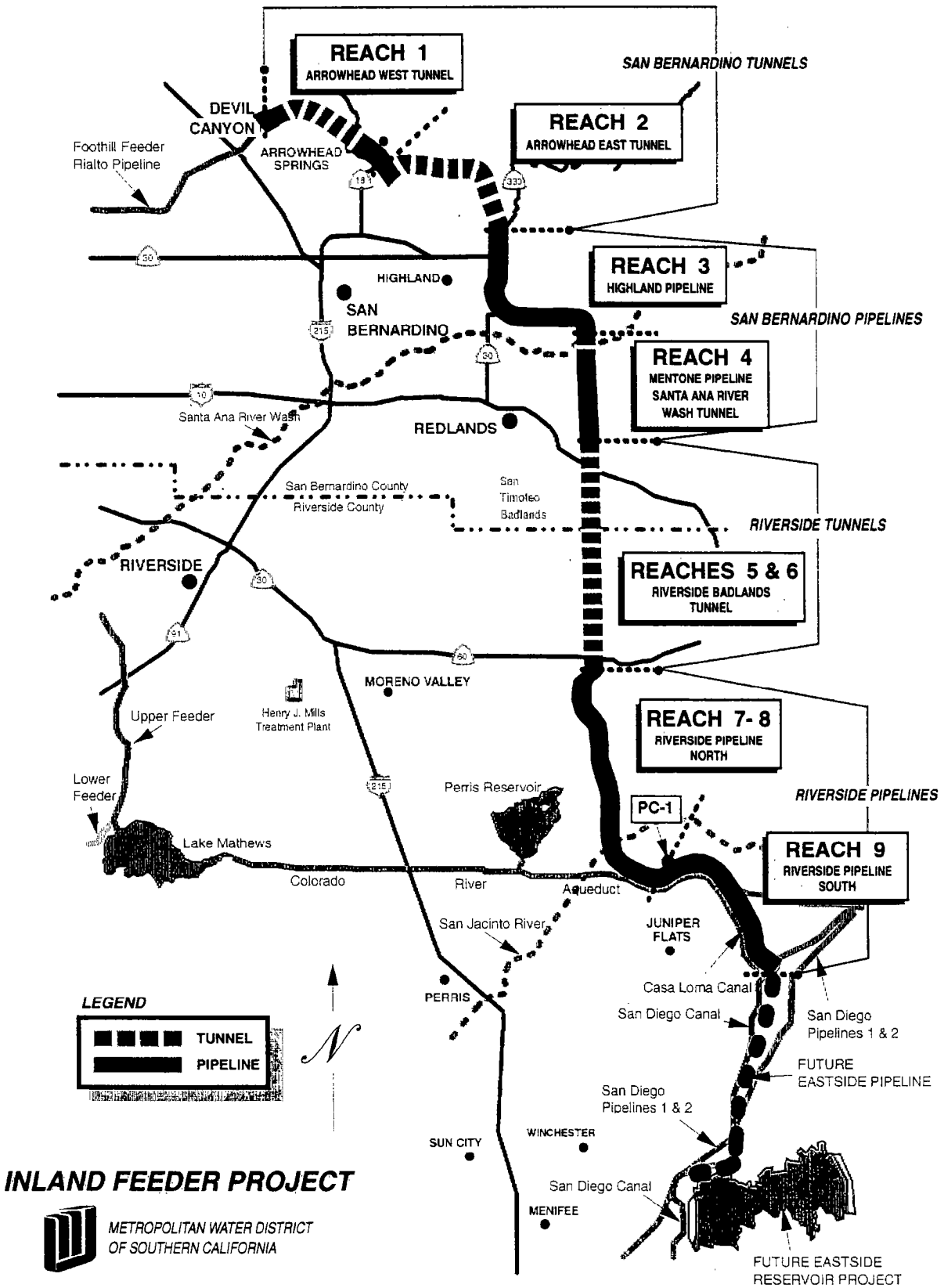


FIGURE 1.1 - MAP OF PROJECT



REACH	DESCRIPTION	PROJECT	LENGTH (IN MILES)	DESIGN CONSULTANT
SAN BERNARDINO TUNNELS				
1	Arrowhead West Pipeline #1: Devil Canyon 2nd afterbay to Devil Canyon Portal.	100620-21	0.47	MWD
1	Arrowhead West Tunnel: Devil Canyon portal to west Waterman Canyon portal.		3.76	Bechtel Corp.
1	Arrowhead West Pipeline #2: Waterman Canyon portal to Strawberry Creek portal.		0.77	MWD
2	Arrowhead East Tunnel Pipeline.		0.21	Bechtel Corp.
2	Arrowhead East Tunnel: Strawberry Creek portal to City Creek portal.		5.18	
2	Arrowhead East Tunnel Pipeline.		0.38	
SAN BERNARDINO PIPELINES				
3	Highland Pipeline: Pipeline parallel to Highway 330, City Creek Levee, and Boulder Ave.	100622	5.84	MWD
4T	Santa Ana Wash Tunnel: Soft ground tunnel under Santa Ana Wash.	100623	0.72	Parsons Brinckerhoff Quade & Douglas
4	Mentone Pipeline: Santa Ana Wash to Opal Ave. portal.	100623	2.49	MWD
RIVERSIDE TUNNELS				
5 & 6	Riverside Badlands Tunnel: Opal Ave. portal to Gilman Springs portal, with potential access shafts located in Live Oak & San Timoteo Canyons.	100624-25	8.19	Daniel, Mann Johnson & Mendenhall
RIVERSIDE PIPELINES				
7- 8	Riverside Pipelines - North: Pipeline through San Jacinto Valley and parallel to Davis Road, through the city of Lakeview and including connection to PC-1 Facility. PC-1 facility and connecting pipeline.	100626	8.37	MWD
9	Riverside Pipelines - South: Pipeline parallel to Colorado River Aqueduct and Casa Loma Canal with connections at the Colorado River Aqueduct and the Eastside Pipeline.	100628	6.7	MWD

TABLE 1.1 - PROGRAM CHARACTERISTICS MATRIX



SECTION 2 - EXECUTIVE SUMMARY

During the first quarter of 1997, the Inland Feeder Program continued the design effort necessary to support the currently approved 2004 Program completion date. Right of Way, Environmental and Public Awareness efforts also continued in parallel with engineering activities in order to sustain the current design and future construction activities.

