



*Scenic view of Lake Mathews.*

**THE METROPOLITAN WATER DISTRICT  
OF SOUTHERN CALIFORNIA**

**ANNUAL REPORT FOR THE FISCAL YEAR**

*July 1, 2020 to June 30, 2021*



LOS ANGELES, CALIFORNIA  
2021

# CONTENTS

<i>Chapter</i>	<i>Page</i>
List of Abbreviations .....	ix
About Metropolitan .....	xiii
Composition of the Metropolitan Water District of Southern California.....	xv
Directors .....	xvi
Board of Directors .....	xx
Board Committees .....	xxii
Historical Roll of Directors.....	xxiv
Organization Chart .....	xxxvi
Executive Management .....	xxxvii
Staff .....	xxxviii
Introduction .....	1
<b>1. Delivering Metropolitan’s Water Supplies .....</b>	<b>5</b>
Major Accomplishments for Fiscal Year 2020/21 .....	9
System Operations and Planning .....	9
Colorado River.....	9
<b>2. Strategic Water Initiatives .....</b>	<b>21</b>
Bay-Delta Initiatives.....	21
Long-Term Actions .....	21
Delta Conveyance.....	21
California EcoRestore.....	23
Sites Reservoir.....	23
Near-Term Actions .....	24
Regulatory Activities.....	24
Science Activities .....	25
Delta Islands Activities.....	25
Emergency Preparedness Plan .....	26
Colorado River Resources .....	26
Lake Mead Record Low Level.....	27
Colorado River Aqueduct at Capacity .....	27
Southern Nevada Water Authority Partnership.....	28
Salinity Control Program .....	28
<b>3. Water Resource Management .....</b>	<b>31</b>
State Water Project Resources.....	32
Water Storage Programs .....	32
Semitropic/Metropolitan Water Banking and Exchange Program .....	32
Arvin-Edison/Metropolitan Water Management Program .....	35
Antelope Valley East-Kern Water Agency/Metropolitan Water Management Program.....	35
Antelope Valley East-Kern Water Agency/Metropolitan Water Management High Desert Water Bank Program.....	35
Kern Delta/Metropolitan Water Management Program .....	35
Mojave/Metropolitan Water Storage Program .....	36
Water Transfers and Exchanges.....	36
San Gabriel Valley Municipal Water District Exchange.....	36
Colorado River Resources .....	36
Water Supply Acquisitions and Exchanges .....	37
Local Resources.....	37

# CONTENTS

<i>Chapter</i>	<i>Page</i>
Water Recycling and Groundwater Recovery.....	37
Stormwater .....	40
Seawater Desalination .....	41
Groundwater Storage.....	41
Conservation and Water-Use Efficiency.....	41
Water Resource and System Planning .....	44
Integrated Water Resources Planning .....	44
Urban Water Management Plan and Water Shortage Contingency Plan .....	44
Future Supply Actions Funding Program .....	44
Water Resource Data .....	45
<b>4. Water System Operations .....</b>	<b>51</b>
Water Treatment.....	51
Water Quality .....	53
Regulations.....	53
New Regulations and Monitoring Requirements .....	53
Water Quality Monitoring.....	55
Chemical/Physical .....	56
Organic Chemicals (VOCs, Herbicides, Pesticides, SOCs).....	56
Trace Metals, General Physical and Chemical Analyses .....	56
Radionuclides .....	56
Total Dissolved Solids.....	60
Disinfection Byproducts .....	60
Microbiological.....	69
Other Monitoring .....	70
PFAS (Per- and Polyfluoroalkyl Substances) .....	70
Nitrosamines .....	70
Other Constituents of Emerging Concern .....	70
Source Water Protection.....	71
Watershed Management and Protection .....	71
Cyanobacteria and Algae Control Program .....	71
Taste-and-Odor Control.....	71
Quagga Mussel Control Program.....	73
Salinity Control.....	73
Uranium Mill Tailings Cleanup .....	73
Chromium 6 Remediation.....	74
Perchlorate Remediation.....	74
Technology Assessment .....	76
Treatment Process Optimization and Development.....	76
Potable Reuse .....	76
Applied Research.....	77
Service to Member Agencies and Drinking Water Industry .....	78
Conveyance, Distribution and Support.....	78
Conveyance and Distribution.....	78
Operations Support Services.....	80
Manufacturing Services .....	80
Construction Services .....	81
Power Equipment and Reliability .....	82



# CONTENTS

<i>Chapter</i>	<i>Page</i>
Fleet Services.....	82
Asset Management.....	83
Emergency Management.....	83
Energy Management.....	84
2020 Energy Crisis.....	84
Hydroelectric Power Recovery Plant Operations.....	85
Solar Power Energy Production.....	85
Greenhouse Gases.....	86
Colorado River Aqueduct Power.....	86
Agreements for CRA Operations.....	88
Energy Sustainability Plan.....	88
Safety and Regulatory Services.....	92
Regulatory.....	92
Health & Safety.....	94
Safety and Technical Training.....	95
Apprenticeship Program Training.....	96
<b>5. Engineering Services.....</b>	<b>99</b>
Capital Investment Plan.....	100
Regional Recycled Water Program.....	100
Water Quality/Oxidation Retrofit Program.....	101
Treatment Plant Reliability Program.....	101
Distribution System Reliability Program.....	101
Colorado River Aqueduct Reliability Program.....	102
PCCP Reliability Program.....	102
Right of Way and Infrastructure Protection Program.....	102
System Flexibility/Supply Reliability Program.....	102
System Reliability Program.....	103
District Housing & Property Improvements Program.....	103
Dam and Reservoir Improvements Program.....	103
Minor Capital Projects Program.....	103
Delta Conveyance.....	112
Infrastructure Protection.....	112
Dam Safety.....	112
Seismic Resilience.....	113
Cooperative Education Program.....	113
Technical Leadership.....	114
<b>6. Legal.....</b>	<b>117</b>
Major Events.....	117
Bay-Delta/State Water Project.....	117
California WaterFix Litigation.....	117
Delta Conveyance Project.....	117
State Water Project Operations.....	118
State Water Project Contract.....	118
Oroville Dam Litigation.....	118
Transfers, Exchanges and Agency Coordination.....	118
Colorado River.....	118
Support.....	118

# CONTENTS

<i>Chapter</i>	<i>Page</i>
Litigation .....	119
Water Planning .....	119
Support .....	119
Regional Recycled Water Program.....	119
Litigation .....	120
Groundwater .....	120
Water Quality .....	120
Real Estate Matters.....	120
Finance .....	120
Issuance of Bonds/Debts.....	120
Rate Litigation .....	121
Infrastructure/Corporate Resources .....	121
Capital Projects.....	121
Litigation .....	121
Energy Management.....	121
Transactions.....	121
Operations.....	122
Federal Energy Regulatory Commission .....	122
Workforce/Human Resources.....	122
Litigation .....	122
Labor Agreements and Investigations.....	122
Human Resources Management.....	122
Deferred Compensation .....	123
District Governance and Support.....	123
Advice.....	123
Technology .....	123
Legal Department Administration .....	123
Public Records Act Requests .....	123
<b>7. Finance .....</b>	<b>125</b>
Finance Overview.....	125
FY 2020/21 Major Financial Activities and Accomplishments .....	126
Security Sales/Debt Administration.....	126
Treasury Operations.....	128
Accounting Operations .....	128
Budget and Financial Planning .....	129
Business Continuity .....	129
Risk Management .....	129
Financial Information .....	130
Revenues.....	130
Expenses .....	133
Budget Process .....	135
Treasury Operations and Cash Management .....	136
<b>8. Information Technology.....</b>	<b>143</b>
IT Infrastructure.....	143
Highlights for Fiscal Year 2020/21.....	143
Enterprise Water Systems.....	144
Highlights for Fiscal Year 2020/21.....	144

# CONTENTS

<i>Chapter</i>	<i>Page</i>
Cybersecurity Services .....	145
Highlights for Fiscal Year 2020/21 .....	145
Project Management Office .....	145
Highlights for Fiscal Year 2020/21 .....	145
<b>9. Administration .....</b>	<b>147</b>
Administrative Services .....	147
Highlights for Fiscal Year 2020/21 .....	147
Environmental Planning .....	149
Highlights for Fiscal Year 2020/21 .....	149
<b>10. Human Resources .....</b>	<b>153</b>
Major Activities and Accomplishments .....	153
HR Pandemic Actions .....	153
Succession Planning .....	154
Tapping the Best .....	155
Leaders Ready for the Future .....	156
Preparing Tomorrow’s Talent Today .....	156
HR Services and People Management .....	157
<b>11. Real Property .....</b>	<b>161</b>
Planning and Acquisition .....	161
Accomplishments for Fiscal Year 2020/21 .....	161
Land Management .....	162
Fiscal Year 2020/21 Highlights .....	163
Annexations .....	164
Diamond Valley Lake Recreation Area .....	164
Facility Asset Management .....	164
Fiscal Year 2020/21 Highlights .....	165
<b>12. External Affairs .....</b>	<b>167</b>
Major Activities and Accomplishments .....	167
Digital Marketing and Social Media Outreach Campaign .....	167
Media Activities .....	168
Web and Social Media Activities .....	168
Legislative and Policy Activities .....	169
Water Stewardship Education .....	170
Videos, Publications, Newsletters .....	171
Business Outreach, Innovation .....	171
<b>13. Internal Audit .....</b>	<b>173</b>
Major Activities and Accomplishments .....	173
Quality Assurance Activities .....	175
<b>14. Ethics .....</b>	<b>177</b>
Legislative Mandate .....	177
Advice and Education .....	177
Policies and Procedures .....	178
Compliance .....	178
Investigations .....	179
Independent Review of Harassment and Related Concerns .....	179
<b>Index .....</b>	<b>180</b>

## CONTENTS

<i>Number</i>		<i>Page</i>
<b>TABLES</b>		
1-1	Metropolitan’s Distribution System/Water Treatment Plants .....	5
1-2	Monthly Water Transactions for All Member Agencies.....	7
1-3	Historical Water Transactions .....	13
1-4	Water Use by Metropolitan’s Member Agencies.....	14
1-5	2020/21 Major Shutdowns & Service Interruptions .....	16
3-1	Charges, Payments and Credits Under the State Water and Devil Canyon Castaic Contracts .....	34
3-2	Metropolitan’s Conjunctive Use Programs.....	42
4-1	Trace Metals in Metropolitan’s Water Supplies .....	57
4-2	General Mineral and Physical Analysis of Metropolitan’s Water Supplies .....	58
4-3	Radionuclides in Metropolitan's Water Supplies.....	59
4-4	Raw Water Coliform Results.....	69
4-5	Hydroelectric Power Recovery Plants – Production for the Past Two Fiscal Years .....	87
4-6	Energy Cost for Pumping Colorado River Water .....	88
4-7	Metropolitan’s Historical CRA Electric Energy Use.....	89
4-8	Accident Incidents .....	97
5-1	Capital Construction Contracts Completed as of June 30, 2021 (Unaudited)....	106
5-2	Major Construction Contracts in Progress as of June 30, 2021 (Unaudited) .....	107
5-3	Major Projects Under Design During Fiscal Year 2020/21 .....	108
7-1	Water Sales Rate Structure – Current .....	132
7-2	Revenues .....	133
7-3	Expenses.....	134
7-4	Ten-Year Summary of Changes in Net Position – Accrual Basis.....	137
7-5	Ten Member Agencies with Largest Assessed Valuations .....	138
7-6	Ten-Year Summary of Assessed Valuations and Property Tax Rates .....	138
7-7	Ten-Year Summary of Property Tax Levies and Collections (Unaudited) .....	139
7-8	Ten-Year Summary of Net Operating Income and Revenue Bond Debt Service Coverage (Unaudited) .....	140
7-9	Ten Largest Water Customers .....	141

## CONTENTS

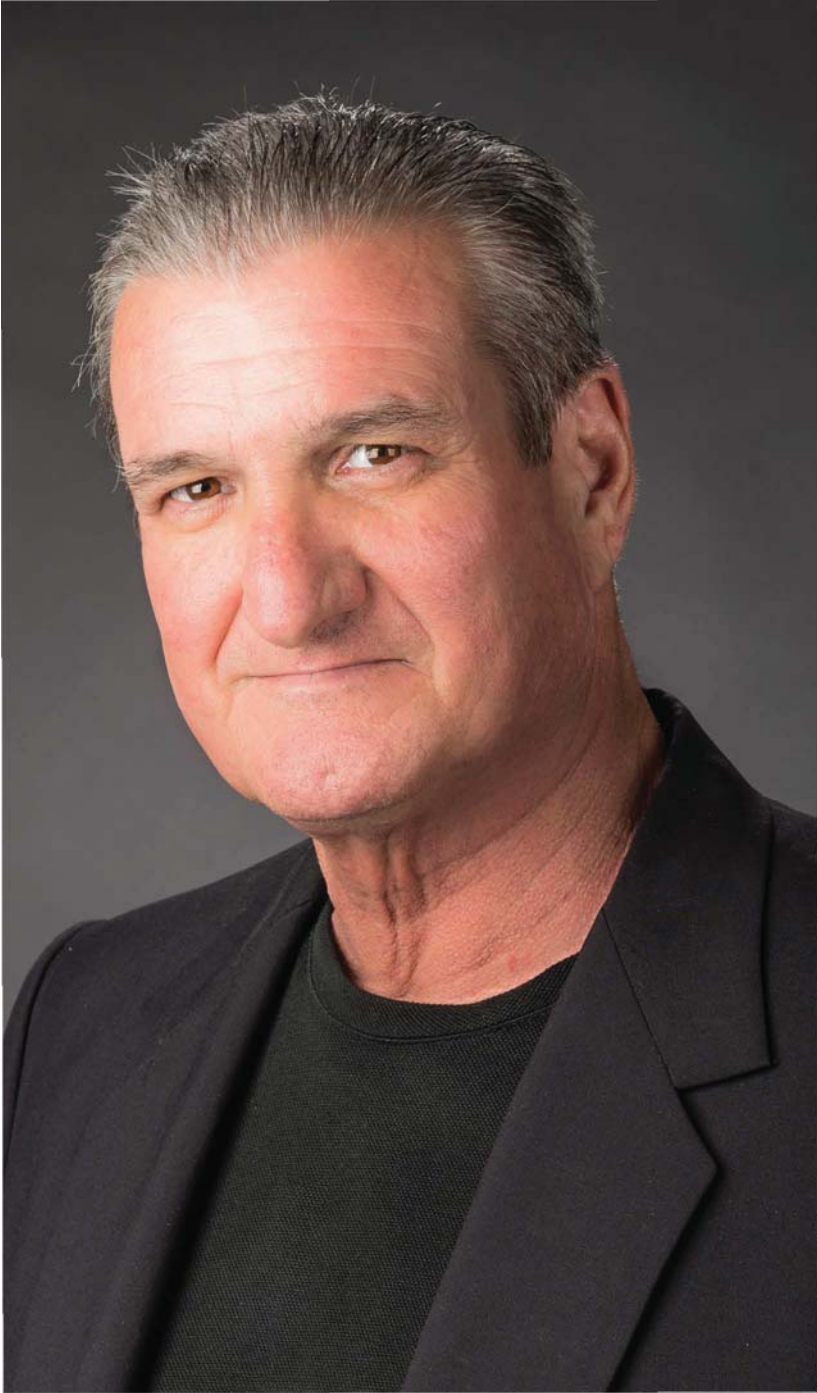
<i>Number</i>		<i>Page</i>
<b>FIGURES</b>		
1-1	Total Water Transactions for Fiscal Year 2020/21 – All Member Agencies .....	10
1-2	Monthly Water Transactions for Fiscal Year 2021/21 – All Member Agencies .	11
1-3	Comparison of Water Transactions with Member Agencies for the Past Two Fiscal Years .....	12
2-1	Map of the Delta Region.....	22
2-2	Map of the Colorado River Basin .....	29
3-1	Supplies Managed through the State Water Project System .....	33
3-2	Supplies Managed through the Colorado River System .....	38
3-3	Historical Lake Mead & Lake Powell Storage.....	39
3-4	Recycled Water Production .....	40
3-5	Recovered Groundwater Production .....	40
3-6	Precipitation.....	46
3-7	Population Growth.....	47
3-8	Metropolitan’s Historical Water Transactions .....	48
3-9	Metropolitan’s Calendar Year Ending Storage Reserves .....	49
4-1	Total Dissolved Solids in East & West Branch SWP and CRA (Lake Havasu, 2006 to 2020).....	61
4-2	Total Dissolved Solids (TDS) in Plant Effluent, Annual Flow-Weighted Averages, Calendar Year 2020.....	62
4-3	Trihalomethane for All Plants Quarterly and Running Annual Averages.....	63
4-4	Haloacetic Acids in Metropolitan’s Distribution System, Quarterly and Running Annual Averages, 2006 to 2020 .....	64
4-5	TOC and Bromide in Treatment Plant Influent, 2006 to 2020.....	65
4-6	Bromate Levels in Treatment Plant Effluent, 2006 to 2020.....	67
4-7	Chlorophyll-a Concentrations and Phytoplankton Activity During a 2020 Bloom in Diamond Valley Lake. ....	72
4-8	Perchlorate Levels at Lake Havasu, 1997 to 2020 .....	75
4-9	Metropolitan’s CRA Electric Energy Use (kWh) Fiscal Year 2020/21 .....	90
4-10	CRA Energy Mix Fiscal Years 1987 to 2021 .....	91
5-1	Fiscal Year 2020/21 Capital Investment Expenditures .....	104
5-2	Metropolitan’s Capital Investment Plan – Fiscal Years 1995/96 to 2024/25 .....	105

## LIST OF ABBREVIATIONS

<b>Abbreviation</b>	<b>Term</b>
AEPCO	Arizona Electric Power Cooperative
AF	Acre-feet or acre-foot
AFY	Acre-feet or acre-foot per year
AVEK	Antelope Valley East-Kern Water Agency
CAISO	California Independent System Operator
CAP	Central Arizona Project
CEQA	California Environmental Quality Act
CFO	Chief Financial Officer
CIP	Capital Investment Plan
CRA	Colorado River Aqueduct
CVP	Central Valley Project
CVWD	Coachella Valley Water District
CY	Calendar year
DART	Days Away, Restricted, or Transferred
DBP	Disinfection Byproducts
DCP	Drought Contingency Plan or Delta Conveyance Project
DDW	Division of Drinking Water
DE&I	Diversity, Equity and Inclusion
DOE	Department of Energy
DVL	Diamond Valley Lake
DWR	Department of Water Resources
EEO	Equal Employment Opportunity
ELAP	Environmental Laboratory Accreditation Program
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
ESP	Energy Sustainability Plan
FSA	Future Supply Actions
FY	Fiscal year
GIS	Geographic Information System
HAA5	Five regulated haloacetic acids
HEP	Hydroelectric plant
ICS	Intentionally Created Surplus
IID	Imperial Irrigation District
IRP	Integrated Water Resources Plan
ITP	Incidental Take Permit
LADWP	Los Angeles Department of Water and Power
LRAA	Locational Running Annual Average

## LIST OF ABBREVIATIONS

Abbreviation	Term
LRP	Local Resources Program
µg/L	Micrograms per liter
MAF	Million acre-feet
MBR	Membrane bioreactors
MCL	Maximum Contaminant Level
MGD	Million gallons per day
MIB	Methylisoborneol
ND	Not detected
NDMA	N-Nitrosodimethylamine
OEHHA	Office of Environmental Health Hazard Assessment
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated biphenyl
PCCP	Prestressed Concrete Cylinder Pipe
PCS	Pressure Control Structure
PFAS	Per- and polyfluoroalkyl substances
PFBS	Perfluorobutane sulfonic acid
PFHxA	Perfluorohexanoic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonate
PSPS	Public safety power shutoff
PSW	Partnership for Safe Water
RAA	Running Annual Average
RRWAPC	Regional Recycled Water Advanced Purification Center
SB	Senate Bill
SDCWA	San Diego County Water Authority
SNWA	Southern Nevada Water Authority
SWP	State Water Project
SWRCB	State Water Resources Control Board
T&O	Taste and odor
TCP	1,2,3-trichloropropane
TDS	Total dissolved solids
TOC	Total organic carbon
TTHM	Total trihalomethane
WAPA	Western Area Power Administration
WRM	Water Resource Management
WSO	Water System Operations
WTP	Water Treatment Plant



*In June, Metropolitan's board was saddened by the sudden death of colleague Donald "Don" Galleano, who had represented Western Municipal Water District of Riverside County since 2015.*





*Metropolitan began wrapping up building renovations and seismic retrofits to its Union Station headquarters building during the COVID-19 pandemic, including the board room.*

# About Metropolitan

**T**he Metropolitan Water District of Southern California is a regional wholesaler that delivers water to 26 member public agencies in a service area of about 19 million people living in Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura counties.

Metropolitan is governed by a 38-member board of directors representing the 26 member agencies consisting of 14 cities, 11 municipal water districts and one county water authority. The member agencies or their sub-agencies serve the residents and businesses of more than 300 cities and numerous unincorporated communities.

Metropolitan directors are selected by their respective member agencies and may serve on the board of that particular member agency. It is a diverse group drawn from a variety of sectors, including business, government, engineering, agriculture, non-governmental organizations and the community at large. The board operates under a weighted voting system, with voting share determined by assessed property valuation.

The mission of Metropolitan is to provide its 5,200-square-mile service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way.

To supply Southern California with reliable and safe water, Metropolitan owns and operates an extensive range of facilities including the Colorado River Aqueduct, 15 hydroelectric plants, nine reservoirs, 830 miles of large-scale pipes, and five water treatment plants. Four of these treatment plants are among the largest plants in the nation. In fact, Metropolitan is the largest distributor of treated drinking water in the United States.

The district imports water from the Colorado River and Northern California to supplement local supplies, and helps its member agencies develop increased water conservation, recycling, storage and other local resource programs.

Metropolitan was established in 1928 under an act of the state Legislature to construct and operate the 242-mile Colorado River Aqueduct, which runs from an intake at Lake Havasu on the California-Arizona border, to an endpoint at Metropolitan's Lake Mathews reservoir in Riverside County.

When Metropolitan began delivering water, its service area consisted of about 625 square miles across 14 member agencies. Since that time, through annexations and the addition of another 12 member agencies, its service area has increased by 4,575 square miles.

In 1960, Metropolitan, followed by 30 other public agencies, signed a long-term contract that made possible the construction of the State Water Project's 444-mile California Aqueduct, which currently serves urban and agricultural agencies from the San Francisco Bay Area to Southern California. As the largest of the State Water Contractors, Metropolitan contracts with the state Department of Water Resources, which operates the SWP, for slightly less than half of all SWP allocations, subject to availability and SWP participation rights.

Water supplies from the SWP travel to Southern California via the California Aqueduct. Metropolitan's groundwater banking partnerships and water transfer and exchange arrangements secure additional supplies. Metropolitan also provides financial incentives to its member agencies for local investments in water management projects and programs. An increasing percentage of Southern California's water supply comes from these local sources, including conservation, water recycling and recovered groundwater.

Metropolitan's Board of Directors typically meets on the second Tuesday of each month. Board committee meetings usually occur on the Monday preceding the board meeting, and the second and fourth Tuesday of the month. Board and committee meetings are open to the public and are broadcast on the internet through Metropolitan's website, [mwdh2o.com](http://mwdh2o.com). A schedule of board and committee meetings is available on the website. An online [archive](#) of board documents dating to the 1920s also is available.

# THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

**MUNICIPAL WATER DISTRICTS**

Calleguas  
Central Basin  
Eastern  
Foothill  
Inland Empire  
Las Virgenes

**MEMBER CITIES**

Anaheim	Glendale	San Marino
Beverly Hills	Long Beach	Santa Ana
Burbank	Los Angeles	Santa Monica
Compton	Pasadena	Torrance
Fullerton	San Fernando	

**SAN DIEGO COUNTY  
WATER AUTHORITY**

**Calleguas MWD**  
Berylwood Heights Mutual Water  
Brandeis Mutual  
Butler Ranch  
California American Water Company  
California Water Service Company  
Camarillo  
Camrosa Water District  
Crestview Mutual Water Company  
Golden State Water Company  
Oxnard  
Pleasant Valley Mutual Water Company  
Simi Valley  
Solano Verde Mutual Water Company  
Thousand Oaks  
Triunfo Water and Sanitation District  
Ventura Co. Waterworks Dist. (Nos. 1, 19 and 38)  
Zone Mutual Water Company

**Central Basin MWD**  
Bell Gardens  
Bellflower-Somerset Mutual Water Co.  
California Water Service Company  
Cerritos  
Commerce  
Downey  
Golden State Water Company  
Huntington Park  
La Habra Heights County Water District  
Lakewood  
Liberty Utilities  
L.A. County Rancho Los Amigos  
Lynwood  
Maywood Mutual Water Co. Nos. 1, 2 and 3  
Montebello  
Norwalk

Orchard Dale Water District  
Paramount  
San Gabriel Valley Water Company  
Santa Fe Springs  
Signal Hill  
South Gate  
Suburban Water Systems  
Vernon  
Walnut Park Mutual Water Company  
Water Replenishment District of So. Cal.

**Eastern MWD**  
Hemet  
Lake Hemet Municipal Water District  
Nuevo Water Company  
Perris  
Rancho California Water District  
San Jacinto

**Foothill MWD**  
Crescenta Valley Water District  
La Canada Irrigation District  
Las Flores Water Company  
Liberty Utilities  
Lincoln Avenue Water Company  
Rubio Canon Land & Water Assoc.  
Valley Water Company

**Inland Empire Utilities Agency**  
Chino  
Chino Hills  
Cucamonga Valley Water District  
Fontana Water Company  
Monte Vista Water District  
Ontario  
San Antonio Water Company  
Upland  
Water Facilities Authority  
West Valley Water District

**MWD of Orange County**  
Brea  
Buena Park  
East Orange County Water District  
El Toro Water District  
Emerald Bay Service District  
Fountain Valley  
Garden Grove  
Golden State Water Company  
Huntington Beach  
Irvine Ranch Water District  
La Habra  
La Palma  
Laguna Beach County Water Dist.  
Mesa Water District  
Moulton Niguel Water District  
Newport Beach  
Orange  
Orange County Water District  
San Clemente  
San Juan Capistrano  
Santa Margarita Water District  
Seal Beach  
Serrano Water District  
South Coast Water District  
Trabuco Canyon Water District  
Tustin  
Westminster  
Yorba Linda Water District

**San Diego County Water Authority**  
Carlsbad Municipal Water District  
Del Mar  
Escondido  
Fallbrook Public Utility District  
Helix Water District

Lakeside Water District  
National City  
Oceanside  
Olivenhain Municipal Water District  
Otay Water District  
Padre Dam Municipal Water District  
Camp Pendleton Marine Corps Base  
Poway  
Rainbow Municipal Water District  
Ramona Municipal Water District  
Rincon del Diablo Municipal Water District  
San Diego  
San Dieguito Water District  
Santa Fe Irrigation District  
South Bay Irrigation District  
Sweetwater Authority  
Vallecitos Water District  
Valley Center Municipal Water District  
Vista Irrigation District  
Yuima Municipal Water District

**Three Valleys MWD**  
Boy Scouts of America, Firestone Ranch Reserv.  
Cal Poly Pomona  
Covina  
Covina Irrigating Company  
Glendora  
Golden State Water Co.  
La Verne  
Mt. San Antonio College  
Pomona  
Rowland Water District Suburban Water Systems  
Valencia Heights Water Company  
Walnut Valley Water District

**Upper San Gabriel Valley MWD**  
Arcadia  
Azusa  
Monrovia  
Main San Gabriel Basin Watermaster/Alhambra  
Golden State Water Company  
South Pasadena  
Suburban Water Systems  
Valley County Water District

**West Basin MWD**  
California American Water  
California Water Service  
Golden State Water Company  
El Segundo  
Inglewood  
Lomita  
Los Angeles County Waterworks District 29  
Manhattan Beach  
Water Replenishment Dist. of So. Cal.

**Western MWD of Riverside County**  
Box Springs Mutual Water Company Corona  
Eagle Valley Mutual Water Company Corona  
Elsinore Valley MWD  
Norco  
Rancho California Water District  
Riverside  
Temescal Valley Water District

*Figure 1. Composition of The Metropolitan Water District of Southern California*

**DIRECTORS**  
JUNE 30, 2021



**Chairwoman**  
Gloria D. Gray  
*West Basin Municipal  
Water District*



**Vice Chair**  
David D. De Jesus  
*Three Valleys  
Municipal Water  
District*



**Vice Chair**  
Cynthia Kurtz  
*Pasadena*



**Vice Chair**  
Heather Repenning  
*Los Angeles*



**Secretary**  
Judy Abdo  
*Santa Monica*

**DIRECTORS**  
**JUNE 30, 2021**



Linda Ackerman  
*Municipal Water  
District of  
Orange County*



Robert Apodaca  
*Central Basin  
Municipal Water  
District*



Richard W. Atwater  
*Foothill Municipal  
Water District*



Steve Blois  
*Calleguas Municipal  
Water District*



Jerry Butkiewicz  
*San Diego County  
Water Authority*



Michael Camacho  
*Inland Empire  
Utilities Agency*



Gloria Cordero  
*Long Beach*



Brenda Dennstedt  
*Western Municipal  
Water District of  
Riverside County*



Larry D. Dick  
*Municipal Water  
District of  
Orange County*



Dennis Erdman  
*Municipal Water  
District of  
Orange County*



Stephen J. Faessel  
*Anaheim*



Anthony R. Fellow  
*Upper San Gabriel  
Valley Municipal  
Water District*

**DIRECTORS**  
**JUNE 30, 2021**



**S. Gail Goldberg**  
*San Diego County  
Water Authority*



**Phillip D. Hawkins**  
*Central Basin  
Municipal Water  
District*



**Michael T. Hogan**  
*San Diego County  
Water Authority*



**Fred Jung**  
*Fullerton*



**Ardy Kassahkian**  
*Glendale*



**Russell Lefevre**  
*Torrance*



**Miguel Angel Luna**  
*Los Angeles*



**Tana L. McCoy**  
*Compton*



**John T. Morris**  
*San Marino*



**John W. Murray Jr.**  
*Los Angeles*



**Adán Ortega**  
*San Fernando*



**Matt S. Petersen**  
*Los Angeles*



**DIRECTORS**  
**JUNE 30, 2021**



**Glen D. Peterson**  
*Las Virgenes  
Municipal Water  
District*



**Thai Viet Phan**  
*Santa Ana*



**Barry D. Pressman**  
*Beverly Hills*



**Tracy Quinn**  
*Los Angeles*



**Marsha Ramos**  
*Burbank*



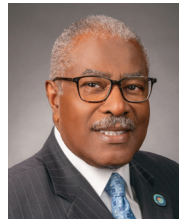
**Randy A. Record**  
*Eastern Municipal  
Water District*



**Tim M. Smith**  
*San Diego County  
Water Authority*



**Satoru Tamaribuchi**  
*Municipal Water  
District of Orange  
County*



**Harold C. Williams**  
*West Basin  
Municipal Water  
District*



**BOARD OF DIRECTORS**  
**July 1, 2020 to June 30, 2021**

**OFFICERS OF THE BOARD**

Chairwoman.....Gloria D. Gray  
Vice Chair.....Jerry Butkiewicz  
Vice Chair.....David D. De Jesus  
Vice Chair.....Cynthia Kurtz  
Vice Chair.....Heather Repenning  
Secretary .....Judy Abdo

**MEMBERS OF THE BOARD**

Anaheim.....Stephen J. Faessel  
Beverly Hills.....Barry D. Pressman  
Burbank.....Marsha Ramos  
Calleguas Municipal Water District .....Steve Blois  
Central Basin Municipal Water District .....Robert Apodaca  
Central Basin Municipal Water District .....Phillip D. Hawkins  
Compton .....Tana L. McCoy  
Eastern Municipal Water District .....Randy A. Record  
Foothill Municipal Water District.....Richard W. Atwater  
Fullerton.....Adán Ortega  
Fullerton.....Fred Jung  
Glendale.....Ardy Kassakhian  
Inland Empire Utilities Agency .....Michael Camacho  
Las Virgenes Municipal Water District .....Glen D. Peterson  
Long Beach.....Gloria Cordero  
Los Angeles .....John W. Murray Jr.  
Los Angeles .....Jesús E. Quiñonez  
Los Angeles .....Tracy Quinn  
Los Angeles .....Heather M. Repenning  
Los Angeles .....Matt S. Petersen  
Los Angeles .....Miguel Angel Luna

Municipal Water District of Orange County .....	Linda Ackerman
Municipal Water District of Orange County .....	Larry D. Dick
Municipal Water District of Orange County .....	Larry McKenney
Municipal Water District of Orange County .....	Satoru “Sat” Tamaribuchi
Municipal Water District of Orange County .....	Dennis Erdman
Pasadena .....	Cynthia Kurtz
San Diego County Water Authority.....	Michael T. Hogan
San Diego County Water Authority.....	Jerry Butkiewicz
San Diego County Water Authority.....	Tim M. Smith
San Diego County Water Authority.....	S. Gail Goldberg
San Fernando .....	Sylvia Ballin
San Fernando .....	Adán Ortega
San Marino.....	John T. Morris
Santa Ana.....	Jose Solorio
Santa Ana.....	Thai Viet Phan
Santa Monica .....	Judy Abdo
Three Valleys Municipal Water District.....	David D. De Jesus
Torrance.....	Russell Lefevre
Upper San Gabriel Valley	
Municipal Water District .....	Charles M. Treviño
Upper San Gabriel Valley	
Municipal Water District .....	Anthony R. Fellow
West Basin Municipal Water District.....	Gloria D. Gray
West Basin Municipal Water District.....	Harold C. Williams
Western Municipal Water District	
of Riverside County .....	Donald Galleano
Western Municipal Water District	
of Riverside County .....	Brenda Dennstedt

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Note:

This list includes all officers and members who served on the board at any time during the fiscal year.

**BOARD OF DIRECTORS**  
**MEMBERS OF STANDING COMMITTEES**  
**June 30, 2021**

**EXECUTIVE COMMITTEE**

Gloria D. Gray, Chair  
David D. De Jesus, Vice Chair  
Cynthia Kurtz, Vice Chair  
Heather M. Repenning, Vice Chair  
Judy Abdo, Secretary  
Linda Ackerman  
Richard W. Atwater  
Michael Camacho

Gloria Cordero  
Larry D. Dick  
Michael T. Hogan  
John W. Murray Jr.  
Marsha Ramos  
Randy A. Record  
Tim M. Smith

**AUDIT AND ETHICS**

Marsha Ramos, Chair  
Tana McCoy, Vice Chair  
Linda Ackerman  
Steve Blois  
Jerry Butkiewicz  
Phillip D. Hawkins

Michael T. Hogan  
Fred Jung  
Cynthia Kurtz  
Randy A. Record  
Tim M. Smith

**BAY-DELTA**

Linda Ackerman, Chair  
Stephen Faessel, Vice Chair  
Robert Apodaca  
Richard W. Atwater  
Steve Blois  
Gloria Cordero  
Michael T. Hogan  
Cynthia Kurtz

Russell Lefevre  
Tana McCoy  
John T. Morris  
John W. Murray Jr.  
Glen D. Peterson  
Barry D. Pressman  
Heather M. Repenning

**COMMUNICATIONS AND LEGISLATION**

Gloria Cordero, Chair  
Cynthia Kurtz, Vice Chair  
Judy Abdo  
Linda Ackerman  
Jerry Butkiewicz  
Dennis Erdman  
Miguel Angel Luna

John T. Morris  
John W. Murray Jr.  
Glen D. Peterson  
Tracy Quinn  
Randy A. Record  
Heather M. Repenning  
Tim M. Smith

**ENGINEERING AND OPERATIONS**

Tim M. Smith, Chair  
Robert Apodaca  
Steve Blois  
Michael Camacho  
David D. De Jesus  
Larry D. Dick  
Stephen Faessel

Russell Lefevre  
John T. Morris  
John W. Murray Jr.  
Glen D. Peterson  
Heather M. Repenning  
Harold C. Williams

## **FINANCE AND INSURANCE**

Randy A. Record, Vice Chair  
Steve Blois  
Larry D. Dick  
Stephen Faessel  
S. Gail Goldberg  
Phillip D. Hawkins

Fred Jung  
Adán Ortega  
Tracy Quinn  
Marsha Ramos  
Tim M. Smith  
Satoru “Sat” Tamaribuchi

## **LEGAL AND CLAIMS**

Larry D. Dick, Chair  
Richard W. Atwater  
Michael Camacho  
Anthony R. Fellow  
S. Gail Goldberg  
Ardy Kassakhian

John W. Murray Jr.  
Thai Viet Phan  
Randy A. Record  
Tim M. Smith  
Satoru “Sat” Tamaribuchi

## **ORGANIZATION, PERSONNEL AND TECHNOLOGY**

John W. Murray Jr., Chair  
Tana L. McCoy, Vice Chair  
Steve Blois  
Michael Camacho  
Gloria Cordero  
Stephen Faessel  
Anthony R. Fellow  
Michael T. Hogan

Fred Jung  
Russell Lefevre  
John T. Morris  
Adán Ortega  
Glen D. Peterson  
Tim M. Smith  
Satoru “Sat” Tamaribuchi  
Harold C. Williams

## **REAL PROPERTY AND ASSET MANAGEMENT**

Michael T. Hogan, Chair  
Glen D. Peterson, Vice Chair  
Michael Camacho  
Larry D. Dick  
Dennis Erdman

Ardy Kassakhian  
Cynthia Kurtz  
Randy A. Record  
Tim M. Smith

## **WATER PLANNING AND STEWARDSHIP**

Richard W. Atwater, Chair  
Cynthia Kurtz, Vice Chair  
Judy Abdo  
Linda Ackerman  
Gloria Cordero  
David D. De Jesus  
Larry D. Dick  
S. Gail Goldberg

Michael T. Hogan  
Russell Lefevre  
Miguel Angel Luna  
John T. Morris  
Matt S. Petersen  
Glen D. Peterson  
Barry D. Pressman  
Randy A. Record

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Note:

For some committees, the vice chair or chair positions were vacant as of June 30, 2021.