Funding by the Board increased to \$272,000,000, during the first quarter of 1997, as funds were approved for construction expenditures. Included were \$115,500,000 for Arrowhead East tunnel and \$4,700,000 for the effort on the Mentone pipeline reach. Please refer to Table 2.1 for a detailed history of Board authorizations. Program projected cost continues to be within budget and on schedule. Total program cost expended through the first quarter of 1997 was \$96,400,000. Please refer to Figure 2.1 for the Program's financial profile.

The Program Cost Summary, Table 2.2, identifies budgets and actual costs through March 31, 1997, for each Inland Feeder contract. A breakdown of the Program Capital Estimate, authorized budgets and actual costs identified by cost category can be found in Table 2.3.

The Program's anticipated levels of participation for Minority Business Enterprises (MBE) and Women Business Enterprises (WBE) for Board-authorized contracts average 14.6% and 8.0%, respectively. Figure 2.2 depicts the Program's MBE/WBE participation. The actual invoiced participation levels in contracts outstanding are shown in Table 2.4. Actual participation levels through the first quarter of 1997, total 16.2% (MBE) and 8.6% (WBE), respectively. Inland Feeder schedules by reach are depicted in Figure 2.3.

Pipe prefabrication (Specifications No. 1378) by Ameron International for Mentone pipelines, Redlands Unified School District (RUSD) segment, was given Notice To Proceed on October 5, 1996. Fabrication has been completed, as well as the cement-mortar coating of the pipe and fittings.

The construction contract for Mentone pipeline, Redlands Unified School District (RUSD) segment was awarded to Kenko, Inc. on January 14, 1997, and Notice To Proceed was issued on February 17, 1997. The contractor has mobilized and is making the necessary submittals prior to actual construction start.

The construction contract for Arrowhead East tunnel was awarded to Shank, Balfour/Beatty on January 14, 1997. Notice To Proceed is expected to be issued in April 1997.