**HISTORICAL  
ROLL OF DIRECTORS  
June 30, 2021**

**ANAHEIM**

A. W. Franzen..... March 1, 1929 to April 11, 1930  
O. E. Steward..... April 18, 1930 to April 12, 1935  
E. P. Hapgood..... May 3, 1935 to June 14, 1960  
Charles A. Pearson..... July 12, 1960 to May 8, 1972  
Keith A. Murdoch..... June 13, 1972 to May 29, 1979  
Joseph C. Truxaw ..... August 17, 1979 to November 20, 1990  
Bob Kazarian ..... November 20, 1990 to July 12, 1994  
Edward G. Alario..... November 8, 1994 to April 14, 1998  
S. Dale Stanton ..... April 14, 1998 to July 8, 2004  
Tom Tait ..... July 8, 2004 to December 13, 2005  
Marcie L. Edwards..... December 13, 2005 to August 18, 2009  
Kristine L. Murray ..... August 18, 2009 to August 20, 2014  
Don Calkins ..... October 3, 2014 to June 8, 2015  
STEPHEN J. FAESSEL ..... June 8, 2015 to

**BEVERLY HILLS**

Paul E. Schwab..... March 1, 1929 to June 19, 1931  
George R. Barker..... June 19, 1931 to August 2, 1935  
Arthur Taylor..... August 2, 1935 to August 2, 1951  
Floyd E. Fischer..... August 17, 1951 to December 2, 1977  
Ellen Stern Harris ..... January 10, 1978 to March 10, 1981  
Nicholas H. Cominos..... March 10, 1981 to September 1, 1984  
Mel Odum..... January 11, 1983 to February 14, 1984  
Ina S. Roth..... February 14, 1984 to February 11, 1992  
Dan Webster ..... March 10, 1992 to September 8, 1999  
Betty H. Harris..... September 8, 1999 to June 14, 2007  
Robert Wunderlich..... July 6, 2007 to October 10, 2017  
BARRY D. PRESSMAN..... October 10, 2017 to

**BURBANK**

Harvey E. Bruce..... March 1, 1929 to February 11, 1933  
James L. Norwood..... March 10, 1933 to April 30, 1943  
May 9, 1947 to October 13, 1953  
Frank C. Tillson..... May 14, 1943 to May 9, 1947  
Walter H. Long ..... October 13, 1953 to June 13, 1961  
Earle C. Blais..... June 13, 1961 to June 11, 1985  
Michael A. Nolan..... June 11, 1985 to July 9, 1991  
Larry L. Stamper..... July 9, 1991 to June 6, 1995  
Thomas H. McCauley..... June 6, 1995 to December 16, 1998  
Fred Lantz..... January 12, 1999 to March 9, 1999  
George E. Battey Jr..... March 9, 1999 to December 10, 2001



Pedro Aceituno.....February 14, 2017 to March 13, 2017  
William C. Gedney.....March 14, 2017 to June 25, 2018  
Frank M. Heldman .....March 11, 2019 to October 3, 2019

COASTAL MUNICIPAL WATER DISTRICT  
(absorbed into MWDOC in 2001)

C. C. Cravath.....August 14, 1942 to January 22, 1957  
Lynndon L. Aufdenkamp .....January 22, 1957 to February 12, 1991  
James E. O'Connor.....December 7, 1976 to July 1, 1979  
John Killefer.....January 12, 1982 to September 9, 1993  
Wayne T. McMurray.....February 12, 1991 to December 31, 2000  
Donald C. Simpson .....October 7, 1996 to December 9, 1996  
Langdon W. Owen .....December 9, 1996 to January 17, 2001

COMPTON

C. A. Dickison.....July 17, 1931 to January 20, 1933  
William H. Foster.....January 20, 1933 to June 28, 1935  
Warren W. Butler .....June 28, 1935 to January 24, 1980  
Regina Murph .....March 11, 1980 to March 25, 2003  
Kenneth M. Orduna.....April 8, 2003 to January 14, 2004  
Isadore Hall III.....February 9, 2004 to April 13, 2009  
Yvonne Arcenaux.....April 13, 2009 to September 14, 2010  
March 11, 2014 to November 10, 2015  
Diane Sanchez.....September 14, 2010 to March 11, 2014  
Janna Zurita.....November 10, 2015 to July 16, 2019  
TANA L. MCCOY.....August 19, 2019 to

EASTERN MUNICIPAL WATER DISTRICT

Irwin E. Farrar.....August 31, 1951 to March 1, 1982  
Doyle F. Boen .....March 9, 1982 to October 11, 1994  
Chester C. Gilbert.....October 11, 1994 to June 1, 1999  
Clayton A. Record Jr.....June 1, 1999 to January 9, 2001  
Marion V. Ashley.....January 9, 2001 to January 6, 2003  
RANDY A. RECORD .....January 14, 2003 to

FOOTHILL MUNICIPAL WATER DISTRICT

Nelson Hayward.....February 8, 1955 to July 4, 1959  
Conrad R. Fanton .....November 10, 1959 to November 2, 1964  
A. B. Smedley .....April 13, 1965 to August 1, 1990  
Brooks T. Morris.....September 11, 1990 to November 27, 1991  
William T. O'Neil.....January 14, 1992 to May 10, 1999  
James T. Edwards.....May 10, 1999 to April 1, 2014  
RICHARD W. ATWATER.....April 3, 2014 to

## FULLERTON

Walter Humphreys..... April 10, 1931 to January 19, 1945  
H. H. Kohlenberger..... July 27, 1945 to March 7, 1959  
Hubert C. Ferry..... February 23, 1960 to February 8, 1983  
Norman L. De Vilbiss..... February 8, 1983 to April 12, 1988  
James H. Blake ..... August 23, 1988 to August 3, 2012  
Thomas Babcock..... September 6, 2012 to February 11, 2014  
Jennifer Fitzgerald ..... February 11, 2014 to July 7, 2014  
Peter A. Beard..... July 7, 2014 to January 15, 2019  
Adán Ortega..... February 11, 2019 to February 8, 2021  
FRED JUNG..... February 8, 2021 to

## GLENDALE

W. Turney Fox..... March 1, 1929 to November 27, 1931  
Samuel G. McClure ..... November 27, 1931 to January 13, 1933  
Frank P. Taggart ..... January 13, 1933 to August 31, 1934  
Bernard C. Brennan ..... August 31, 1934 to April 23, 1937  
Herman Nelson ..... June 4, 1937 to August 27, 1954  
Paul L. Burkhard..... September 28, 1954 to June 10, 1958  
Normal C. Hayhurst..... June 10, 1958 to June 9, 1970  
Lauren W. Grayson..... June 9, 1970 to May 21, 1972  
William H. Fell ..... June 13, 1972 to July 13, 1976  
C. E. Perkins ..... July 13, 1976 to July 13, 1988  
James M. Rez..... August 23, 1988 to March 9, 2009  
Peter Kavounas ..... March 9, 2009 to December 8, 2009  
Laura Friedman..... December 8, 2009 to December 4, 2016  
Zareh Sinanyan ..... February 14, 2017 to June 7, 2019  
Vartan Gharpetian..... October 8, 2019 to March 31, 2020  
ARDY KASSAKHIAN ..... May 21, 2020 to

## INLAND EMPIRE UTILITIES AGENCY (formerly Chino Basin MWD)

A. C. Reynolds..... February 12, 1952 to March 12, 1963  
Ray W. Ferguson ..... March 12, 1963 to December 31, 1980  
Carl B. Masingale ..... March 10, 1981 to August 9, 1984  
John G. Gilday ..... September 11, 1984 to February 15, 1985  
Edward A. Girard..... March 12, 1985 to May 31, 1990  
Anne W. Dunihue ..... September 20, 1988 to February 11, 1992  
Bill M. Hill..... August 21, 1990 to February 9, 1999  
Dwight F. French..... February 11, 1992 to August 18, 1994  
Wyatt L. Troxel..... August 19, 1994 to November 14, 2003



Gene Koopman.....February 9, 1999 to December 31, 2000  
November 14, 2003 to February 10, 2009  
Angel Santiago.....February 10, 2009 to February 3, 2011  
MICHAEL CAMACHO .....February 3, 2011 to January 21, 2019  
January 8, 2020 to  
Jasmin A. Hall.....February 11, 2019 to January 8, 2020

LAS VIRGENES MUNICIPAL WATER DISTRICT

Earle Brookins.....December 13, 1960 to March 26, 1963  
A. Myron McBride.....March 26, 1963 to May 11, 1965  
A. Macneil Stelle.....June 8, 1965 to October 23, 1967  
March 11, 1975 to February 9, 1993  
Whitney P. Reeve.....December 19, 1967 to March 11, 1975  
GLEN D. PETERSON.....February 9, 1993 to

LONG BEACH

Nowland M. Reid.....April 10, 1931 to January 27, 1933  
W. M. Cook.....January 27, 1933 to April 30, 1943  
Gus A. Walker.....April 30, 1943 to December 31, 1976  
Lloyd C. Leedom .....May 9, 1947 to June 30, 1979  
Samuel C. Rue.....October 9, 1979 to March 12, 1985  
Ida Frances Lowry.....March 12, 1985 to February 9, 1993  
Henry J. Meyer.....February 9, 1993 to August 19, 1997  
Helen Z. Hansen.....August 19, 1997 to May 13, 2008  
Suja Lowenthal.....May 13, 2008 to September 13, 2016  
GLORIA CORDERO.....September 13, 2016 to

LOS ANGELES

John R. Haynes .....March 1, 1929 to February 4, 1930  
John R. Richards .....March 1, 1929 to October 28, 1947  
W. P. Whitsett .....March 1, 1929 to January 10, 1947  
John G. Bullock.....November 1, 1929 to September 15, 1933  
O. T. Johnson Jr. ....November 5, 1929 to August 29, 1930  
W. L. Honnold .....February 28, 1930 to July 21, 1933  
J. Eisner.....August 29, 1930 to July 2, 1937  
Walter A. Ham .....January 20, 1933 to January 4, 1935  
D. W. Pontius .....January 20, 1933 to September 3, 1955  
Perry H. Greer.....July 21, 1933 to August 14, 1950  
V. H. Rossetti.....October 13, 1933 to November 19, 1960  
Otto J. Emme.....January 11, 1935 to October 22, 1947  
Louis S. Nordlinger.....August 13, 1937 to June 8, 1940

Joseph Jensen.....	August 16, 1940 to February 3, 1944 March 8, 1946 to July 8, 1974
Ransom W. Chase.....	March 14, 1947 to February 11, 1975
Gordon B. Crary .....	March 14, 1947 to November 8, 1959
Howard D. Mills .....	March 14, 1947 to March 17, 1965
W. R. Fawcett .....	May 13, 1952 to November 27, 1953
Luther C. Anderson.....	January 12, 1954 to February 11, 1975
Noah Dietrich.....	November 8, 1955 to November 23, 1970
Ferdinand Mendenhall .....	July 29, 1958 to October 8, 1974
Ben P. Griffith.....	August 9, 1960 to June 7, 1961
Pietro Di Carlo .....	February 14, 1961 to November 7, 1967
William S. Peterson .....	February 14, 1961 to August 10, 1979
Aubrey E. Austin Jr. ....	February 28, 1961 to May 13, 1975
Albert F. Bush.....	November 14, 1961 to February 11, 1975
John W. Luhring .....	January 16, 1962 to August 8, 1967
Joseph M. Quinn.....	May 14, 1968 to September 18, 1973
B. Walter Hicks.....	May 8, 1973 to August 20, 1974
Samuel B. Nelson .....	September 18, 1973 to October 9, 1984
Katherine B. Dunlap .....	August 20, 1974 to September 11, 1984
Jerry Godell.....	October 8, 1974 to October 9, 1984
Edward L. Kussman.....	October 8, 1974 to November 8, 1993
Herman Leavitt .....	February 11, 1975 to August 19, 1975
Yolanda M. Nava.....	February 11, 1975 to September 14, 1976
S. Dell Scott .....	February 11, 1975 to October 12, 1993
Willie J. Stennis .....	May 13, 1975 to December 31, 1978
Mladin Zarubica.....	August 19, 1975 to March 16, 1981
Soledad S. Garcia.....	September 14, 1976 to September 11, 1984
Mark Lainer .....	November 13, 1979 to February 12, 1991
Mark Nathanson.....	April 14, 1981 to September 11, 1984
Michael Glazer.....	September 11, 1984 to April 9, 1991
Helen Romero Shaw .....	September 11, 1984 to November 8, 1993
Marilyn L. Garcia .....	October 9, 1984 to February 9, 1993
Rachel Levin .....	October 9, 1984 to April 4, 1989
Frank S. Wyle .....	October 9, 1984 to August 1, 1991
Robert Abernethy.....	April 4, 1989 to October 13, 1992 February 9, 1993 to November 8, 1993
Vernon R. Watkins .....	February 12, 1991 to August 20, 1992
Alf W. Brandt .....	April 9, 1991 to February 13, 1996
Michael J. Gage .....	August 1, 1991 to September 21, 1993
Carolyn L. Green .....	August 20, 1992 to December 31, 1995 April 30, 1996 to May 16, 1997

William G. Luddy .....October 13, 1992 to May 10, 2005  
 George Wein .....October 12, 1992 to August 20, 2002  
 David Y. Handelman.....November 8, 1993 to November 14, 1995  
 Kenneth T. Lombard .....November 8, 1993 to April 11, 1995  
 Katherine W. Moret .....November 8, 1993 to December 31, 2000  
 Christopher C. Pak .....November 8, 1993 to December 19, 1995  
 Bonny L. Herman.....April 11, 1995 to April 12, 2004  
 Larry J. Kosmont.....February 13, 1996 to December 31, 2000  
 Aaron E. Michaelsen.....February 13, 1996 to January 13, 1997  
 L. Michael Russell .....June 11, 1996 to January 12, 1998  
 S. David Freeman.....January 12, 1998 to December 31, 2000  
 Ronald R. Gastelum .....January 12, 1998 to November 10, 1998  
 Jorge G. Castro.....June 7, 1999 to October 7, 2003  
 Deborah Dentler .....August 20, 2002 to January 6, 2006  
 David Farrar .....October 7, 2003 to January 6, 2006  
 Robert B. Simonds .....April 12, 2004 to January 6, 2006  
 Ronald F. Deaton .....May 10, 2005 to January 6, 2006  
 Aaron A. Grunfeld .....January 6, 2006 to May 12, 2014  
 JOHN W. MURRAY JR. ....January 6, 2006 to  
 Jesús E. Quiñonez .....January 6, 2006 to March 4, 2021  
 Nancy Sutley .....January 6, 2006 to May 12, 2009  
 David W. Fleming.....May 12, 2009 to January 14, 2014  
 Paul Koretz.....January 14, 2014 to April 11, 2016  
 Glen C. Dake .....May 12, 2014 to November 5, 2019  
 Lorraine Paskett .....December 7, 2015 to January 16, 2020  
 Mark Gold.....April 11, 2016 to July 9, 2019  
 TRACY QUINN .....September 24, 2019 to  
 HEATHER M. REPENNING .....December 18, 2019 to  
 MATT S. PETERSEN .....October 8, 2020 to  
 MIGUEL ANGEL LUNA.....March 4, 2021 to

MUNICIPAL WATER DISTRICT OF ORANGE COUNTY

Glenn P. Allen.....December 11, 1951 to December 17, 1986  
 W. B. Hellis.....August 19, 1955 to February 9, 1975  
 William J. Teague .....February 11, 1969 to October 10, 1972  
 Robert R. Dowling .....September 14, 1971 to May 11, 1976  
 Doyle Miller.....October 10, 1972 to October 31, 1987  
 Carl J. Kymla .....October 9, 1973 to October 20, 1993  
 Philip J. Reilly.....December 9, 1975 to December 8, 1978  
 Gerald E. Price .....May 11, 1976 to December 31, 1988  
 M. Roy Knauft Jr.....September 13, 1977 to January 12, 1993  
 Kenneth H. Witt .....October 13, 1981 to December 31, 2000

William F. Davenport ..... January 13, 1987 to February 14, 1995  
 John V. Foley ..... August 22, 1989 to March 21, 2014  
 Wesley M. Bannister ..... January 12, 1993 to October 31, 2006  
 Jerry A. King ..... January 11, 1994 to July 21, 1999  
 Robert J. Huntley ..... February 14, 1995 to October 31, 1999  
 Peer A. Swan ..... August 31, 1999 to June 30, 2002  
 Ed Royce Sr. .... February 7, 2000 to December 31, 2000  
 Langdon W. Owen ..... January 17, 2001 to April 24, 2003  
 Ergun Bakall ..... July 1, 2002 to December 8, 2009  
 LARRY D. DICK ..... August 12, 2003 to  
 Steve Anderson ..... January 30, 2007 to January 16, 2008  
 LINDA ACKERMAN ..... April 8, 2008 to  
 Brett R. Barbre ..... December 8, 2009 to May 26, 2020  
 Larry McKenney ..... October 13, 2014 to November 10, 2020  
 SATORU TAMARIBUCHI ..... August 12, 2020 to  
 DENNIS ERDMAN ..... March 1, 2021 to

PASADENA

Franklin Thomas ..... March 1, 1929 to August 27, 1952  
 Morris S. Jones ..... September 16, 1952 to October 10, 1961  
 Robert B. Diemer ..... January 16, 1962 to October 27, 1966  
 Don C. McMillan ..... January 10, 1967 to October 26, 1975  
 Karl A. Johnson ..... December 9, 1975 to April 11, 1980  
 Martin Goldsmith ..... July 8, 1980 to June 11, 1985  
 Timothy F. Brick ..... June 11, 1985 to December 31, 2012  
 CYNTHIA KURTZ ..... April 8, 2013 to

SAN DIEGO COUNTY WATER AUTHORITY

Fred A. Heilbron ..... January 10, 1947 to February 14, 1973  
 J. L. Burkholder ..... January 24, 1947 to April 6, 1953  
 Richard S. Holmgren ..... August 11, 1953 to February 19, 1963  
 J. William Fisher ..... April 12, 1955 to October 11, 1955  
 Hans H. Doe ..... August 20, 1959 to October 20, 1986  
 Paul Beermann ..... February 19, 1963 to July 9, 1963  
 Harry Griffen ..... February 19, 1963 to October 13, 1997  
 George R. Henderson ..... August 13, 1963 to November 29, 1964  
 Ralph E. Graham ..... September 14, 1971 to January 14, 1975  
 August 17, 1979 to June 28, 1982  
 Raymond E. Badger ..... September 18, 1973 to May 14, 1979  
 Lloyd L. Lee ..... November 20, 1973 to December 31, 1980  
 John M. Cranston ..... January 14, 1975 to December 31, 1986  
 John P. Starkey ..... January 13, 1981 to March 12, 1992

Michael D. Madigan.....	August 18, 1982 to October 13, 1992
Francesca M. Krauel .....	November 8, 1983 to August 20, 2001
John F. Hennigar .....	November 18, 1986 to October 31, 1989
Dale Mason .....	January 13, 1987 to February 8, 1999
Herbert H. Stickney.....	November 14, 1989 to April 13, 1993
Christine M. Frahm .....	April 14, 1992 to March 12, 1999
John M. Leach.....	October 13, 1992 to October 25, 1993
Joseph Parker .....	April 13, 1993 to January 11, 1999
	June 7, 1999 to February 10, 2009
Mark W. Watton.....	December 13, 1993 to January 12, 1998
	February 8, 1999 to May 14, 2001
Gordon W. Tinker.....	October 12, 1997 to December 31, 2000
Claude A. “Bud” Lewis.....	January 12, 1998 to December 7, 2006
James F. Turner.....	January 11, 1999 to December 31, 2000
	February 10, 2003 to August 17, 2004
Harold W. Ball .....	May 14, 2001 to February 10, 2003
George I. Loveland.....	October 15, 2001 to November 1, 2006
W.D. “Bud” Pocklington.....	August 17, 2004 to December 14, 2010
James H. “Jim” Bond.....	November 1, 2006 to February 10, 2009
James M. Barrett .....	December 7, 2006 to July 12, 2010
Keith Lewinger.....	February 10, 2009 to July 15, 2018
Fern Steiner .....	February 10, 2009 to March 1, 2019
Lynne L. Heidel .....	July 12, 2010 to November 5, 2012
James Bowersox.....	December 14, 2010 to December 12, 2011
Douglas Wilson.....	December 12, 2011 to August 27, 2013
Vincent Mudd .....	November 5, 2012 to October 13, 2014
MICHAEL T. HOGAN.....	August 27, 2013 to
Yen C. Tu.....	October 13, 2014 to July 5, 2016
Elsa Saxod.....	October 11, 2016 to July 15, 2018
TIM M. SMITH .....	July 24, 2018 to
JERRY BUTKIEWICZ.....	July 24, 2018 to
S. GAIL GOLDBERG .....	March 11, 2019 to

#### SAN FERNANDO

Neville R. Lewis.....	December 14, 1971 to August 21, 1984
Pat J. Modugno .....	August 21, 1984 to August 8, 1986
Doude Wysbeek .....	December 9, 1986 to June 10, 1997
Sergio Rascon .....	June 10, 1997 to July 7, 2000
Hugo C. Mejia.....	July 7, 2000 to November 8, 2004
Steven Veres .....	November 8, 2004 to September 5, 2007
Sylvia Ballin.....	September 5, 2007 to November 6, 2018
	May 13, 2019 to March 4, 2021

Yazdan Emrani ..... November 6, 2018 to April 19, 2019  
ADÁN ORTEGA..... March 4, 2021 to

#### SAN MARINO

Harry L. Heffner ..... March 1, 1929 to September 29, 1933  
John H. Ramboz..... September 29, 1933 to November 18, 1960  
Howard A. Miller..... January 10, 1961 to April 26, 1975  
Preston Hotchkis ..... June 10, 1975 to September 10, 1986  
Preston B. Hotchkis ..... March 10, 1987 to March 13, 1990  
JOHN T. MORRIS ..... March 13, 1990 to

#### SANTA ANA

S.H. Finley ..... March 1, 1929 to April 10, 1942  
A. H. Allen..... April 10, 1942 to December 10, 1968  
Howard W. Crooke ..... December 10, 1968 to September 1, 1977  
John Garthe ..... November 8, 1977 to July 9, 1991  
Daniel H. Young ..... July 9, 1991 to December 31, 1993  
Lee Harry ..... February 8, 1994 to April 8, 1997  
Thom Coughran ..... April 8, 1997 to February 3, 2005  
Daniel E. Griset..... February 3, 2005 to March 10, 2015  
Michele Martinez..... March 10, 2015 to January 21, 2019  
Jose Solorio..... February 12, 2019 to January 25, 2021  
THAI VIET PHAN..... January 25, 2021 to

#### SANTA MONICA

George H. Hutton..... March 1, 1929 to January 16, 1931  
Arthur A. Weber ..... January 16, 1931 to October 12, 1934  
William H. Carter ..... February 15, 1935 to March 13, 1936  
Edmond S. Gillette..... June 12, 1936 to January 8, 1937  
Arthur P. Creel..... January 8, 1937 to March 3, 1941  
Samuel G. McClure ..... March 21, 1941 to November 14, 1947  
Samuel J. Crawford..... December 5, 1947 to September 15, 1959  
Mark T. Gates ..... January 12, 1960 to July 12, 1972  
Francis A. Goplen..... August 18, 1972 to December 9, 1980  
Robert Gottlieb ..... December 9, 1980 to December 8, 1987  
Christine E. Reed ..... March 8, 1988 to April 24, 1996  
JUDY ABDO..... June 11, 1996 to

THREE VALLEYS MUNICIPAL WATER DISTRICT

Hugh W. Stiles .....December 8, 1950 to December 31, 1961  
Arthur H. Cox .....January 16, 1962 to April 16, 1974  
William C. Leech .....April 16, 1974 to February 9, 1982  
William H. Koch .....February 9, 1982 to February 12, 1985  
Mel Harper .....February 12, 1985 to February 18, 1986  
Richard W. Hansen .....June 10, 1986 to August 20, 1991  
Bruce R. J. Milne .....August 20, 1991 to February 10, 1997  
Henry S. Barbosa .....February 10, 1997 to February 20, 2002  
DAVID D. DE JESUS .....March 8, 2002 to

TORRANCE

John Dennis .....March 17, 1931 to April 14, 1933  
J. R. Jensen .....April 14, 1933 to December 31, 1933  
Charles T. Rippey .....January 19, 1934 to August 8, 1950  
George W. Stevens .....September 22, 1950 to June 13, 1961  
George A. Bradford .....June 13, 1961 to October 13, 1964  
George Vico .....November 17, 1964 to August 13, 1968  
Ben Haggott .....August 13, 1968 to November 14, 1982  
Marvin Brewer .....March 8, 1983 to November 27, 1993  
Bill D. Wright .....March 8, 1994 to July 1, 2013  
RUSSELL LEFEVRE .....September 24, 2013 to

UPPER SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT

J. Ercel Cleminson .....April 9, 1963 to January 30, 1964  
Howard H. Hawkins .....April 9, 1963 to December 31, 1989  
February 9, 1993 to March 4, 1997  
Frank E. Vachon .....March 10, 1964 to March 10, 1970  
Robert T. Radford .....March 10, 1970 to December 31, 1970  
Travis L. Manning .....January 12, 1971 to December 31, 1978  
Burton E. Jones .....January 9, 1979 to February 9, 1993  
John E. Maulding .....January 9, 1990 to February 9, 1993  
ANTHONY R. FELLOW .....February 9, 1993 to February 10, 2009  
February 9, 2010 to July 19, 2011  
February 2, 2021 to  
Edward L. Chavez .....August 30, 2011 to January 9, 2012  
Frank F. Forbes .....March 4, 1997 to December 31, 2000  
R. William "Bill" Robinson .....February 10, 2009 to February 9, 2010  
Stephen Millard .....January 9, 2012 to February 8, 2013  
Michael Touhey .....February 8, 2013 to January 3, 2017  
Charles M. Treviño .....January 10, 2017 to February 12, 2021

## WEST BASIN MUNICIPAL WATER DISTRICT

Robert E. Austin .....	August 20, 1948 to October 21, 1968
Ben Haggott .....	March 10, 1953 to October 8, 1956
W. C. Farquhar.....	August 19, 1955 to July 13, 1976
T. V. Tallon.....	August 9, 1960 to April 9, 1963
Louis J. Alexander .....	August 13, 1963 to March 30, 1972
Charles D. Barker .....	September 10, 1963 to December 31, 2000
Einar C. Matson .....	November 12, 1968 to February 12, 1984
Lester E. Carlson.....	October 8, 1974 to September 2, 1988
E. L. Balmer.....	August 19, 1976 to May 23, 1989
Harold E. Crozier.....	October 25, 1988 to April 9, 1991
Charles L. Stuart .....	July 11, 1989 to April 11, 1995
Robert Goldsworthy.....	April 9, 1991 to March 8, 1994
Edward C. Little.....	March 8, 1994 to January 12, 1998
	January 5, 1999 to September 5, 2001
	April 9, 2007 to September 24, 2013
Bondie O. Gambrell.....	April 11, 1995 to February 10, 1997
Mark S. Dymally.....	February 10, 1997 to January 5, 1999
Carol W. Kwan .....	January 12, 1998 to January 5, 1999
	September 5, 2001 to April 9, 2007
Willard H. Murray Jr.....	January 5, 1999 to April 13, 2009
GLORIA D. GRAY .....	April 13, 2009 to
Donald L. Dear .....	September 24, 2013 to March 13, 2018
HAROLD C. WILLIAMS .....	March 13, 2018 to

## WESTERN MUNICIPAL WATER DISTRICT OF RIVERSIDE COUNTY

Howard Boylan.....	December 14, 1954 to July 13, 1976
Lois B. Krieger .....	August 19, 1976 to December 31, 2000
John M. Mylne III.....	October 12, 1993 to January 7, 2008
S.R. "Al" Lopez.....	January 7, 2008 to July 13, 2009
Thomas P. Evans.....	July 13, 2009 to May 11, 2015
Donald Galleano .....	May 11, 2015 to June 2, 2021
BRENDA DENNSTEDT.....	June 4, 2021 to

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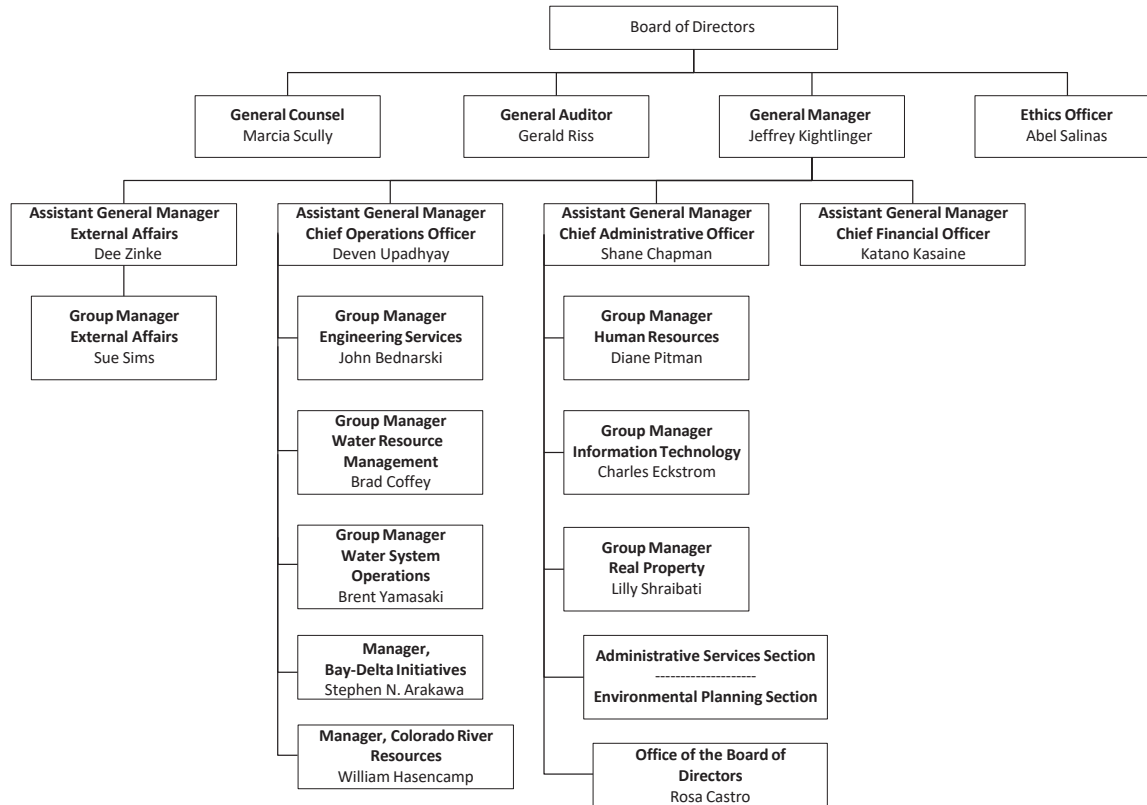
### Notes:

Current Directors' names are shown in capital letters.

A 2001 reorganization reduced the number of directors on the board from 51 to 37.

In late 2015, a one-seat addition for Los Angeles (based on assessed property valuation) increased the number of directors to 38.





## EXECUTIVE MANAGEMENT

JUNE 30, 2021



Jeffrey Kightlinger  
*General Manager*



Marcia L. Scully  
*General Counsel*



Abel Salinas  
*Ethics Officer*



Gerald C. Riss  
*General Auditor*



Deven Upadhyay  
*Assistant General Manager/  
Chief Operating Officer*



Katano Kaisane  
*Assistant General Manager/  
Chief Financial Officer*



Dee Zinke  
*Assistant General Manager/  
External Affairs*



Shane Chapman  
*Assistant General Manager/  
Chief Administrative Officer*

**STAFF**  
June 30, 2021

**EXECUTIVE MANAGEMENT**

General Manager..... J. Kightlinger  
General Counsel..... M.L. Scully  
General Auditor..... G.C. Riss  
Ethics Officer ..... A. Salinas  
Assistant General Manager/Chief Operating Officer ..... D. Upadhyay  
Assistant General Manager/Chief Administrative Officer ..... S.O. Chapman  
Assistant General Manager/Chief Financial Officer ..... K. Kaisane  
Assistant General Manager/External Affairs..... D. Zinke

**ADMINISTRATION**

Manager, Administrative Services Section ..... C. Torres  
Manager, Environmental Planning Section..... J. Harriger

**BAY-DELTA INITIATIVES**

Manager, Bay-Delta Initiatives ..... S.N. Arakawa  
Policy Manager..... N.E. Hawk  
Special Projects Manager..... R.D. Neudeck  
Executive Strategist..... M.J. Wheeler

**CHIEF FINANCIAL OFFICER**

Controller ..... B.H. Robertson  
Manager, Revenue & Budget..... A. Van den Berg  
Manager, Treasury and Debt Management ..... S. Smalls

**CHIEF OPERATING OFFICER**

Manager, Colorado River Resources..... W.J. Hasencamp

**ENGINEERING SERVICES**

Group Manager/Chief Engineer ..... J. Bednarski  
Assistant Group Manager..... M. Hattar  
Manager, Design Section ..... D. Clark  
Manager, Engineering Planning Section ..... J. Shamma  
Manager, Infrastructure Reliability Section ..... M. Bushyeager  
Interim Manager, Program Management Section ..... F. Becerra

**ETHICS**

Assistant Ethics Officer..... P.E. von Haam  
Assistant Ethics Officer..... K.E. Shope

**EXTERNAL AFFAIRS**

Group Manager ..... S. Sims  
State Legislative Representative ..... K. Viatella  
Federal Legislative Representative ..... A.R. Schneider  
Manager, Business Outreach Section..... J. Arena

**STAFF**  
June 30, 2021

Manager, Conservation & Community Services Section ..... Y.L. Martinez  
Manager, Legislative Services Section ..... L. Haddad  
Manager, Media Services Section ..... B. Muir  
Manager, Member Services & Public Outreach Section ..... C. Schaffer  
Strategic Communications & Policy Advisor ..... T. Philp  
Special Projects Manager ..... M. Westford

**HUMAN RESOURCES**

Group Manager ..... D. Pitman  
Manager, Human Resources Section ..... S. Lem

**INFORMATION TECHNOLOGY**

Group Manager ..... C. Eckstrom  
Director, Applications and Infrastructure Section ..... T.D. Miller

**INTERNAL AUDIT**

Assistant General Auditor ..... J. Tonsick

**LEGAL**

Assistant General Counsel ..... H.C. Beatty  
Assistant General Counsel ..... H. Torres Jr.

**OFFICE OF THE BOARD OF DIRECTORS**

Board Administrator ..... R. Castro

**REAL PROPERTY**

Group Manager ..... L. Shraibati  
Manager, Real Property Section ..... O. Tucker

**WATER RESOURCE MANAGEMENT**

Group Manager ..... B. Coffey  
Manager, Resource Implementation Section ..... K.A. Donhoff  
Manager, Resource Planning & Development Section ..... B. Goshi

**WATER SYSTEM OPERATIONS**

Group Manager ..... B. Yamasaki  
Assistant Group Manager ..... M. Chaudhuri  
Interim Assistant Group Manager ..... S. Escalante  
Manager, Conveyance & Distribution Section (East/West) ..... G. Boyd  
Manager, Conveyance & Distribution Section (Desert) ..... G. Patricio  
Manager, Operational Safety & Regulatory Services Section ..... D. Guillory  
Interim Manager, Operations Support Services Section ..... V. Erikson  
Interim Manager, Power Operations & Planning Section ..... J. Jontry  
Manager, Water Operations & Planning Section ..... K. Nobriga  
Manager, Water Quality Section ..... P.A. Rochelle  
Manager, Water Treatment Section ..... H. Collins



*As California drought conditions worsened, Metropolitan increased its focus on local supplies and innovative partnerships, epitomized by the Regional Recycled Water Advanced Purification Center.*

# Introduction

**I**t was a year of great challenge and change, but Metropolitan responded with its signature brand of leadership, innovation and commitment to service.

Metropolitan began the year with record storage to quench the needs of the region thanks in large part to investments in water conservation, recycling and other regional projects, together with infrastructure improvements that improve system reliability. But by year's end, an historic statewide drought was testing all aspects of how Southern California manages water.

At the same time, Metropolitan prepared for a major change in its leadership with the retirement of longtime General Manager Jeffrey Kightlinger and hiring of Adel Hagekhalil, an experienced leader in public works and water issues.

As the COVID-19 pandemic unfolded, Metropolitan continued to provide safe and reliable water supplies to customers, minimizing exposure of employees to COVID-19 while still guaranteeing the region's water supply. Further enhancements to micro-teams, equipment and procedures were put in place to protect field staff who had labored on-site throughout the pandemic.

**Ensuring the Reliability of Imported Supplies:** The Sierra Nevada and Rocky Mountains, which have provided most of Southern California's water for generations, dried at an astonishingly rapid rate leaving reservoirs in Northern California at or near historic lows. In March 2021, following an extremely dry winter and spring, the State Water Project lowered its initial supply allocations to just 5 percent of requested water supplies, and Gov. Newsom declared a drought emergency for much of the state and called for increased conservation.

On the Colorado River, future projections got bleaker by the month. An anticipated Colorado River shortage declaration for 2022 will mean sacrifice. Metropolitan with its Colorado River partners have delayed shortages on the Colorado River thanks to conservation programs and investments in local supplies and storage. Similar efforts on a larger scale

will be required going forward to bring river supplies and demands into balance. Some of the water Southern California currently has in reserve in Lake Mead enabled by various agreements, including the Drought Contingency Plan, may need to stay in the lake during the shortage to prevent dangerously lower lake levels. That would be a first in history, reinforcing how important it is to manage these reserves wisely.

The severe situation underscored the importance of modernizing the state's water delivery system to be more resilient to droughts, climate change and earthquakes. Metropolitan's board agreed to support efforts to modernize the infrastructure that delivers water from Northern California through the Sacramento-San Joaquin Delta by voting in December to fund its share of the environmental planning and pre-construction costs for the proposed Delta Conveyance Project. The vote ensured the project's environmental review and planning phase could move forward.

Southern California water managers have long relied on a playbook of storing away reserves in the wet years and using them during the next drought. This has worked remarkably well thanks to investments in a flexible, vast regional system. However, the lessons of this year have changed the narrative and mountain snowpack simply has not rebounded from this dry year like it had in the past. Whenever this drought ends, it will be harder to replenish this supply than ever before, requiring agencies and the public to re-examine and renew water-saving habits and do everything possible to use this precious resource wisely.

The old playbook needs some new chapters that Metropolitan and its member agencies are now writing. Prepare for less imported water and less local groundwater due to climate change. Conserve more. Improve efficiencies. Develop more local supplies. Fit all these pieces together and use experience as a teacher so Southern California will continue to have the water needed for its future.

**Expanding Investments in Local Supplies:** Metropolitan's role in the region continues to evolve. Today, the agency's sights are set on increasing local supply development to complement Metropolitan's imported supplies. Support of conservation and diverse local resource projects like water recycling, desalination, groundwater recovery and storage have added over 7 million acre-feet to the region's resource mix, increasing resiliency and reliability. Going forward, Metropolitan's pursuit of new projects and investments will better protect the region from the impact of drought cycles and climate change.

With the passage of the Urban Water Management Plan in May, Metropolitan further demonstrated its ability to meet expected water demands in the region for the next quarter century, even under drought conditions. At the center of Metropolitan's reliability plan is its diverse portfolio of water resources and continued investment in water-use efficiency measures to help lower regional demands. Work continued during the year on the update to the Integrated Water Resources Plan, an indispensable tool that guides Metropolitan's water supply investments, programs and policies 25 years into the future.

As planning work and purification testing continued on its promising Regional Recycled Water Program, Metropolitan greatly expanded its public education on the project and community engagement programs with virtual tours in English and Spanish. The program also took a bold step with a new kind of collaboration in the Colorado River Basin with an agreement by the Southern Nevada Water Authority to contribute \$6 million for environmental planning for the project that could lead to an interstate exchange of new locally produced water, increasing resiliency for both agencies.

**Addressing Employee Concerns:** In response to concerns raised by employees about instances of sexual harassment and other forms of misconduct, the board directed a review by outside counsel of Equal Employment Opportunity policies and practices. As part of its review, the law firm conducted interviews with more than 190 employees and reviewed existing policies and the process by which EEO claims are handled by management to determine Metropolitan's compliance with industry best practices.

Throughout the year, the Diversity, Equity & Inclusion Council met to promote and enhance DE&I values throughout the organization. The council worked to ensure accountability in Metropolitan's commitment to an inclusive culture and work environment that values diversity and equity for all employees.

**The Future:** While no one can state with certainty what our water future will look like or how factors such as the drought and climate change will impact our water supply, Metropolitan's innovative spirit, legacy of leadership, vision for the future and tenacity of its workforce will help successfully adapt to the challenges of changing water resources and help prepare for a more secure future in uncertain times.





*Welder at work during a pumping plant shutdown in the Desert.*

# Delivering Metropolitan's Water Supplies

**M**etropolitan supplies water to its 5,200-square-mile service area through a conveyance and distribution system that consists of the 242-mile-long Colorado River Aqueduct, five pumping plants, about 830 miles of pipeline, five water treatment plants and nine reservoirs; and participation rights in the State Water Project. Metropolitan also has 15 hydroelectric power recovery plants throughout its system. See Table 1-1 for the rated capacity of Metropolitan's five treatment plants.

**TABLE 1-1  
METROPOLITAN'S DISTRIBUTION SYSTEM  
WATER TREATMENT PLANTS**

<b>Plant (Location)</b>	<b>Process/ Water Type</b>	<b>Rated Capacity (MGD)</b>
Joseph Jensen Water Treatment Plant (Granada Hills)	Conventional treatment with ozone, SWP supplies	750
Robert A. Skinner Water Treatment Plant (Winchester)	Conventional treatment with ozone, blend of SWP/CRA water	350
F. E. Weymouth Water Treatment Plant (La Verne)	Conventional treatment with ozone, blend of SWP/CRA water	520
Robert B. Diemer Water Treatment Plant (Yorba Linda)	Conventional treatment with ozone, blend of SWP/CRA water	520
Henry J. Mills Water Treatment Plant (Riverside)	Conventional treatment with ozone, SWP supplies	220

SWP = State Water Project  
CRA = Colorado River Aqueduct  
MGD = Million Gallons per Day

In fiscal year 2020/21, dry conditions continued in both Metropolitan's service area and supply watersheds, especially those serving the State Water Project. As it had since early 2020, Metropolitan continued minimizing SWP use and implementing special drought actions to ensure continued water supply reliability, even as the COVID-19 pandemic continued.

The state Department of Water Resources set the final SWP allocation for calendar year 2020 at 20 percent, or about 382,000 AF, as runoff on the Sacramento River was only 54 percent of average. Watershed conditions turned even drier in 2021, with the Sacramento River runoff at only 38 percent of average for the calendar year. The dry conditions led to a final SWP allocation for CY 2021 of only 5 percent, or about 96,000 AF, tied for the lowest in history with the allocation that occurred during the last drought in 2014.

At the beginning of the fiscal year, Metropolitan held SWP blends at zero percent, with Colorado River water supplies maximized throughout the distribution system. Wet early spring conditions had reduced demands by agricultural contractors with higher Colorado River priorities, and by maximizing delivery of Colorado River water, Metropolitan minimized the risk of unused agricultural supplies being lost to the region. Faced with the potential for exceeding Metropolitan's Lake Mead Intentionally Created Surplus storage capacity, Metropolitan adjusted operations. The district effectively managed to balance Colorado River resources with deliveries in-region and to the Desert Water Agency and Coachella Valley Water District Advanced Delivery Account at the Whitewater and Mission Creek connections along the CRA. Through these strategic operations, Metropolitan increased Lake Mead ICS storage to a record high level of 1.3 MAF without exceeding the maximum put capacity for 2020. This increase, along with low demands due to wet conditions in 2019 and continued conservation, brought Metropolitan's total dry-year storage to a new record level of 3.2 MAF at the end of 2020. This is significant considering the SWP allocation for the year was only 20 percent.