MAJOR ACCOMPLISHMENTS

- San Bernardino Tunnels:
 - Board approved the Arrowhead East tunnel contract on January 14, 1997.
 - Initiated forensic and acoustical studies for properties near the Arrowhead East tunnel portal.
 - Conducted a land exchange ceremony with United States Forest Service.
- San Bernardino Pipelines:
 - Board approved Mentone pipeline, Redlands Unified School District segment on January 14, 1997. The Notice To Proceed was issued to the contractor on February 17, 1997. Contractor is mobilized and making the required submittals.
 - Coordinated with Southern California Edison to complete pole relocation and duct bank work on Opal Avenue from Mentone Boulevard to Independence Avenue.
 - Received Caltrans approval for an encroachment permit for the Mentone pipeline on Mentone Boulevard at Highway 38.
- Riverside Tunnels:
 - Updated prestressed drawings to reflect the new core thickness in the high head (greater than 250 feet) areas.
 - Incorporated final comments in to the environmental specifications.
 - Issued 100% plan and profile checkset for Reaches 5 and 6.
- Riverside Pipelines:
 - Issued Advertise For Bid for construction of Riverside South Pipeline, Reach 9, on February 25, 1997.
 - Completed a meeting with California Department of Fish and Game (CDFG) finalizing the details of a right-of-way acquisition for San Jacinto River blowoff structure and realignment of Davis Road. The CDFG also clarified its position opposing asphalt pavement installation within Davis Road, as recommended by the city of Moreno Valley.

MAJOR ACCOMPLISHMENTS (Continued)

- Riverside Pipelines (Continued):
 - Informed the city of Moreno Valley Engineering Department that Metropolitan intends to advertise and construct a pipeline within Davis Road with no additional pavement improvements in accordance with the terms of the agreement with CDFG.
- Right of Way:
 - Completed negotiations with alfalfa farmer who is working on McAnally parcels to have his farm leases terminated; escrow is closed and leases are terminated.
 - Completed calculations for centerline coordinates for San Bernardino Municipal Water District pipeline in Reach 3.
 - Completed Relocation Assistance Plan.
- Environmental:
 - Obtained 401 water quality certification from the State Water Resources Control Board.
 - Prepared draft Discovery Clause/Treatment Plan for Paleontological resources.
 - Conducted Phase II investigation of the Opal Avenue wall segment in San Bernardino county.
- Public Awareness:
 - Met with residence of Mountain Shadow Mobile Home Park to inform them of the tunnel construction schedule.
 - Toured more than 40 residence from Mountain Shadows Mobile Home Park through the Inland Feeder alignment and Eastside Reservoir.
 - Assisted in planning a public event that acknowledged a land exchange between Metropolitan and United States Forest Service.
- Owner Controlled Insurance Program:
 - Processed enrollment of Kenko, Inc. for Mentone pipeline.

MAJOR ACCOMPLISHMENTS (Continued)

- Owner Controlled Insurance Program: (Continued) :
 - Evaluated, revised and discussed submittals of Shank, Balfour/Beatty for Arrowhead East tunnel.
 - Set up emergency testing facilities along the alignment.
- Program Management Support:
 - Entered approximately 890 documents into the Electronic Document Management System (EDMS) for this quarter. The system is connected to the Metropolitan computer network allowing all Program personnel easy access to locate and retrieve Program documentation. Through March 1997, approximately 14,410 documents have been entered into the system.
 - Reviewed 36 consultant invoices in this quarter. To date, 354 invoices, requesting approximately \$31,000,000 in payments have been received. Invoice audit through March 1997, has recommended that \$8,300,000 of funds be held or disallowed from initial invoicing due to insufficient documentation and support.
 - Continued the Minority Business Enterprises/Women Business Enterprises data tracking and collection including the monitoring of subconsultants certification status and invoiced amounts as they relate to their goals.
 - Reviewed and updated the 1996/1997 Capital Improvement Plan expenditure forecasts including actual cost to date and updated construction estimates and schedules.

GOALS FOR NEXT QUARTER

- San Bernardino Tunnels:
 - Begin construction on Arrowhead East tunnel.
 - Complete engineering on Arrowhead West tunnel.
 - Issue a notice inviting bids for Arrowhead West tunnel.
- San Bernardino Pipelines:
 - Continue working on Specifications No. 1334, Highland pipeline, Reach 3.