Metropolitan's water transactions for FY 2020/21 were about 1.57 MAF. While below the 10-year average of 1.65 MAF, this was an increase of over 200,000 AF from the prior fiscal year. This increase was primarily in the last half of the fiscal year and stemmed from dry local conditions that increased the overall demand in the region and reduced

local supply availability and use. Efforts to increase conservation and develop local supplies continued in Metropolitan's service area. Despite the dry conditions, 2021 demands on Metropolitan under voluntary conservation trended close to demands under mandatory conservation in 2015 during the last drought. Maximum daily system deliveries to member agencies were about 5,714 AF for the fiscal year, compared to 5,860 AF per day for FY 2019/20. Maximum daily delivery over the last 10 years peaked at 7,600 AF per day in FY 2013/14. Table 1-2 shows Metropolitan's monthly water transactions for FY 2020/21. Additional figures and tables at the end of this chapter show total fiscal year water transactions by category, monthly water transactions by category, a comparison of water transactions by category for the past two fiscal years, historical water transactions by calendar and fiscal year, and water use by member agency.

**TABLE 1-2**  
**MONTHLY WATER TRANSACTIONS FOR ALL MEMBER AGENCIES**  
Fiscal Year 2020/21  
(Acre-Feet)

<b>Month</b>	<b>Full Service*</b>	<b>Storage Programs**</b>	<b>Totals</b>
July	132,092	2,000	134,092
August	141,662	5,200	146,862
September	134,310	2,500	136,810
October	140,572	5,000	145,572
November	122,359	0	122,359
December	116,336	48,216	164,551
January	91,525	0	91,525
February	95,656	102	95,758
March	105,955	0	105,955
April	132,810	2,000	134,810
May	139,423	2,600	142,023
June	152,020	2,200	154,220
<b>Totals</b>	<b>1,504,720</b>	<b>69,817</b>	<b>1,574,537</b>

\* Water transactions include water sales, wheeling and exchange water transactions.

\*\*Includes water transactions from the Conjunctive Use, Cyclic Storage and Soboba Settlement programs including the December sale of water pre-delivered in 2017 and 2019. Storage program transactions are sales of pre-delivered water, generally sold in even 100 acre-foot increments.

Metropolitan supplemented its low 2021 SWP supplies through several actions. By the end of CY 2021, Metropolitan was expected to withdraw 200,000 AF of SWP carryover water conserved from prior years and 170,000 AF of contractual flexible storage supplies from Castaic Lake and Lake Perris, as well as 30,000 AF of purchases and exchanges. Metropolitan also anticipated supplementing SWP deliveries through 70,000 AF of withdrawals from its Central Valley groundwater storage programs in CY 2021.

Severe drought conditions required a multi-pronged strategy to ensure water supply reliability. In April 2021, Metropolitan maximized the Colorado River Aqueduct at an 8-pump flow for the first time since October 2015 to support the region during a low SWP supply. Additionally, Metropolitan tapped dry-year storage reserves to bridge the estimated 650,000 AF gap between supplies and demands for CY 2021. Furthermore, due to the historic shortage of SWP supplies, Metropolitan developed and implemented operational actions and capital projects to move Colorado River water and water from Diamond Valley Lake into areas that typically receive SWP supplies only. Some of these actions were first envisioned and implemented under the last 5 percent SWP allocation in 2014. But others were newly developed for 2021. Chief among these were (1) strengthening portions of the Lakeview Pipeline and Perris facilities to flow water by gravity from DVL to Mills plant for the first time; (2) completing a major refurbishment of the Greg Avenue Pump Station on the East Valley Feeder and pumping Colorado River supplies as far west as portions of the San Fernando Valley and Ventura County; and (3) developing a new Operational Shift Cost Offset Program to cover member agency costs to shift their demand from service connections taking SWP water to those taking Colorado supplies. By the end of CY 2021, it is anticipated that these actions will offset SWP demands by 130,000 to 190,000 AF, an amount equivalent to about a 5 to 10 percent SWP allocation.

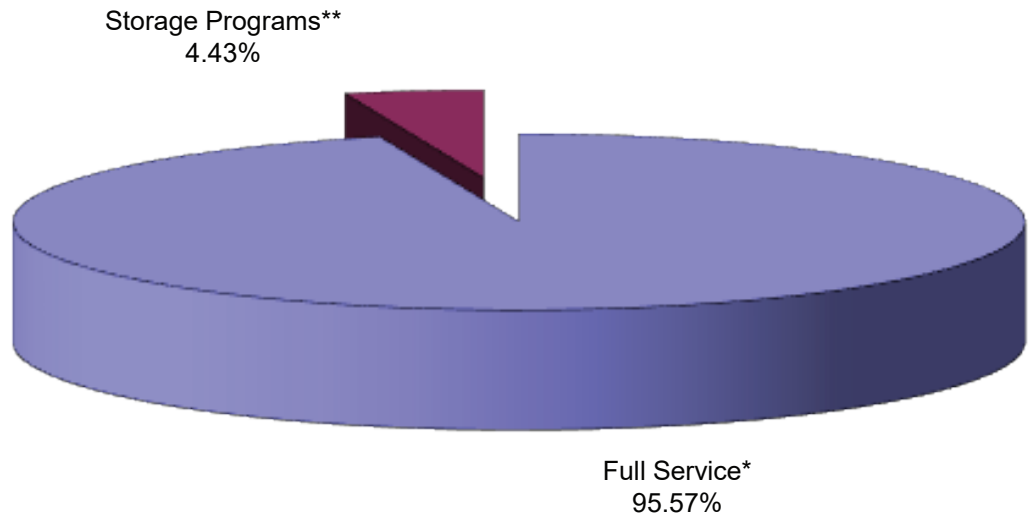
## *Major Accomplishments for Fiscal Year 2020/21*

### ***System Operations and Planning***

- Effectively managed supplies and demands and set a new end-of-year dry-year storage reserve record of 3.2 MAF in 2020.
- Adapted to a 5 percent SWP allocation, tied for the lowest in project history, by shifting deliveries and implementing operational actions that are expected to reduce SWP use by approximately 130,000 to 190,000 AF in CY 2021.
- Completed capital projects to further enhance operational flexibility by reducing the size of the service area traditionally served by only SWP supplies.
- Continued critical operations and reliable water deliveries, while maintaining workforce safety amid a global pandemic.
- Successfully managed critical shutdowns for system improvements, maintenance and repairs (major shutdowns and service interruptions are shown in Table 1-5).

### ***Colorado River***

- Captured all available Colorado River water supplies and brought Lake Mead ICS storage to a new record level of 1.3 MAF by the end of CY 2020.
- Maximized Colorado River Aqueduct deliveries at 8-pump flow beginning April 2021 to support the region under low SWP supplies.



\* Water transactions include water sales, wheeling and exchange water transactions.

\*\* Includes water transactions from the Conjunctive Use, Cyclic Storage and Soboba Settlement programs.

*Figure 1-1. Total Water Transactions for Fiscal Year 2020/21 - All Member Agencies*

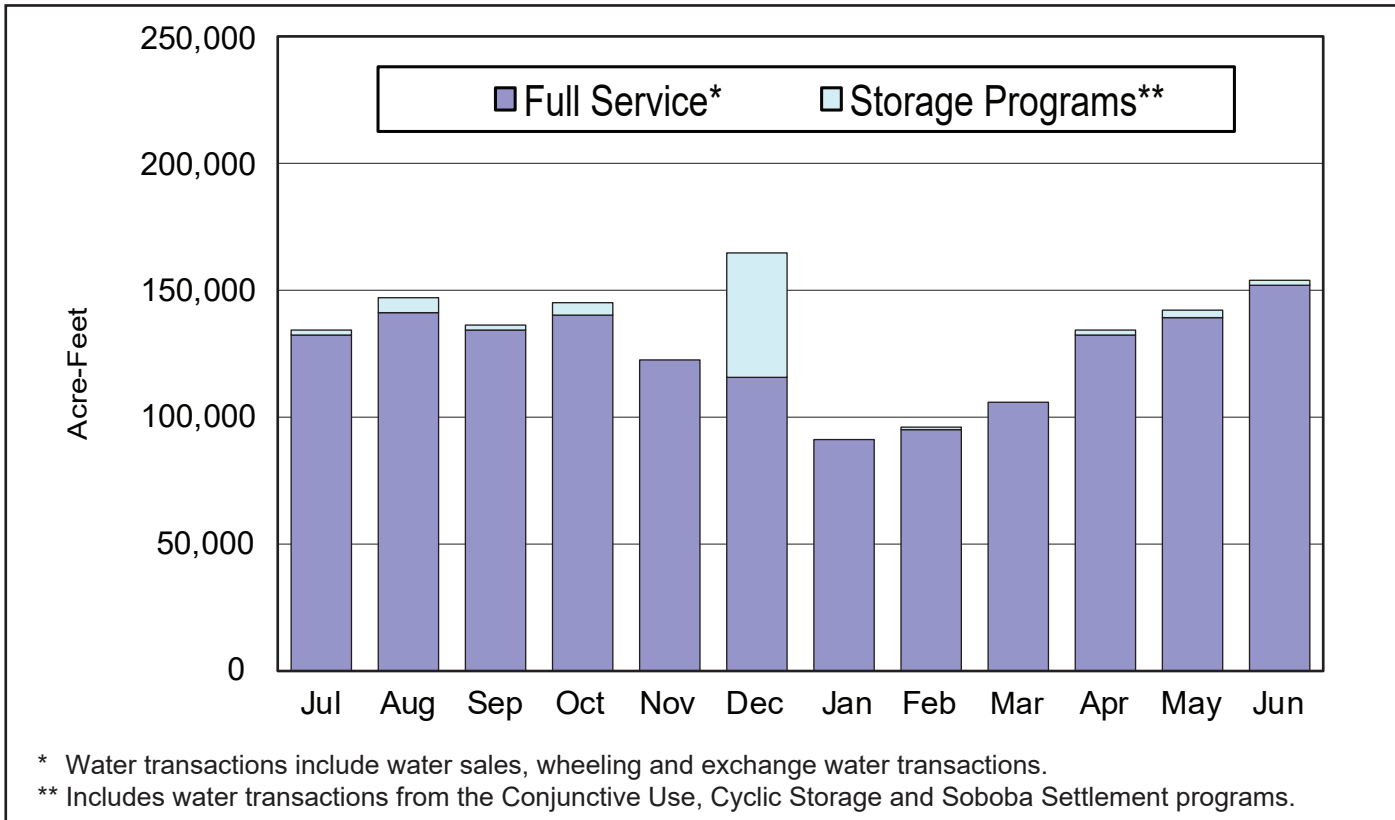


Figure 1-2. Monthly Water Transactions for Fiscal Year 2020/21 - All Member Agencies



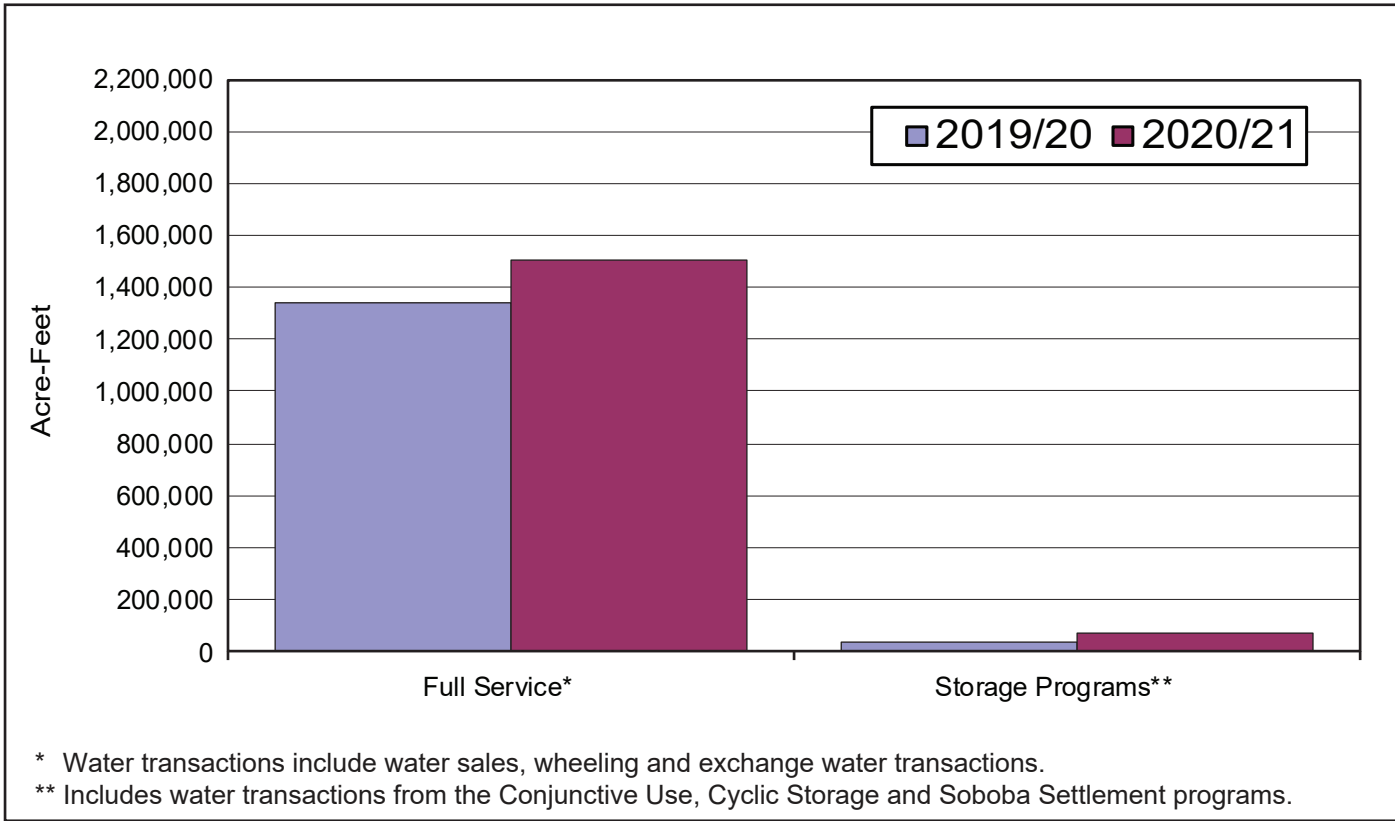


Figure 1-3. Comparison of Water Transactions to Member Agencies for the Past Two Fiscal Years

**TABLE 1-3**  
**HISTORICAL WATER TRANSACTIONS**  
**Calendar Year & Fiscal Year Totals**  
**(Acre-Feet)**

	Calendar Year	Fiscal Year		Calendar Year	Fiscal Year
1941	4,444		1982	1,366,664	1,502,949
1942	12,391	9,739	1983	1,180,616	1,226,783
1943	16,355	14,566	1984	1,547,078	1,428,253
1944	24,567	15,875	1985	1,653,414	1,574,216
1945	37,883	30,606	1986	1,685,359	1,642,249
1946	54,134	46,686	1987	1,857,591	1,825,657
1947	73,573	59,721	1988	2,017,403	1,923,824
1948	148,178	113,090	1989	2,371,479	2,095,079
1949*	163,817	145,008	1990	2,626,124	2,511,375
1950*	170,825	165,616	1991	1,809,606	2,264,864
1951*	192,416	165,473	1992	1,989,165	1,888,907
1952	203,068	197,210	1993	1,812,644	1,910,644
1953	221,022	219,397	1994	1,955,411	1,930,529
1954	333,968	245,875	1995	1,458,237	1,591,496
1955	386,341	385,946	1996	1,675,254	1,641,670
1956	482,909	405,962	1997	1,838,675	1,787,857
1957	518,754	543,706	1998	1,413,674	1,569,024
1958	578,384	539,734	1999	1,776,306	1,593,687
1959	660,718	601,099	2000	2,325,836	2,075,680
1960	816,722	734,919	2001	2,100,771	2,164,556
1961	977,795	935,228	2002	2,438,570	2,326,920
1962	1,033,361	931,795	2003	2,251,051	2,271,628
1963	943,745	1,020,822	2004	2,440,724	2,437,678
1964	1,122,880	1,064,381	2005	2,003,041	2,076,100
1965	1,105,809	1,148,847	2006	2,129,518	2,116,039
1966	1,115,040	1,059,631	2007	2,390,535	2,351,927
1967	1,008,946	1,059,354	2008	2,178,630	2,250,184
1968	1,208,064	1,077,178	2009	1,963,448	2,137,979
1969	997,623	1,057,335	2010	1,658,597	1,780,030
1970	1,152,914	1,165,866	2011	1,650,260	1,613,529
1971	1,184,697	1,113,968	2012	1,748,167	1,708,565
1972	1,213,417	1,248,710	2013	1,955,799	1,856,537
1973	1,218,156	1,177,860	2014	2,015,848	2,056,396
1974	1,223,256	1,139,175	2015	1,732,324	1,905,480
1975	1,294,650	1,329,636	2016	1,672,077	1,578,495
1976	1,390,822	1,389,248	2017	1,428,465	1,504,654
1977	1,312,876	1,390,466	2018	1,540,021	1,549,941
1978	1,302,312	1,198,325	2019	1,284,410	1,374,327
1979	1,230,068	1,235,193	2020	1,412,286	1,359,622
1980	1,295,903	1,282,064	2021		1,574,537
1981	1,597,315	1,462,825			

Note:

\* Calendar years 1949, 1950, and 1951 are estimated values.

Figures from 1979 to present consist of water transactions which include water sales, exchanges and wheeling transactions to member agencies.

**TABLE 1-4**  
**WATER USE BY METROPOLITAN'S MEMBER AGENCIES**  
 Fiscal Year 2020/21<sup>1</sup>  
 (Acre-Feet)

<b>Member Agency</b>	<b>Total Local Production<sup>2</sup></b>	<b>Total Local Use<sup>3</sup></b>	<b>MWD Direct Deliveries<sup>4</sup></b>	<b>MWD Indirect Deliveries<sup>5</sup></b>	<b>MWD Total Deliveries</b>	<b>Total Water Use<sup>6</sup></b>	<b>MWD Direct Deliveries as % of Total Use</b>
Anaheim	18,388	18,388	41,964	0	41,964	60,352	70%
Beverly Hills	0	0	9,784	0	9,784	9,784	100%
Burbank	14,868	14,868	4,449	5,472	9,920	19,316	23%
Calleguas	36,805	46,602	95,365	0	95,365	141,967	67%
Central Basin	215,783	240,204	25,527	0	25,527	265,731	10%
Compton	7,334	7,334	2	0	2	7,336	0%
Eastern	125,453	125,453	93,956	2,000	95,956	219,409	43%
Foothill	7,858	7,858	9,733	0	9,733	17,591	55%
Fullerton	17,867	17,867	6,947	0	6,947	24,813	28%
Glendale	9,716	9,716	16,183	0	16,183	25,899	62%
Inland Empire	171,099	169,063	48,347	23,000	71,347	217,410	22%
Las Virgenes	5,099	5,229	21,153	0	21,153	26,382	80%
Long Beach	40,605	40,605	22,399	0	22,399	63,004	36%
Los Angeles	190,978	192,016	316,958	0	316,958	508,975	62%
MWDOC	369,836	385,474	140,558	0	140,558	526,032	27%
Pasadena	9,354	9,690	21,297	0	21,297	30,987	69%
San Diego CWA	186,250	186,250	334,258	0	334,258	520,509	64%
San Fernando	2,938	2,938	0	0	0	2,938	0%
San Marino	3,894	3,894	738	0	738	4,632	16%
Santa Ana	29,519	29,519	7,738	0	7,738	37,257	21%

**TABLE 1-4 (Continued)**  
**WATER USE BY METROPOLITAN'S MEMBER AGENCIES**  
 Fiscal Year 2020/21<sup>1</sup>  
 (Acre-Feet)

<b>Member Agency</b>	<b>Total Local Production<sup>2</sup></b>	<b>Total Local Use<sup>3</sup></b>	<b>MWD Direct Deliveries<sup>4</sup></b>	<b>MWD Indirect Deliveries<sup>5</sup></b>	<b>MWD Total Deliveries</b>	<b>Total Water Use<sup>6</sup></b>	<b>MWD Direct Deliveries as % of Total Use</b>
Santa Monica	6,284	6,284	5,603	0	5,603	11,887	47%
Three Valleys	41,680	43,050	61,038	2,661	63,699	104,087	59%
Torrance	5,288	10,522	14,341	0	14,341	24,863	58%
Upper San Gabriel	177,078	137,988	5,141	54,895	60,036	143,129	4%
West Basin	58,525	52,252	108,250	0	108,250	160,502	67%
Western	170,287	170,287	74,783	0	74,783	245,070	31%
	1,922,785	1,933,352	1,486,509	88,028	1,574,537	3,419,861	43%

Footnotes:

<sup>1</sup> Local supply data includes three-year averages for those sources unavailable at time of publication.

<sup>2</sup> Total Local Production = groundwater, groundwater recovery, surface water, recycled water, seawater desalination, and Los Angeles Aqueduct supplies produced, but not necessarily used, within a member agency boundary, not including water used for environmental purposes.

<sup>3</sup> Total Local Use = Total Local Production adjusted for inter-agency water transfers and locally produced water, not including water used for environmental purposes.

<sup>4</sup> MWD Direct Deliveries includes SDCWA/IID exchange.

<sup>5</sup> MWD Indirect deliveries: Non-consumptive water being delivered to storage for later use.

<sup>6</sup> Total Water Use = Total Local Use + MWD Direct Deliveries.

**TABLE 1-5  
2020/21 MAJOR SHUTDOWNS & SERVICE INTERRUPTIONS**

<b>FACILITY</b>	<b>DATES</b>	<b>NO.OF DAYS</b>	<b>LIMITS OF SHUTDOWN</b>	<b>PURPOSE</b>
Second Lower Feeder	Jul 1 - Jul 4, 2020	4	From Diemer plant to Carbon Creek PCS	Install bulkhead upstream of Service Connection OC-56, continuing from late June 2020.
Second Lower Feeder	Jul 5-Aug 19, 2020	46	From Diemer plant to bulkhead at Station 291+72	Reline PCCP on Reach 8.
Lakeview Pipeline -Perris Pump Back Facility	Jul 13-20, 2020	8	From Perris Facilities to PC-1 interconnection	Inspect and survey pipeline and repair joints as needed.
Second Lower Feeder	Aug 11-29, 2020	19	From Diemer plant to Carbon Creek pressure control structure	Remove bulkhead upstream of Service Connection OC-56 and return feeder to normal operation.
Second Lower Feeder	Sep 13-22, 2020	9	From South Coast Feeder to the sectionalizing valve at Carson Street and Bataan Avenue	Remove bulkhead downstream of Service Connection LB-08; return feeder to normal operation.
West Orange County Feeder	Sep 28-30, 2020	3	From Lower Feeder (Treated) to Brea Creek PCS	Perform maintenance at Brea Creek PCS.
Yorba Linda Feeder	Oct 19-24, 2020	6	From Tonner Tunnel No. 1 to Diemer WTP	Inspect PCCP and perform maintenance.
Lakeview Pipeline -Perris Pump Back Facility	Oct 19-Nov 11, 2020	24	From Perris Facilities to PC-1 interconnection	Perform 3D survey and joint repairs.
East Valley Feeder -Greg Avenue Pumping Plant	Nov 1-9, 2020	9	From Sepulveda Feeder to Santa Monica Feeder	Inspect feeder and support Greg Avenue Shutdown.
Irvine Cross Feeder	Nov 2-4, 2020	3	From Orange County Feeder to East OC Feeder 2	Inspect pre-stressed concrete cylinder pipe.
San Diego Pipelines 1 & 2	Dec 6-12, 2020	7	From Auld Valley Pipeline to SDCWA jurisdiction	MWD inspections/repairs in Rainbow Tunnel; support SDCWA's bulkhead removals.
Rialto Feeder -Etiwanda Pipeline	Dec 7-13, 2020	7	From Devil Canyon Power Plant Facility to Indian Hill sectionalizing valve	Inspect PCCP.
Rialto Feeder	Dec 7-16, 2020	10	From Indian Hill sectionalizing valve to San Dimas facilities	Inspect PCCP.

**TABLE 1-5 (Continued)**  
**2020/21 MAJOR SHUTDOWNS & SERVICE INTERRUPTIONS**

<b>FACILITY</b>	<b>DATES</b>	<b>NO.OF DAYS</b>	<b>LIMITS OF SHUTDOWN</b>	<b>PURPOSE</b>
Box Springs Feeder -Mills Water Treatment Plant -Perris Valley Pipeline	Jan 19-21, 2021	3	From DWR's Santa Ana Valley Pipeline to Mills WTP	Support DWR's leak repair to Santa Ana Valley Pipeline.
Greg Avenue Pumping Plant -East Valley Feeder	Jan 20-30, 2021	11	Greg Avenue Pumping Plant	Modify suction and discharge piping.
San Diego Pipeline 3	Jan 20, 2021	1	From Auld Valley Pipeline to SDCWA jurisdiction	Replace air release/vacuum valve.
Eagle Rock Lateral	Jan 21-Feb 1, 2021	8	From Eagle Rock Lateral Tower to LADWP jurisdiction	Replace Service Connctn LA-17B flowmeter & valves.
Colorado River Aqueduct -San Jacinto Pipeline 1 & 2	Jan 28-Mar 3, 2021	35	From Whitsett Intake Pumping Plant to Lake Mathews	1. Perform repair, cleaning, and maintenance. 2. Perform San Jacinto Tunnel weir measurement.
San Diego Canal	Feb 2-11, 2021	10	From Casa Loma Canal to Lake Skinner	Clean canal and siphons.
Lake Mathews Facility -Upper Feeder (Untreated) -Etiwanda Pipeline -Lower Feeder (Untreated) -Santiago Lateral Spillway -Santiago Lateral -East Orange County Feeder 1	Mar 1-14, 2021	14	Lake Mathews Forebay	Perform maintenance on Upper Feeder Slide Gates and primary valves and abandon Service Connection WR-22.
San Diego Pipeline 5	Mar 8-17, 2021	10	From Lake Skinner East Bypass Valve Structure to SDCWA Jurisdiction	Support SDCWA's inspection of San Diego Pipeline 5 and MWD to repair valve at Red Mountain PCS.
Lakeview Pipeline -Perris Bypass Pipeline	Mar 11-Apr 7, 2021	28	From Perris Facilities to San Diego Canal	Reline pipeline.
Allen-McColloch Pipeline	Apr 4-May 4, 2021	31	From Allen-McColloch Pipeline Bifurcation to El Toro Reservoir	Reline PCCP.

**TABLE 1-5 (Continued)**  
**2020/21 MAJOR SHUTDOWNS & SERVICE INTERRUPTIONS**

<b>FACILITY</b>	<b>DATES</b>	<b>NO.OF DAYS</b>	<b>LIMITS OF SHUTDOWN</b>	<b>PURPOSE</b>
South Coast Feeder	Apr 5-9, 2021	5	From Lower Feeder (Treated) to Second Lower Feeder	Inspect PCCP.
Lakeview Pipeline -Perris Bypass Pipeline	Apr 7-May 12, 2021	36	From Perris Facilities to PC-1 interconnection	Install bulkheads for drought action and repair minor leak.
West Valley Feeder 1	Apr 23-May 7, 2021	15	From Sepulveda Feeder to Santa Susana Tunnel	Replace DeSoto sectionalizing valve and inspect PCCP.
San Diego Pipeline 5	May 3-8, 2021	6	From Lake Skinner East Bypass Valve Structure to SDCWA Jurisdiction	Support SDCWA's repair of its PCCP monitoring cable and MWD to repair valve at Red Mountain HEP valve.
East Valley Feeder -Greg Avenue Pumping Plant	May 24-25, 2021	2	From Greg Avenue Pumping Plant to Santa Monica Feeder	Repair minor leak.
West Valley Feeder 1	Jun 8-9, 2021	2	From DeSoto Sectionalizing Valve to Calleguas Drop Gate	Repair leak in DeSoto Sectionalizing Valve Structure.



*Water from the Colorado River Aqueduct flows over a weir into Iron Mountain Reservoir, before heading to the Iron Mountain pumping plant for delivery to Metropolitan's service area.*





*Record low level at Lake Mead, June 2021 (top);  
effects of severe drought on Lake Oroville, May 2021 (bottom)*

# Strategic Water Initiatives

**M**etropolitan provides imported water supplies to its member agencies from two primary sources, the Colorado River and Northern California via the State Water Project. Strategic Water Initiatives staff coordinates resources throughout the organization to manage and protect Metropolitan’s interests in the watersheds that support these two key systems.

## *Bay-Delta Initiatives*

California was once again in the middle of a drought that prompted the declaration of a [drought emergency](#) by Gov. Newsom. Despite working remotely, staff continued collaboration with state, federal and other water agencies on various programs and projects, addressing water supply operation and reliability. Bay-Delta Initiatives continued to participate in planning for the proposed Delta Conveyance Project and Sites Reservoir. These projects, when implemented, could significantly contribute to long-term water reliability and resiliency. Figure 2-1 shows a map of the Delta region.

### *Long-Term Actions*

#### *Delta Conveyance*

The state Department of Water Resources continued developing an Environmental Impact Report under the California Environmental Quality Act, analyzing a range of reasonable alternatives and potential impacts on environmental resources. DWR continued discussions with local communities in the Delta regarding a [Community Benefits Program](#) that would help protect and enhance the cultural, recreational, natural resource, and agricultural values of the Delta. DWR conducted a survey in November and December 2020 to collect information on

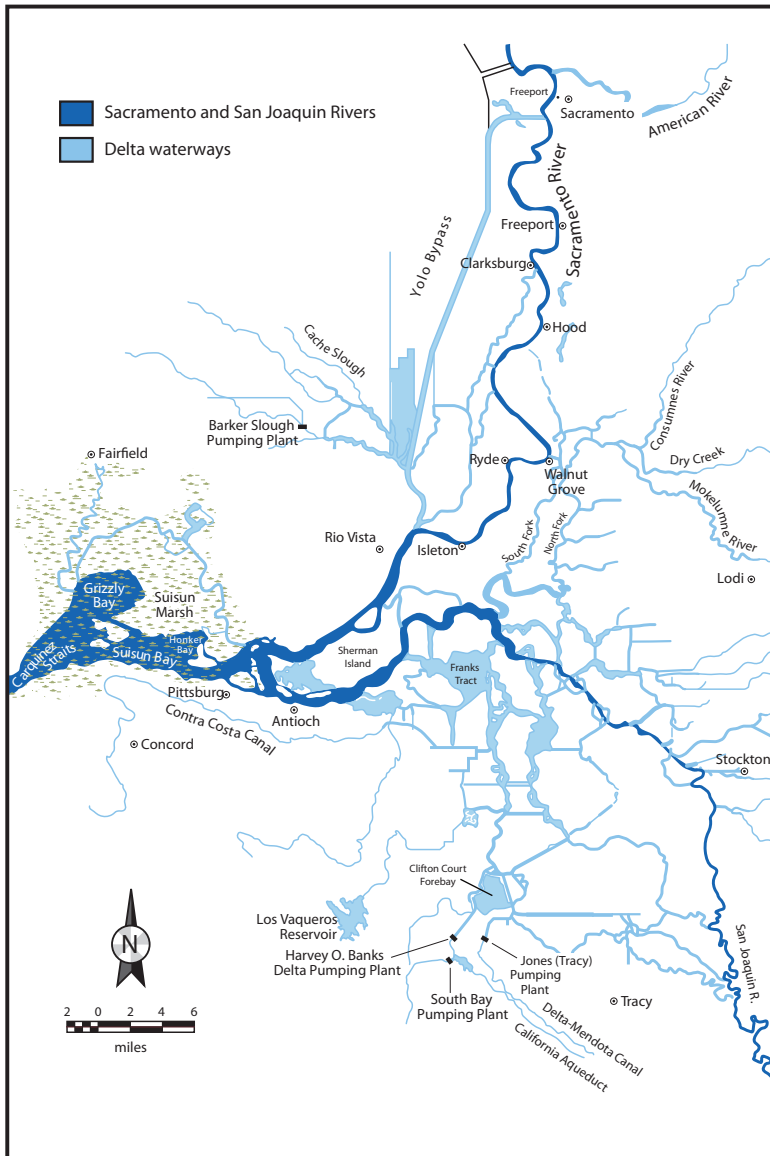


Figure 2-1. Map of the Delta Region

how disadvantaged and other underserved communities rely on resources in the Delta. The [report](#) documenting the survey results was posted on DWR's website.

Field activities included cone penetration tests, soil borings and geophysical surveys, under the Initial Study/Mitigated Negative Declaration for Soil Investigations in the Delta. DWR added a [link](#) to its public website to provide information for the public on the overall project, and provide updated maps showing the near-term planned explorations. The U.S. Army Corps of Engineers, as part of its permitting review under the Clean Water Act and Rivers and Harbors Act, started preparation of an Environmental Impact Statement to comply with the National Environmental Policy Act.

### *California EcoRestore*

Staff continued participating on the Fisheries and Engineering Technical Team for the Yolo Bypass Salmonid Habitat and Adult Passage (Fremont Weir Notch) project. The project aims to remove barriers for migration of salmonids and sturgeon between the Sacramento River and the Yolo Bypass through installation of operable gates in the concrete Fremont Weir. This would provide 17,000 floodplain acres of rearing habitat and allow passage for out-migrating juveniles while helping to prevent stranding of adult salmonids and sturgeon. DWR obtained permits from the State Water Resources Control Board (Section 401 Water Quality Certification) and state Department of Fish and Wildlife (draft Incidental Take Permit and Section 1600 Streambed Alteration Agreement). DWR will continue to obtain necessary permits for the project and complete final design. Project construction is scheduled to be completed in 2022, with operations expected to commence in 2023.

### *Sites Reservoir*

In April, the Sites Project Authority Board and Sites Reservoir Committee approved principles for the storage, delivery and sale of Sites Reservoir Project Water. These storage principles will serve as the basic framework for the development of additional agreements, policies and procedures for the project. A foundational principle of the Sites project and component of the storage policy is that each storage partner would be allocated storage space in Sites Reservoir based on level of financial participation in the project.

On June 23, the Sites Project Authority formally set the updated feasibility-level cost estimate at \$3.93 billion for a 1.5 million acre-foot reservoir (Alternative 1), and \$3.87 billion for a 1.3 million acre-foot reservoir (Alternative 2). Both figures are in 2021 dollars.

In February, the Sites Project Authority released its [2020 Annual Report](#), which summarizes planning progress on the Sites Reservoir project for that year.

### ***Near-Term Actions***

#### *Regulatory Activities*

Staff co-organized and participated in a Delta Science Program workshop on monitoring steelhead populations in the San Joaquin River basin. Workshop information assisted in the biological opinion on long-term operation of the Central Valley Project and State Water Project. Staff engaged with the planning committee, including National Marine Fisheries Service and U.S. Bureau of Reclamation, on how to incorporate information into a monitoring plan. Staff also participated in the Delta Coordination Group as part of the biological opinion implementation and provided written comments on the summer/fall habitat action science and monitoring plans. These science planning and monitoring documents will guide collection of data needed to assess the outcomes of actions taken under the biological opinion and incidental take permit. In June, staff continued work with state and federal agencies to develop a juvenile production estimate for spring-run Chinook salmon as required by the ITP.

In response to worsening drought, DWR began construction on June 2 of a temporary emergency drought [barrier](#) on the West False River in the Sacramento-San Joaquin Delta. The barrier is designed to help prevent the movement of saltwater from the bay into the central Delta, prevent contamination of water supplies for Delta agriculture and municipal supplies, and conserve critical water supplies in upstream reservoirs for later use given the severity of the dry year. Installation of the barrier was accompanied by the approval of a Temporary Urgency Change Petition by the State Water Resources Control Board to modify SWP and CVP water rights operational requirements.

*Science Activities*

Staff continued participating in the Collaborative Science and Adaptive Management Program to advance Delta smelt and salmon science and recovery efforts. Staff participated in the Delta smelt Structured Decision-Making project to evaluate potential management and science actions to advance Delta smelt recovery. Staff also participated in the CSAMP Salmon Recovery Initiative to develop and submit a proposal that was awarded funding by the Delta Science Program, and to collaboratively develop a scientific definition of salmon recovery, expressed as a suite of clear, measurable objectives and landscape level quantitative targets.

In April, staff presented several Metropolitan-funded studies in the 11th Biennial Bay-Delta Science [Conference](#). Study topics included salmon stressors, a floating wetland at Bouldin Island, and a levee instrumentation and monitoring pilot project at Bacon Island.

In supporting the development of Bay-Delta science, staff co-authored peer reviewed articles addressing salmon predation, disease in Central Valley salmon, longfin smelt distribution and habitat use, and a multi-year study on agricultural floodplain habitat. Other articles dealt with effects of dietary pesticide exposure on juvenile Chinook salmon, and using satellite remote sensing to monitor turbidity in the San Francisco estuary.

*Delta Islands Activities*

Staff participated in the Holland Tract and DWR flood response and emergency training activities, managed the Delta Islands Emergency Response Team for flood/emergency situation updates for four Delta Islands, and coordinated with County Office of Emergency Services and Reclamation District Engineer in developing a grant application submittal for regional emergency response material and storage containers.

As part of Senate Bill 88 compliance requirements, staff completed installation in June of eight new flanged magnetic meters and associated telemetry/solar equipment. Staff participated in monitoring, data collection, and reporting on meter measurement testing activities through the Delta Watermaster's Consortium. Staff is

currently working with a consultant and the reclamation districts to identify remaining siphons, which will need new meters and telemetry devices for the fourth phase of the compliance effort.

### *Emergency Preparedness Plan*

DWR utilizes a real-time earthquake intensity notification system that sends alerts of ground motions at important locations throughout the Delta, providing essential information to emergency operations managers regarding potential impacts to Delta levees. This automated system, called the U.S. Geological Survey Earthquake Notification Service, is used by DWR and Delta emergency response partners. DWR has expressed interest in Metropolitan's ShakeCast notification system, which provides both earthquake intensity and damage assessments at identified Metropolitan infrastructure locations. Staff is collaborating with DWR on these efforts.

In addition to major centralized Delta stockpile sites currently in place to support flood fighting and emergency freshwater pathway actions at Rio Vista and Stockton, DWR plans to place flood fight supplies in the Delta at locations providing more localized access during future flood emergencies. A \$1 million agreement with the Sacramento County Office of Emergency Services and Reclamation District 756 will store emergency materials on Metropolitan's Bouldin Island to facilitate freshwater pathway flows along Middle and Old Rivers in response to large seismic emergencies.

## *Colorado River Resources*

Figure 2-2 shows a map of the Colorado River Basin and the states that rely on the Colorado River system for water. The map also shows California's major water agencies with federal water supply contracts. California has a basic apportionment of 4.4 million acre-feet, most of which is used by higher-priority agricultural users - [Palo Verde Irrigation District](#), [Yuma Project Reservation Division](#) that includes Bard Water District, [Imperial](#) Irrigation District and [Coachella](#) Valley Water District as well as Metropolitan.

### ***Lake Mead Record Low Level***

In June 2021, Lake Mead reached its lowest level since the reservoir was first filled in the 1930s. By the end of June elevation had dropped to 1,068.8 feet; 35 percent of capacity. This reduced reservoir storage was projected to result in the Department of Interior issuing a first-ever shortage declaration for the Colorado River for CY 2022. Metropolitan's supplies will not be cut back in a shortage, but deliveries would be curtailed to Arizona, Nevada, and Mexico. In response to the impending shortage declaration and overall poor hydrology, Metropolitan's Board of Directors approved an agreement with the Bureau of Reclamation, Southern Nevada Water Authority, and Central Arizona Water Conservation District to fund additional land fallowing in Palo Verde Valley and Bard Water District to generate additional water supplies not needed for Metropolitan's own water needs. The water would become system water and stay in Lake Mead for the benefit of all water users. To implement the agreement, Metropolitan entered into an agreement with Palo Verde Irrigation District under which farmers could voluntarily increase their fallowing amounts in FY 2021/22 from the existing 25 percent fallowing call to up to 75 percent of their maximum fallowing amounts. Farmers could begin the additional fallowing through Jan. 1, 2022. The additional water generated will not affect the anticipated shortage declaration but will result in more water in Lake Mead that could affect future water supply determinations.

### ***Colorado River Aqueduct at Capacity***

In response to severe drought conditions in Northern California, which have resulted in a 5 percent allocation from the State Water Project in 2021, the Colorado River Aqueduct began running at capacity in 2021 to meet demands in Metropolitan's service area. The CRA has been operating at eight-pump flow for the first time since 2015. To fill the CRA, Metropolitan tapped into its Intentionally Created Surplus account in Lake Mead to augment its supplies from its agricultural water transfer programs and basic apportionment. Metropolitan can reliably fill the CRA despite the anticipated shortage declaration because of the provisions of the 2019 Colorado River Drought Contingency Plan, which ensures Metropolitan can access its ICS during and in the year immediately before a Colorado River shortage declaration.