GOALS FOR NEXT QUARTER (Continued)

- San Bernardino Pipelines (Continued) :
 - Finalize Dames & Moore's report of deformation studies analyzing quarry slopes near Cone Camp Road and Orange Street in Reach 3, Highland pipeline.
 - Issue 60% checkset for review on the Highland pipeline, Reach 3.
- Riverside Tunnels:
 - Continue to incorporate final comments into the environmental specifications.
 - Continue to review outstanding right-of-way issues and develop an action plan to resolve.
 - Finalize deformation plan and start the monitoring of critical structures for settlement.
- Riverside Pipelines:
 - Advertised For Bid for construction of Riverside North pipeline, Reach 7- 8, on May 14, 1997.
 - Open bids for Riverside pipeline - south, Reach 9, on May 29, 1997.
 - Issue design supplements for Casa Loma Detention Basin and spillway for Riverside pipeline - south.
- Right of Way:
 - Begin relocation activities for two families that will be displaced because of the project.
 - Complete deformation plans for Reaches 5 and 6.
 - Completed additional title research for Southern Pacific Railroad right-of-way in Reach 6.
- Environmental:
 - Meet with the Resident Engineer and construction managers regarding environmental issues within Reach 4 (RUSD) and mitigation monitoring requirements.

GOALS FOR NEXT QUARTER (Continued)

- Environmental (Continued) :
 - Prepare Resident Engineer's Manual for Reach 4 (RUSD).
 - Initiate mitigation monitoring, as required, for Reaches 2 and 4 (RUSD).
- Public Awareness:
 - Continue implementing the second phase of the Inland feeder public awareness campaign. In the coming months, staff plans to once again update local city, state and federal officials on the project's progress.
 - Distribute revised construction fact sheets and information sheets.
 - As City Creek tunnel construction nears, schedule informational meeting with residents of a mobile home park along Reach 3 near the portal site.

Note: Detailed goals for each pipeline and tunnel reach are shown in their respective sections.

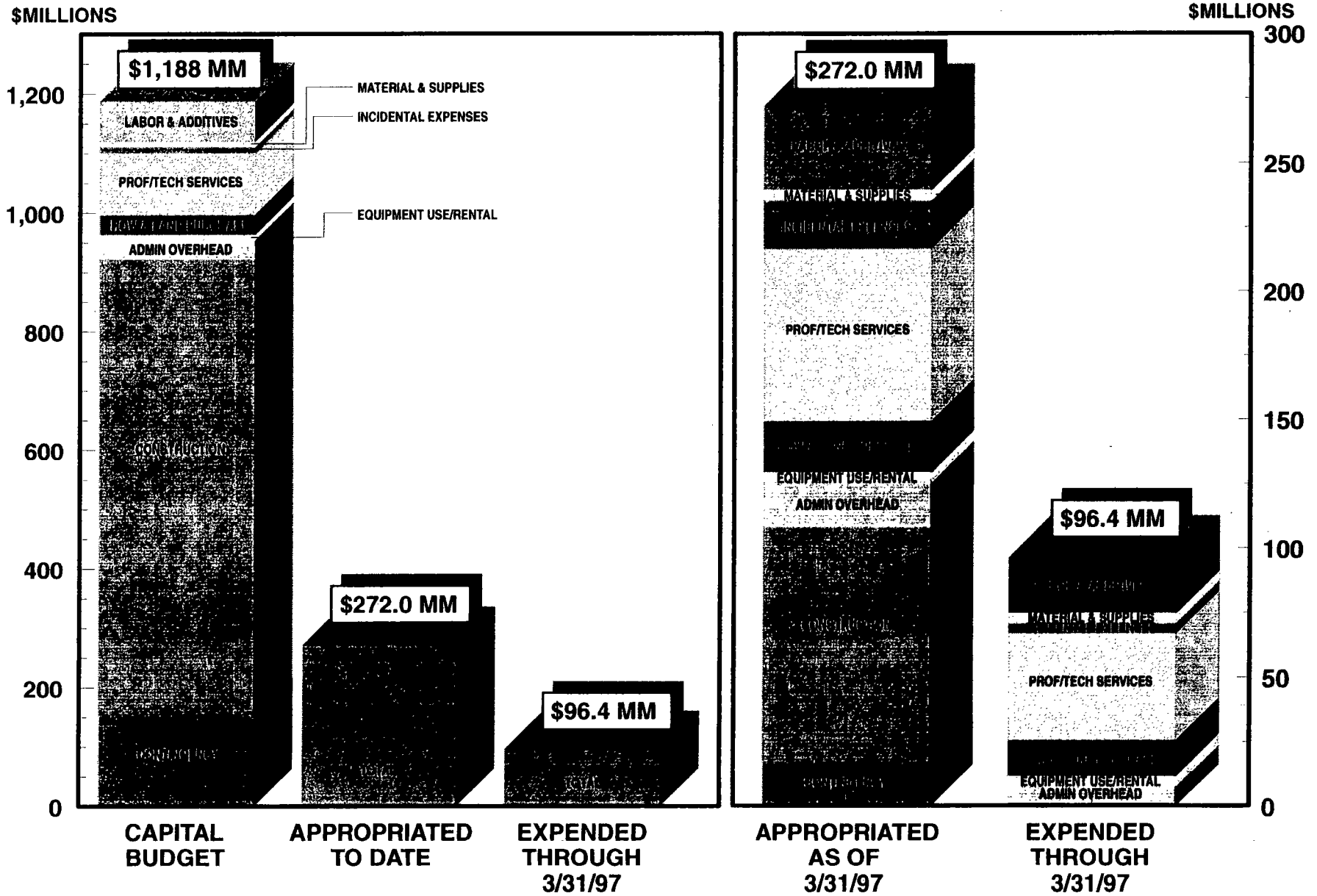


FIGURE 2.1 - PROGRAM FINANCIAL PROFILE





**INLAND FEEDER PROJECT
BOARD AUTHORIZED APPROPRIATION
APPROPRIATION NUMBER 15122**

BOARD LETTER DATE	AUTHORIZED DATE	REVISION NUMBER	APPROPRIATION AMOUNT	CUMULATIVE APPROPRIATION	REMARKS
			\$ 1,450,000	\$ 1,450,000	Original Study Authorization
8-Aug-89		1	\$ 2,000,000	\$ 3,450,000	Additional studies
31-Jul-90		2	\$ 2,320,000	\$ 5,770,000	Additional studies
17-Dec-91		3	\$ 2,330,000	\$ 8,100,000	Additional studies
22-Jan-93		4	\$ 3,000,000	\$ 11,100,000	Increase funding
30-Mar-93		5	\$ 102,900,000	\$ 114,000,000	Planning, land acquisition and design in advance of award of construction contracts
30-Jun-93		6	\$ -	\$ 114,000,000	Remove contingency with respect to MOU with Moreno Highlands Development
20-Aug-96	10-Sep-96	7	\$ 2,200,000	\$ 116,200,000	Mentone Pipeline - RUSD section (3,400 LF) pipe fabrication (Ameron)
29-Oct-96	19-Nov-96	8	\$ 8,250,000	\$ 124,450,000	Arrowhead East Construction Management (DMJM)
31-Oct-96	19-Nov-96	9	\$ 19,710,000	\$ 144,160,000	Owner Controlled Insurance Program (OCIP), Sedwick/Dickerson as administrators and Hartford as insurer
19-Nov-96	10-Dec-96	10	\$ 7,600,000	\$ 151,760,000	Addition of post design services (DMJM) for Arrowhead East Tunnel
10-Dec-96	14-Jan-97	11	\$ 115,500,000	\$ 267,260,000	Arrowhead East Tunnel Construction contract
10-Dec-96	14-Jan-97	12	\$ 4,700,000	\$ 271,960,000	Mentone Pipeline - RUSD section (3,400 LF) construction contract

TABLE 2.1 - BOARD AUTHORIZED APPROPRIATION



COST SUMMARY
APPROPRIATED TO DATE

MAJOR WORK AREAS	BUDGET	ACTUAL COST
SAN BERNARDINO TUNNELS (REACHES 1 & 2)	154,950,000	19,979,200
SAN BERNARDINO PIPELINES (REACHES 3 & 4)	20,000,000	11,127,700
RIVERSIDE TUNNELS (REACHES 5 & 6)	13,100,000	11,013,600
RIVERSIDE PIPELINES (REACHES 7 - 8 & 9)	11,300,000	8,282,600
RIGHT OF WAY ENGINEERING	11,200,000	14,613,800
RIGHT OF WAY PROCUREMENT ^a	20,094,000	11,907,000
ENVIRONMENTAL	9,000,000	2,018,600
PROGRAM MANAGEMENT SUPPORT	4,586,000	4,034,600
OWNER CONTROLLED INSURANCE PROGRAM (CLOSED PROJECT)	19,710,000	5,441,400
INLAND FEEDER STUDY	8,020,000	8,023,600
TOTALS	271,960,000	96,442,100