### ***Southern Nevada Water Authority Partnership***

Metropolitan and [Southern Nevada Water Authority](#) have a long-term program of sharing Colorado River water for each agencies' mutual benefit, and jointly funding actions that improve their water supply reliability. That partnership continued in 2021, when the two agencies signed an agreement to share costs for completing the environmental compliance work needed for the Regional Recycled Water Program. Under the terms of the agreement, SNWA would pay up to \$6 million, estimated to be about 25 percent of the total costs, for the three-year effort to complete the environmental analysis and cost estimate refinements needed for Metropolitan's board to determine whether to move forward with the project. At that time, Metropolitan and SNWA will discuss the potential for the project to not only benefit Southern California, but the Colorado River Basin as well.

### ***Salinity Control Program***

The Colorado River Salinity Control Program has effectively reduced the salinity of Metropolitan's Colorado River supplies by about 20 percent since its inception in the 1970s. The program funds several initiatives, including projects that reduce flood irrigation in the Upper Colorado River Basin that contribute to salinity increases. The single largest salinity control project has been a well in Paradox Valley, Colorado that captures and injects natural brine shallow groundwater two miles below the ground surface where it cannot interact with the Colorado River. Following its construction in the 1990s, this project successfully prevented about 110,000 tons per year of salt from reaching the Dolores River, a Colorado River tributary. Increased seismicity in the area prompted Reclamation to shut down well operation in April 2019. In search of a long-term replacement, Reclamation completed an Environmental Impact Statement process that evaluated options to control the salt, but ultimately concluded that none of the options analyzed was acceptable. Metropolitan, along with the Basin States, is working with Reclamation to develop additional alternatives that might be acceptable to Reclamation and resume capturing and preventing the salt from reaching the Colorado River.



Figure 2-2. Map of the Colorado River Basin



*With Metropolitan's support, a growing number of Southern California gardens are switching over to native plants like this matilija poppy.*

## Water Resource Management

**T**he Water Resource Management Group plans, secures and manages high-quality water resources for Metropolitan's member agencies in a reliable, cost-effective and environmentally responsible manner. Principal responsibilities include managing imported water supplies and quality, advancing water-use efficiency and local resource development, and providing supply and demand forecasts that form the foundation for resource and facility planning. Other responsibilities include developing and implementing timely resource programs and projects, assisting member agencies in optimizing local resources to benefit the entire Metropolitan service area, and ensuring a fair return on Metropolitan's contractual investments in local and imported resources.

In calendar year 2020, State Water Project contractors operated under a 20 percent SWP allocation due to below-average hydrologic conditions. Even with the low allocation, Metropolitan's water supplies exceeded demands in 2020, helped by available Colorado River supplies. These conditions enabled Metropolitan to increase dry-year storage reserves to a record-high level of 3.2 million acre-feet at the end of 2020. Extreme drought conditions continued into 2021, and in March the California Department of Water Resources decreased SWP supplies from an initial allocation of 10 percent to a final allocation of 5 percent for CY 2021. Despite the low supply allocation, Metropolitan stood ready to meet demands in 2021, thanks to the region's water-savings ethic, investments in storage and innovative actions to preserve SWP supplies.

Amid the COVID-19 pandemic, Water Resource Management staff continued teleworking from home. Staff maintained all essential functions such as supporting Water Surplus and Drought Management decisions as the water year developed and continued making progress on the 2020 Integrated Water Resources Plan. Staff also adapted conservation programs for social-distancing requirements and converted to online training.

## *State Water Project Resources*

Metropolitan holds a contract with DWR that provides for SWP participation rights and an allocation of 1,911,500 AF annually, subject to availability. The two-year period from 2020 through 2021 ranked as the second driest two-year period in the historical record, exceeded only by 1976-77. This dry sequence resulted in a 20 percent allocation of SWP contract supplies in CY 2020 and a 5 percent allocation for CY 2021. Below-average snowpack and dry soil conditions in 2021 reduced runoff in the Feather River watershed to near-record lows. In FY 2020/21, Metropolitan managed 685,000 AF through the SWP system (Fig. 3-1), about 790,000 AF less water than in the previous fiscal year (FY 2020/21 deliveries and storage are subject to final reconciliation). During FY 2020/21, Metropolitan exercised options under its SWP water management programs to ensure delivery capability under these dry-year conditions. These included drafting more than 34,000 AF from San Joaquin Valley storage accounts, 117,000 AF from flexible storage accounts in Castaic Lake and Lake Perris, and supplying the Mills Water Treatment Plant with 9,500 AF of supplies from Diamond Valley Lake to offset State Water Project demands.

Metropolitan's net SWP payments during FY 2020/21 were \$521.8 million (Table 3-1) on a modified accrual basis. Metropolitan also administered existing storage programs outside its service area along the SWP system, as described on the following pages.

### **Water Storage Programs**

#### *Semitropic/Metropolitan Water Banking and Exchange Program*

Metropolitan's 1994 groundwater storage agreement with Semitropic Water Storage District in Kern County allows storage of up to 350,000 AF. During FY 2020/21, Semitropic delivered 12,223 AF in the second half of the fiscal year. The total water in storage on June 30, 2021 was 253,072 AF.

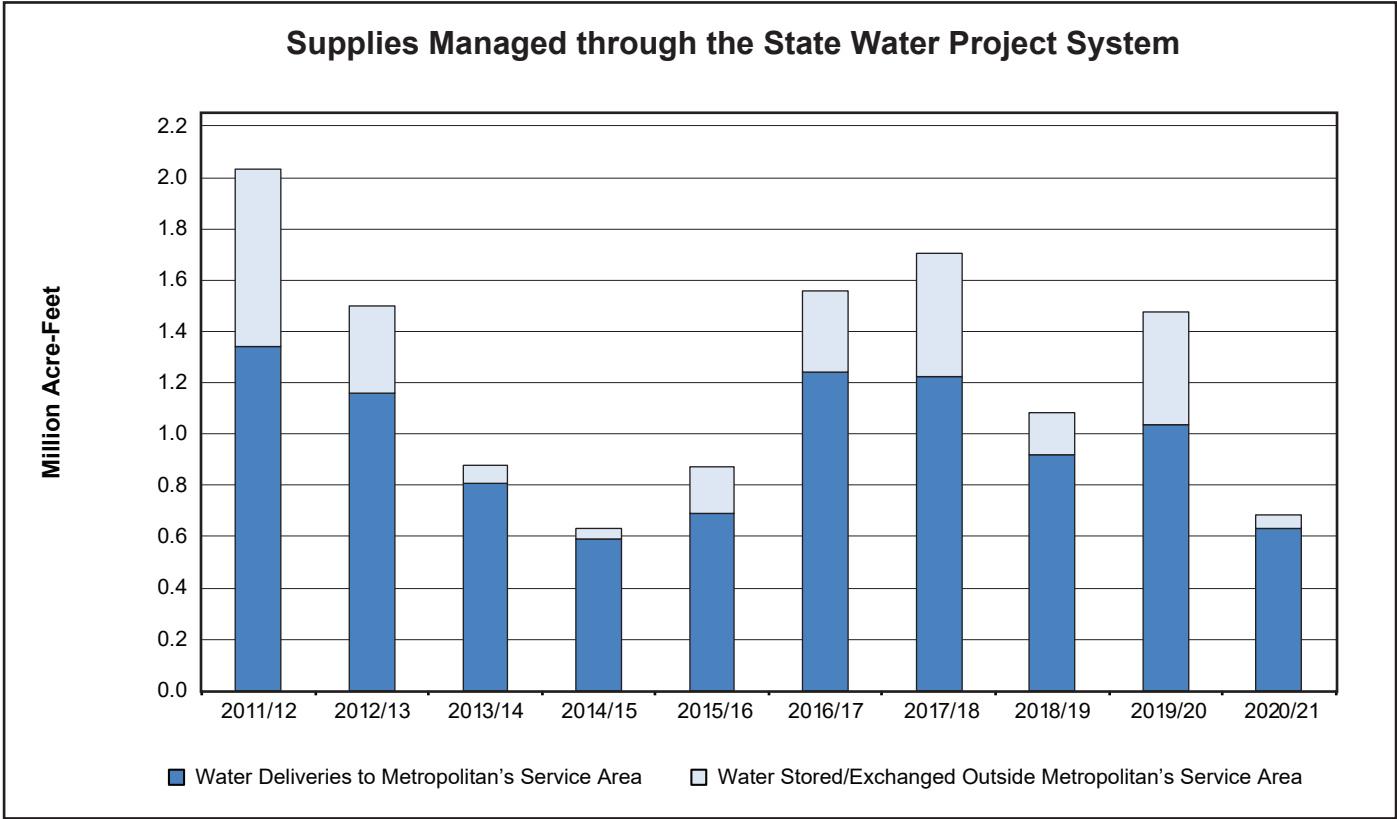


Figure 3-1. Supplies Managed through the State Water Project System

**TABLE 3-1  
CHARGES, PAYMENTS AND CREDITS UNDER THE STATE WATER  
AND DEVIL CANYON CASTAIC CONTRACTS**

(Millions of Dollars)

34

Fiscal Year	Conservation ( Delta )		Transportation			Extra * Capacity Costs	Devil Canyon/ Castaic	Subtotals	Credits	Totals	Accumulated Totals
	Capital	Minimum OMP&R <sup>1</sup>	Capital	Minimum OMP&R <sup>1</sup>	Variable						
1963-73	2.50	0.66	197.31	19.33	1.02	39.16	3.56	263.54	(15.62)	247.91	247.91
1973-83	80.68	29.43	484.57	181.61	59.06		70.74	906.09	(49.53)	856.56	1,104.47
1983-93	163.85	127.62	662.42	1,391.73	88.29	85.62	88.50	2,608.03	(373.17)	2,234.86	3,339.33
1993/94	23.50	16.92	74.35	147.75	(5.86)	25.24	9.89	291.79	(101.81)	189.98	3,529.31
1994/95	22.58	17.29	77.05	150.63	8.96	24.01	10.24	310.76	(94.13)	216.63	3,745.94
1995/96	21.85	19.68	81.31	111.87	3.11	26.08	10.60	274.49	(65.33)	209.16	3,955.10
1996/97	21.51	21.19	85.23	109.56	10.00	29.18	10.44	287.11	(38.30)	248.81	4,203.91
1997/98	21.79	22.87	90.07	138.35	6.67	27.58	9.56	316.87	(64.74)	252.14	4,456.05
1998/99	20.56	23.07	90.58	139.60	6.50	29.48	9.40	319.19	(74.96)	244.23	4,700.28
1999/00	19.16	24.11	89.26	164.26	12.05	29.99	10.32	349.15	(70.06)	279.09	4,979.37
2000/01	26.91 <sup>2</sup>	24.60	115.99 <sup>2</sup>	156.53	35.73	32.99	10.81	403.57	(27.19)	376.38	5,355.75
2001/02	8.46	25.20	60.24	147.23	111.75	38.99	10.53	402.40	(68.44)	333.97	5,689.72
2002/03	16.32	25.90	88.45	161.36	64.83	32.95	10.26	400.07	(57.10)	342.97	6,032.68
2003/04	18.39	27.86	94.86	169.12	110.22	31.49	10.23	462.18	(69.47)	392.71	6,425.39
2004/05	20.60	29.65	98.51	149.53	102.39	28.28	10.99	439.94	(66.68)	373.26	6,798.65
2005/06	17.36	28.37	88.80	140.92	130.82	23.60	11.10	440.97	(41.33)	399.64	7,198.30
2006/07	21.34	25.40	87.95	172.78	88.82	28.64	11.90	436.83	(74.20)	362.63	7,560.92
2007/08	23.95	15.33	80.98	188.78	165.49	36.24	12.12	522.90	(58.60)	464.30	8,025.22
2008/09	23.18	30.50	73.30	224.90	56.72	31.30	13.40	453.30	(58.59)	394.71	8,419.93
2009/10	34.69	39.06	91.87	205.72	71.27	35.93	13.97	492.49	(54.28)	438.22	8,858.15
2010/11	34.70	49.13	97.02	206.13	100.66	36.22	14.10	537.96	(46.08)	491.88	9,350.03
2011/12	26.52	57.29	94.26	197.73	109.67	38.73	14.68	538.88	(59.04)	479.84	9,829.87
2012/13 <sup>3</sup>	34.62	61.06	72.72	170.08	135.15	35.30	14.35	523.28	(42.33)	480.95	10,310.81
2013/14	27.13	60.51	93.50	163.40	91.77	30.64	14.21	481.17	(49.77)	431.40	10,742.21
2014/15	25.74	68.67	97.40	160.18	97.27	26.84	15.63	491.73	(51.74)	439.99	11,182.20
2015/16	33.95	85.43	97.75	193.95	115.63	31.52	16.95	575.17	(63.72)	511.45	11,693.65
2016/17	36.55	91.18	99.40	131.59	148.57	37.96	17.65	562.90	(37.16)	525.74	12,219.39
2017/18	35.93	90.15	97.96	136.63	150.19	37.95	18.66	567.47	(40.18)	527.29	12,746.68
2018/19 <sup>4</sup>	38.79	88.44	100.59	104.94	134.62	37.28	18.98	523.64	(41.37)	482.27	13,228.95
2019/20 <sup>4,5</sup>	48.89	89.93	96.32	125.54	148.08	38.11	19.34	566.21	(47.26)	518.95	13,747.90
2020/21 <sup>4</sup>	57.55	96.06	86.44	149.12	127.47	37.36	20.16	574.17	(52.41)	521.77	14,269.67
<b>TOTALS</b>	<b>1,009.58</b>	<b>1,412.57</b>	<b>3,846.46</b>	<b>6,010.83</b>	<b>2,486.93</b>	<b>1,024.64</b>	<b>533.25</b>	<b>16,324.26</b>	<b>(2,054.59)</b>	<b>14,269.67</b>	

\* Includes costs for excess capacity constructed for Metropolitan on the System and East Branch Enlargement <sup>1</sup> Minimum Operations, Maintenance, Power, and Replacement charge

<sup>2</sup> DWR requested early payment of \$36M to manage cash shortages due to California's 2001 energy crisis <sup>3</sup> Reporting changed from cash to modified accrual basis in FY 2012/13.

<sup>4</sup> Does not include advance payments for new facilities planning

*Arvin-Edison/Metropolitan Water Management Program*

Under a 1997 agreement with Arvin-Edison Water Storage District, Metropolitan can store up to 350,000 AF. The total water in storage on June 30, 2021 was 142,258 AF. As a result of detecting TCP (1,2,3-trichloropropane) in some of Arvin-Edison's wells, Metropolitan temporarily suspended operation of the program until the water quality concerns can be further evaluated and managed.

*Antelope Valley East-Kern Water Agency/Metropolitan Water Management Program*

A 2016 agreement with the Antelope Valley East-Kern Water Agency allows Metropolitan to store up to 30,000 AF in the AVEK groundwater basin, located downstream of the Edmonston Pumping Plant along the East Branch of the California Aqueduct. During FY 2020/21, Metropolitan did not store any water in the program. The total water in storage on June 30, 2021 was 27,000 AF.

*Antelope Valley East-Kern Water Agency/Metropolitan Water Management High Desert Water Bank Program*

Under the 2019 High Desert Water Bank program agreement with Antelope Valley-East Kern, Metropolitan can store up to 280,000 AF in the groundwater basin. AVEK carried out final design activities, including a Metropolitan-requested value engineering process. When facilities are completed, Metropolitan expects to be able to recover or store 70,000 AF per year. Metropolitan would recover the water through direct pumpback to the East Branch, providing additional water supply reliability during emergencies or water supply shortages.

*Kern Delta/Metropolitan Water Management Program*

A 2003 agreement with the Kern Delta Water District allows Metropolitan to store up to 250,000 AF in the groundwater basin underlying Kern Delta, with a retrieval capacity of 50,000 AF per year. During FY 2020/21, Kern Delta returned 21,527 AF. Total water in storage on June 30, 2021 was 166,869 AF.



### *Mojave/Metropolitan Water Storage Program*

In 2003, Metropolitan entered into a demonstration agreement with [Mojave Water Agency](#). The agreement allows for the exchange of SWP water on the basis of one acre-foot of return water for each acre-foot of water previously delivered to Mojave. A 2011 amendment extended the agreement to 2035 and reduced program costs. Metropolitan did not store or recover water from the Mojave program during FY 2020/21, leaving 18,812 AF in the exchange account as of June 30, 2021.

### *Water Transfers and Exchanges*

#### *San Gabriel Valley Municipal Water District Exchange*

A 2013 purchase and exchange agreement with San Gabriel Valley Municipal Water District meant that during FY 2020/21, Metropolitan developed 1,629 AF of additional supply by exchange.

## *Colorado River Resources*

Acquisitions and exchanges made possible by the 2003 Quantification Settlement Agreement continued during FY 2020/21. Figure 3-2 illustrates annual water supplies managed through the CRA since CY 2012. In CY 2020, Metropolitan managed a total of about 1,154,000 AF of water supplies through the Colorado River system. Of this volume, 687,000 AF was conveyed into Metropolitan's service area. Metropolitan also stored 338,000 AF of Intentionally Created Surplus in Lake Mead and stored or exchanged more than 128,000 AF of supplies outside Metropolitan's service area. On January 2021, Metropolitan's ICS storage in Lake Mead reached a record high level of 1,293,029 AF. For the remainder of CY 2021, due to dry conditions on the State Water Project, Metropolitan planned to divert approximately 1,068,000 AF of Colorado River supplies, including 70,000 AF of ICS, while keeping more than 1.2 MAF in Lake Mead for later use.

Figure 3-3 illustrates the storage levels of lakes Mead and Powell through FY 2020/21. While peak snowpack conditions were near average in 2021, a dry fall and significantly below-average spring

precipitation resulted in dry soil conditions. When combined with above-average temperatures, those conditions resulted in a projected unregulated inflow to Lake Powell of about 30 percent of normal. Lake Powell elevations remained above 3,575 feet, which, when combined with Lake Mead elevations, provided for an 8.23 MAF release to Lake Mead.

### ***Water Supply Acquisitions and Exchanges***

Metropolitan's conservation program with Imperial Irrigation District yielded 105,000 AF in CY 2020, with an additional 49,933 AF made available through Metropolitan's land-fallowing agreements with farmers in the Palo Verde Valley and Bard Water District. In CY 2020, Metropolitan delivered 270,200 AF to San Diego County Water Authority in exchange for 192,500 AF of conserved IID water, plus 77,700 AF of conserved water from the Coachella Canal and All-American Canal lining projects, which was made available to Metropolitan at Lake Havasu. The lining projects also conserved an additional 16,000 AF that was exchanged via a water rights agreement with a group of entities referred to as the San Luis Rey Settlement Parties. Metropolitan also delivered 128,000 AF to Coachella Valley Water District and Desert Water Agency during CY 2020 under a long-term agreement involving the exchange of Colorado River and SWP supplies.