NOTES:

1. BASED ON PMIS REPORTS RPRJC205 AND RPRJC004 EFFECTIVE FOR 03/31/97.
- ^a BUDGET FOR LAND PURCHASE ONLY; RIGHT OF WAY LABOR HOURS IN PROJECT 100629.

TABLE 2.2 - PROGRAM COST SUMMARY

CAPITAL BUDGET VS ACTUAL COST

ALL PROJECTS

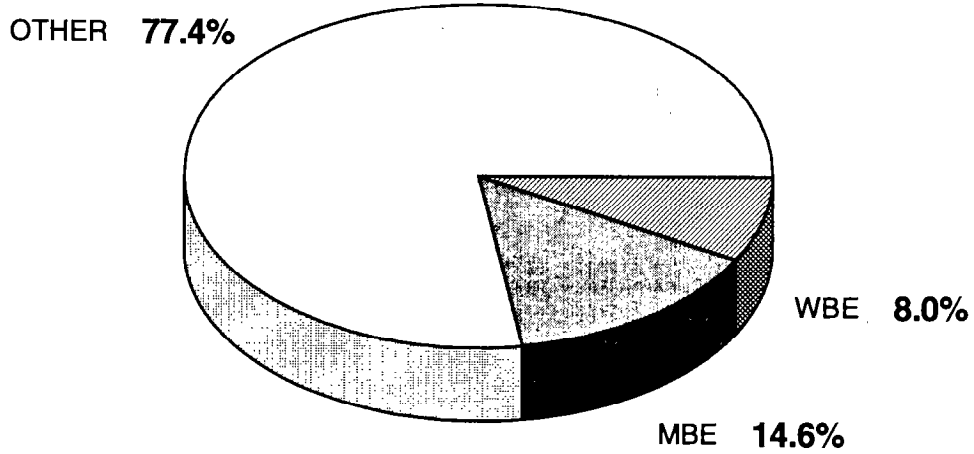
ACCOUNT CATEGORY	PROGRAM ESTIMATE	BUDGET	ACTUAL COST
LABOR AND ADDITIVES	66,178	32,612	22,456
MWD-FURNISHED EQUIP & MATERIALS	6,260	2,795	301
INCIDENTAL EXPENSES	37,540	19,899	5,959
PROFESSIONAL/TECHNICAL SERVICES	111,901	67,834	42,086
RIGHT OF WAY & LAND PURCHASES	46,093	20,300	15,859
OPERATING EQUIPMENT	2,298	665	98
ADMINISTRATIVE CHARGES	33,319	17,185	9,115
CONSTRUCTION CONTRACTS	708,933	93,557	567
CONTINGENCY	175,478	17,112	-
TOTALS	1,188,000	271,960	96,442

NOTES:

1. BASED ON PMIS REPORTS RPRJC205 AND RPRJC004 EFFECTIVE FOR 03/31/97.
2. ALL NUMBERS IN THOUSANDS

TABLE 2.3 - PROGRAM CAPITAL ESTIMATE

**Anticipated Levels
of Participation**



Actuals To Date

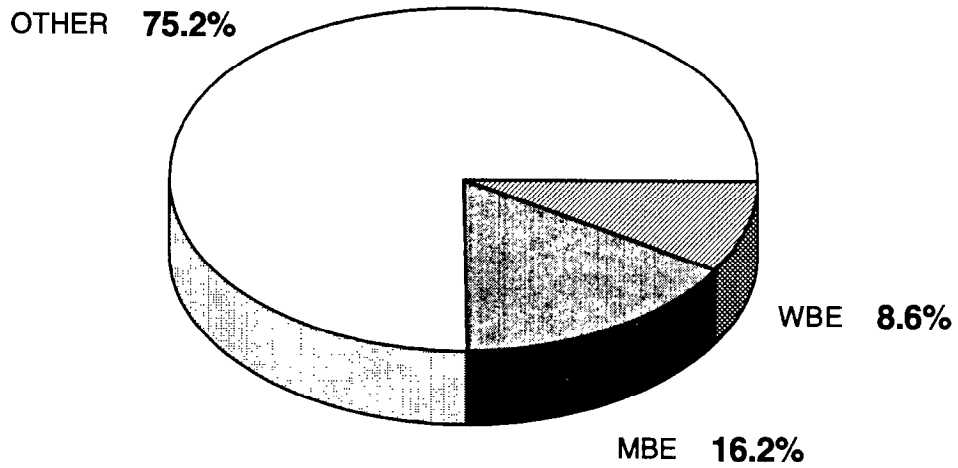


FIGURE 2.2 - MBE/WBE PARTICIPATION



MBE/WBE INLAND FEEDER PARTICIPATION PROGRAM

CONSULTANT FIRM	A/O NO.	CONTRACTUAL ANTICIPATED LEVEL OF PARTICIPATION					INVOICED					TOTAL \$ % EXPENDED (k)
		PRIME CONTRACT VALUE (a)	MBE CONTRACT PLAN (b)	WBE CONTRACT PLAN (c)	MBE % OF PRIME (d)	WBE % OF PRIME (e)	CUM PAID TO DATE (f)	MBE PAID TO DATE (g)	WBE PAID TO DATE (h)	MBE % of PAID TO DATE (i)	WBE % of PAID TO DATE (j)	
AIRBORNE SURVEYS	4425	525,000	63,000	15,750	12.0	3.0	504,100	42,170	16,230	8.4	3.2	96.0
RADMAN AERIAL SURVEYS	4426	500,000	0.0	500,000	0.0	100.0	227,100	0.0	227,067	0.0	100.0	45.4
RICK ENGINEERING	4427	389,000	46,680	11,670	12.0	3.0	308,200	40,468	6,488	13.1	2.1	79.2
RATTRAY & ASSOCIATES	4428	335,000	41,875	10,050	12.5	3.0	330,600	36,126	13,359	10.9	4.0	98.7
PARSONS / DOUGLAS / BRINCKERHOFF / QUADE	4530	2,780,000	417,000	166,800	15.0	6.0	2,309,700	335,828	136,442	14.5	5.9	83.1
DMJM / WOODWARD	4531	7,750,000	1,108,250	364,250	14.3	4.7	7,163,100	1,105,356	277,733	15.4	3.9	92.4
BECHTEL CORP.	4532	19,450,000	2,480,264	1,365,390	12.8	7.0	12,323,300	1,759,726	1,197,062	14.3	9.7	63.4
KEITH COMPANIES	4554	600,000	120,000	0.0	20.0	0.0	523,100	75,664	0.0	14.5	0.0	87.2
PSOMAS & ASSOCIATES	4555	950,000	950,000	0.0	100.0	0.0	862,100	845,100	0.0	98.0	0.0	90.7
ROBERT BEIN & FROST	4556	845,000	169,000	0.0	20.0	0.0	390,000	88,552	0.0	22.7	0.0	46.2
HUNSAKER & ASSOC.	4557	450,000	67,500	0.0	15.0	0.0	403,100	50,697	0.0	12.6	0.0	89.6
P & D TECHNOLOGIES	4588	4,500,000	270,000	540,000	6.0	12.0	1,184,500	27,955	77,049	2.4	6.5	26.3
LAW / CRANDALL, INC.	4599	584,000	128,480	46,720	22.0	8.0	577,900	132,593	25,804	22.9	4.5	99.0
DAMES & MOORE	4600	700,000	119,000	35,000	17.0	5.0	633,300	93,741	51,024	14.8	8.1	90.5
PARSONS COMPANY	4705	2,900,000	321,900	513,300	11.1	17.7	2,757,900	310,968	603,043	11.3	21.9	95.1
CH2M HILL	8215	90,000	14,400	6,300	16.0	7.0	79,400	8,052	5,366	10.1	6.8	88.2
MAC DONALD-STEPHENS	8216	80,000	13,600	7,200	17.0	9.0	28,700	9,654	6,558	33.6	22.9	35.9
SEDGWICK / DICKERSON	11995	1,085,000	162,750	0.0	15.0	0.0	25,000	0.0	0.0	0.0	0.0	2.3
TOTAL		44,513,000	6,493,699	3,582,430	14.6	8.0	30,631,100	4,962,650	2,643,225	16.2	8.6	68.8

TABLE 2.4 - MBE/WBE INLAND FEEDER PROGRAM PARTICIPATION



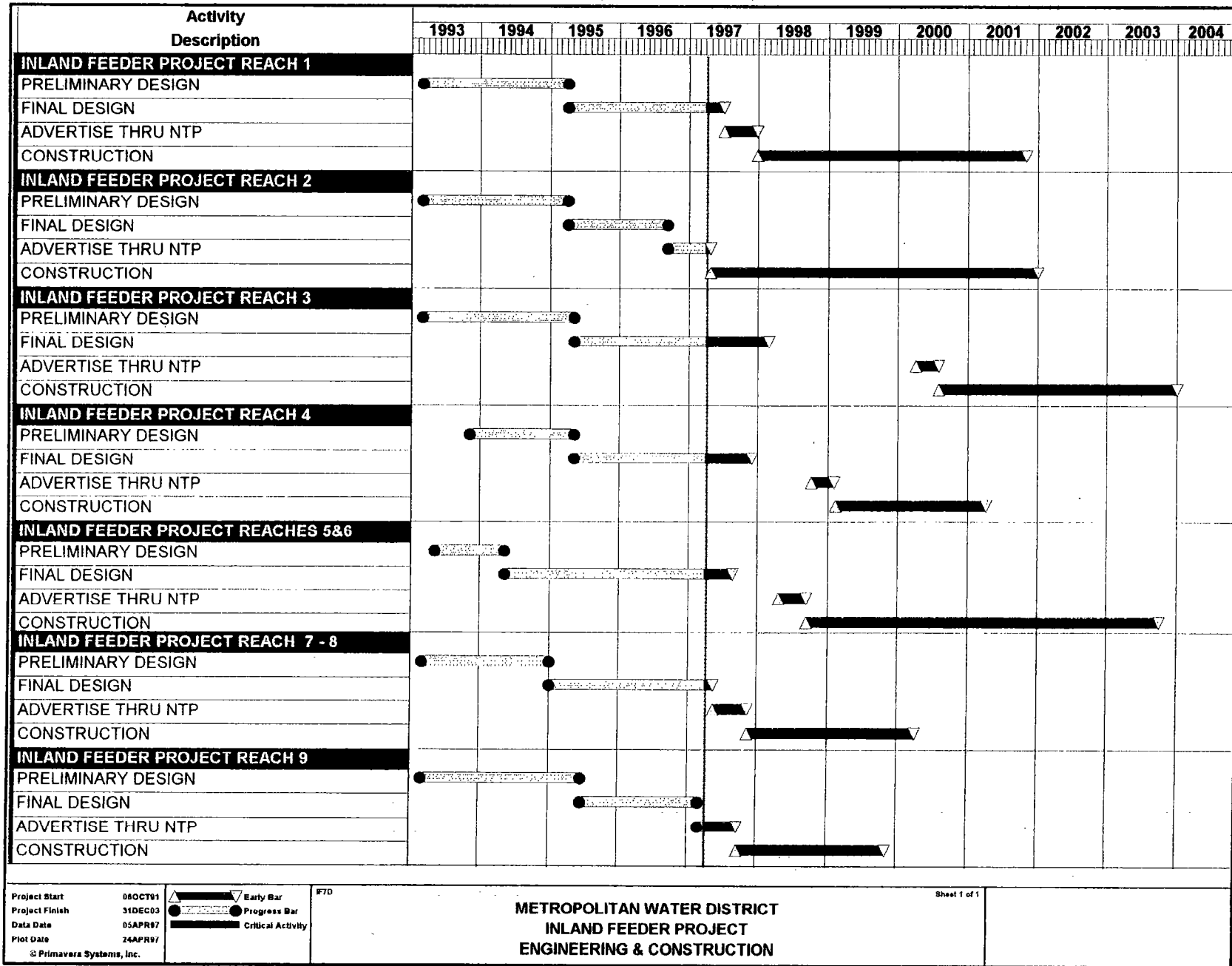


FIGURE 2.3 - OVERALL SCHEDULE BY REACH