## ***Local Resources***

### ***Water Recycling and Groundwater Recovery***

Since inception, Metropolitan's Local Resources Program has provided \$709 million in incentives to produce a total of about 4.1 MAF of local recycled water and recovered groundwater production. The LRP provides financial incentives of up to \$475/AF for member agencies to develop local supply projects. During FY 2020/21, Metropolitan provided \$14.5 million for production of 103,500 AF under the LRP. Out of the 116 projects contracted under the LRP, there are currently 66 active projects expected to produce about 246,300 AF per year once fully implemented. In addition, various agencies submit new LRP applications for staff review. Every year, staff assesses performance targets on all contracts and

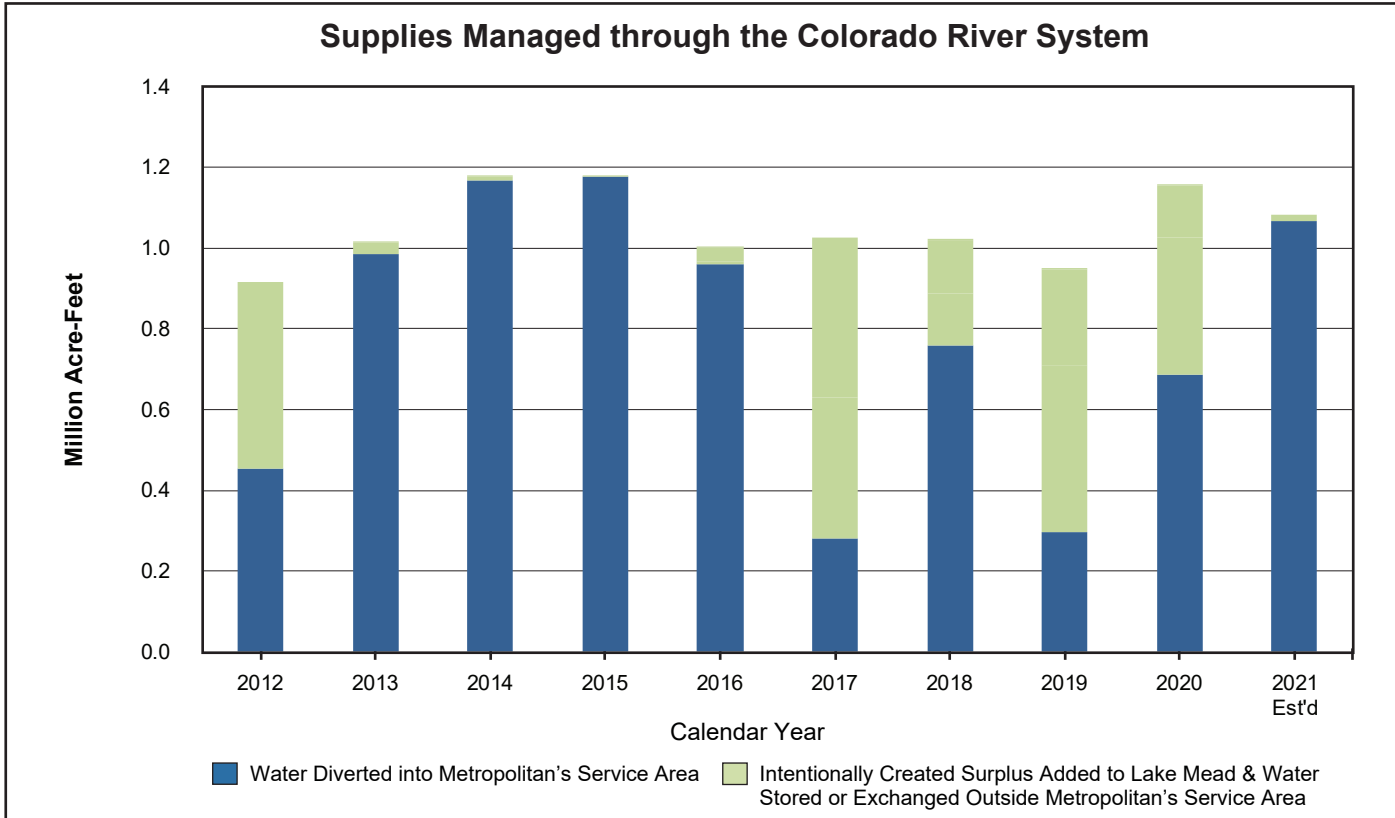


Figure 3-2. Supplies Managed through the Colorado River System

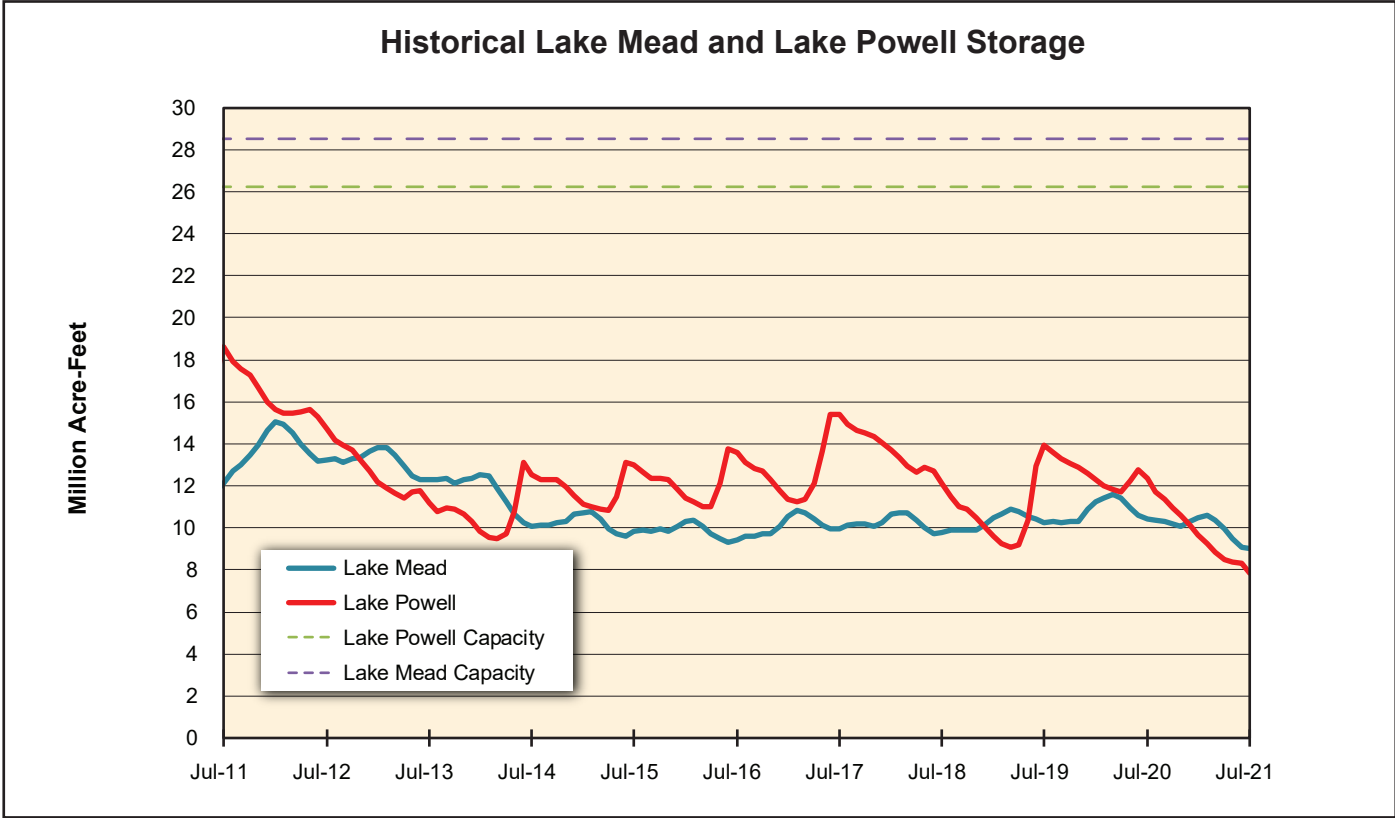


Figure 3-3. Historical Lake Mead and Lake Powell Storage Fiscal Years 2011/12-2020/21

can reduce contract amounts when targets are not met. In FY 2020/21, the LRP delivered about 55,000 AF of recycled water (Figure 3-4) and recovered about 48,000 AF of degraded groundwater (Figure 3-5). From inception through FY 2020/21, the LRP has produced 1.1 million AF of recovered groundwater and 3.03 million AF of recycled water.

Through the On-site Retrofit Program, Metropolitan provides incentives to customers to retrofit and connect irrigation and industrial potable water systems to recycled water pipelines. Since 2014, Metropolitan has paid \$11 million for projects at 436 sites, offsetting about 12,700 AFY of historic potable water use.

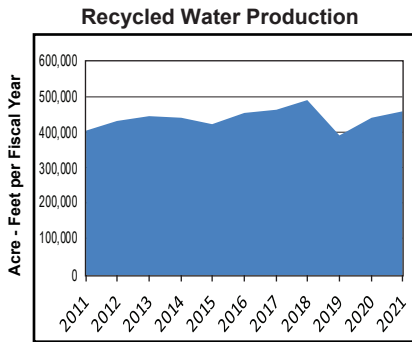


Figure 3-4.

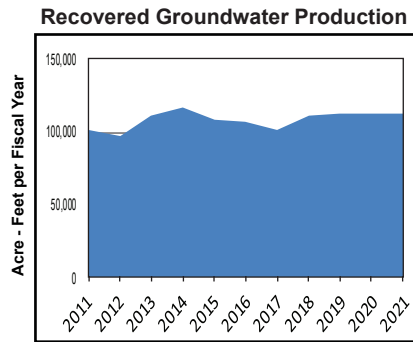


Figure 3-5.

*Figures reflect total regional production (including Metropolitan-assisted project production through June 2021), and subject to change due to annual reconciliation and late invoices. Recycled water production includes Santa Ana River base flows below Prado Dam.*

### **Stormwater**

To better understand the costs and benefits of stormwater capture, yield, and use, Metropolitan implemented its [third pilot program](#) using stormwater for direct use and groundwater recharge to further evaluate the relationship between stormwater capture and yield. These programs provide funding for new construction and installation of monitoring equipment, and three years of monitoring and reporting. Since early 2020, Metropolitan has committed \$12.5 million toward these pilot programs. The data collected from these pilot programs will help evaluate the water-supply benefits of stormwater projects and provide a basis for potential future funding approaches.

### ***Seawater Desalination***

During FY 2020/21, Metropolitan joined the [National Alliance for Water Innovation](#) to support research into early-stage desalination technologies. Metropolitan continued to support member agency desalination efforts and coordinate regulatory policy for seawater desalination through participation in CalDesal. CalDesal is a consortium of California water agencies and other stakeholders working to advance seawater and groundwater desalination. Member agency seawater desalination projects have been eligible for LRP incentives since 2014. Two local projects are currently in the permitting stage, while a third is undergoing environmental review. The three projects represent between 81,000 to 131,000 AFY of potential new supplies.

### ***Groundwater Storage***

Metropolitan extracted 23,032 AF of water previously stored in the Chino Basin. Metropolitan stored this water as part of its conjunctive use program with its member agencies, which enhances reliability during dry conditions, droughts and emergencies. Table 3-2 shows the balance of stored water in each in-region groundwater conjunctive use program as of June 30, 2021.

Metropolitan also develops cyclic agreements with member agencies to pre-deliver full-service water for future use upon mutual agreement. Participating member agencies pay for the water on an agreed-upon schedule for up to five years. The program allows for improved coordination of local resources with regional supplies. Metropolitan maintains cyclic agreements with nine member agencies. No water deliveries were made during FY 2020/21.

In May 2021, Metropolitan's board authorized the General Manager to enter into agreements with participating member agencies to increase regional reliability by shifting deliveries from SWP supplies to Colorado River water.

## ***Conservation and Water-Use Efficiency***

Water conservation plays a significant role in Metropolitan's ability to provide a reliable source of water for Southern California. Metropolitan encourages conservation and water-use efficiency by providing financial incentives, water conservation education and outreach programs. Water conservation efforts from the state and Metropolitan enabled Southern California to achieve its California 20x2020 Water Plan goal of a

**TABLE 3-2  
METROPOLITAN'S CONJUNCTIVE USE PROGRAMS**

<b>Conjunctive Use Program</b>	<b>Total Storage Capacity (AF)</b>	<b>2020/21 Beginning Balance (AF)</b>	<b>Change in Storage (AF)</b>	<b>2020/21 Ending Balance (AF)</b>
<b>Los Angeles County</b>				
Claremont	3,000	1,095	0	1,095
Compton	2,289	0	0	0
Foothill	9,000	0	0	0
Live Oak	3,000	0	0	0
Long Beach Phase 1	13,000	3,250	0	3,250
Long Beach – Lakewood	3,600	0	0	0
<b>Orange County</b>				
Orange County	66,000	0	0	0
<b>San Bernardino County</b>				
Chino Basin	100,000	45,929	-23,032	22,897
<b>Riverside County</b>				
Elsinore Basin	12,000	7,295	0	7,295
<b>TOTAL</b>	<b>211,889</b>	<b>57,569</b>	<b>-23,032</b>	<b>34,537</b>

Some 2020/21 beginning balances may differ from 2019/20 ending balances due to data received after publication of the 2020 Annual Report. 2020/21 data presented in this table includes CUP production data that was received by June 30, 2021 and are subject to change.

20 percent reduction from its 2009 demand levels. Metropolitan's continued investment in water conservation has enabled its service area to keep demands low, thereby increasing supply storage that will be utilized during this current drought.

Metropolitan invested a total of \$16.9 million in conservation incentives and programs for water consumers in 2020/21, generating roughly 41,600 AF in projected lifetime water savings. While the COVID-19 pandemic suppressed conservation rebate activity, Metropolitan's continuing effort to streamline its regional rebate application activity online prevented a much larger drop. With many commercial businesses shut down or operating remotely, the demand for commercial rebates diminished almost in half. By contrast, residential rebates did not see such a drop. The ability to research rebate incentives, apply online, receive email updates, and receive a check in the mail facilitated the ability for residential consumers to make water-efficient improvements while many were staying at home.

FY 2020/21 saw Metropolitan begin making inroads to reducing water loss in residential homes and municipal distribution systems as new conservation measures took hold. A new residential rebate created for flow monitoring devices allowed residential consumers to track their water usage and spot leaks through data sent to their smart phone. Following a successful pilot program, Metropolitan created a municipal leak detection demonstration program where agencies can be reimbursed for leak detection and repair activities that reduce their systems' water losses.

Metropolitan staff participated in the documentary ["The Last Drop,"](#) which aired on the National Geographic Channel and featured advice on how people can create a more water-efficient lifestyle at home.

Metropolitan continued to implement a 2018 state law on making water conservation a California way of life. The legislation involves a water-budget based approach for conservation and water-use efficiency and sets a November 2023 deadline for reporting on urban water use, indoor residential use, outdoor residential use, outdoor commercial, industrial and institutional use with dedicated irrigation meters, water losses, variances for unique water uses, and a potable reuse bonus incentive.



The legislation's new reporting requirements relating to drought resilience were included in Metropolitan's 2020 Urban Water Management Plan and Water Shortage Contingency Plan. Metropolitan provided technical expertise via several workgroups.

## *Water Resource and System Planning*

### ***Integrated Water Resources Planning***

For nearly 25 years, Metropolitan has based its long-range strategic resource planning on its [Integrated Water Resources Plan](#). First adopted in 1996 under a 25-year timeframe, the IRP has been regularly updated. The 2020 IRP strengthens the adaptive management approaches employed in prior updates through the incorporation of scenario planning that prepares the region for a wider range of potential outcomes.

Four months after launching the 2020 update, the board received preliminary scenarios in July 2020. These were revised throughout the fiscal year, culminating in a refined set of scenarios and supply-demand analyses presented in June 2021. During that time, the board's Integrated Resources Plan Special Committee held 10 meetings with four scenarios developed based on a plausible range of future demands and imported supply stability. Board members, member agencies, retail agencies and other stakeholders provided feedback through multiple workshops and an online survey.

Metropolitan hosted six collaborative technical workshops with member agency staff and worked with expert consultants in the fields of water demand, demographics and climate change.

### ***Urban Water Management Plan and Water Shortage Contingency Plan***

Metropolitan adopted its 2020 Urban Water Management Plan which reports on Metropolitan's water service reliability, evaluation of frequent and severe periods of droughts, and planned actions to respond to actual water shortage conditions under the Water Shortage Contingency Plan.

### ***Future Supply Actions Funding Program***

Future Supply Actions are low-cost, low-risk supply development efforts designed to increase local supply resiliency by preparing the region for unforeseen water supply challenges. In FY 2020/21, Metropolitan implemented 14 FSA funding agreements with nine member agencies representing an investment of \$3.1 million in new research. Metropolitan

also managed a \$975,000 funding agreement with the [Water Research Foundation](#) for six potable reuse studies and one agricultural reuse study. Several of the studies may prove critical to enabling direct potable reuse in California. The FSA studies will help remove barriers to the development of local groundwater, recycling, stormwater and seawater desalination supplies.

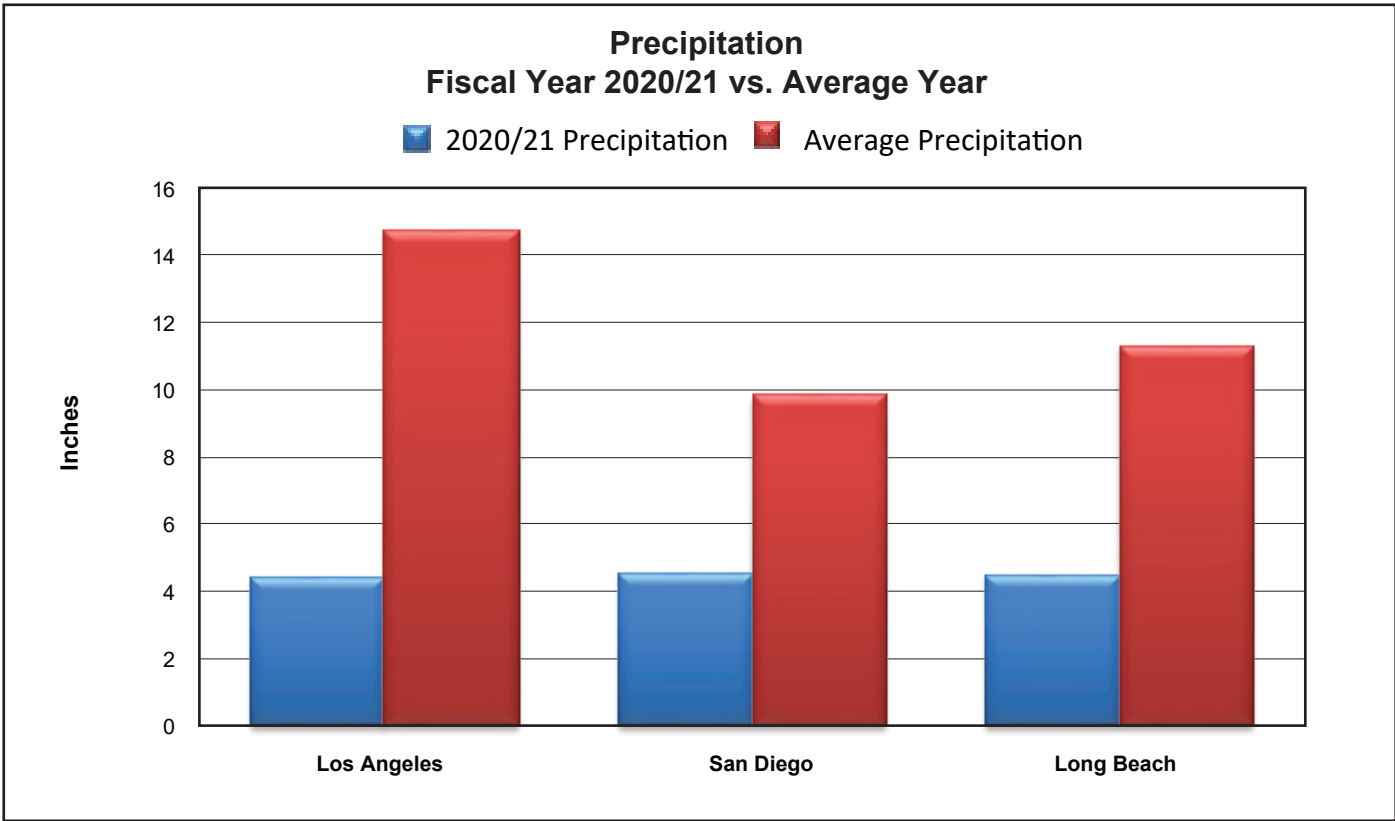
### ***Water Resource Data***

Figure 3-6 displays precipitation for FY 2020/21 compared to average annual precipitation figures for three weather stations within Metropolitan's service area. Local rainfall was very low for the year. Downtown Los Angeles recorded precipitation of 4.41 inches, which was only 30 percent of average. San Diego recorded precipitation of 4.51 inches, which was 46 percent of average. Precipitation in Long Beach was 4.49 inches or 40 percent of average.

Figure 3-7 displays population within Metropolitan's service area since 1990, with historical population based on California Department of Finance estimates and projections by regional transportation planning agencies. Since 1990, the population served has increased from about 15 million to about 19 million, although growth has slowed significantly, from an average of about 180,000 persons per year in the 1990s, to less than 100,000 per year since 2015. Population slightly decreased between 2019 and 2020.

Figure 3-8 displays Metropolitan's historical water transactions since FY 1989/90, which ranged between 1.36 and 2.51 MAF (this includes sales, exchanges and wheeling). The decline in transactions since FY 2014/15 reflects reduced consumer demand since the statewide drought emergency was declared in 2014. Demands remained low even after the state ended the drought emergency in 2017, but with drier conditions returning in FY 2020/21 water demands began to increase again. Water transactions fluctuate due to many factors, including weather, hydrologic conditions, local supply production, and economic activity. Historically, per capita water use gradually increases in years following severe droughts.

Figure 3-9 displays Metropolitan's calendar year ending storage reserves for the past 10 years. In 2020, with balanced supply and demand conditions, total storage reserves remained at 3.9 MAF, the same as the record levels reached in 2019. These reserves consisted of 3.1 MAF of dry-year storage and 750,000 AF of emergency storage.



*Figure 3-6. Precipitation*

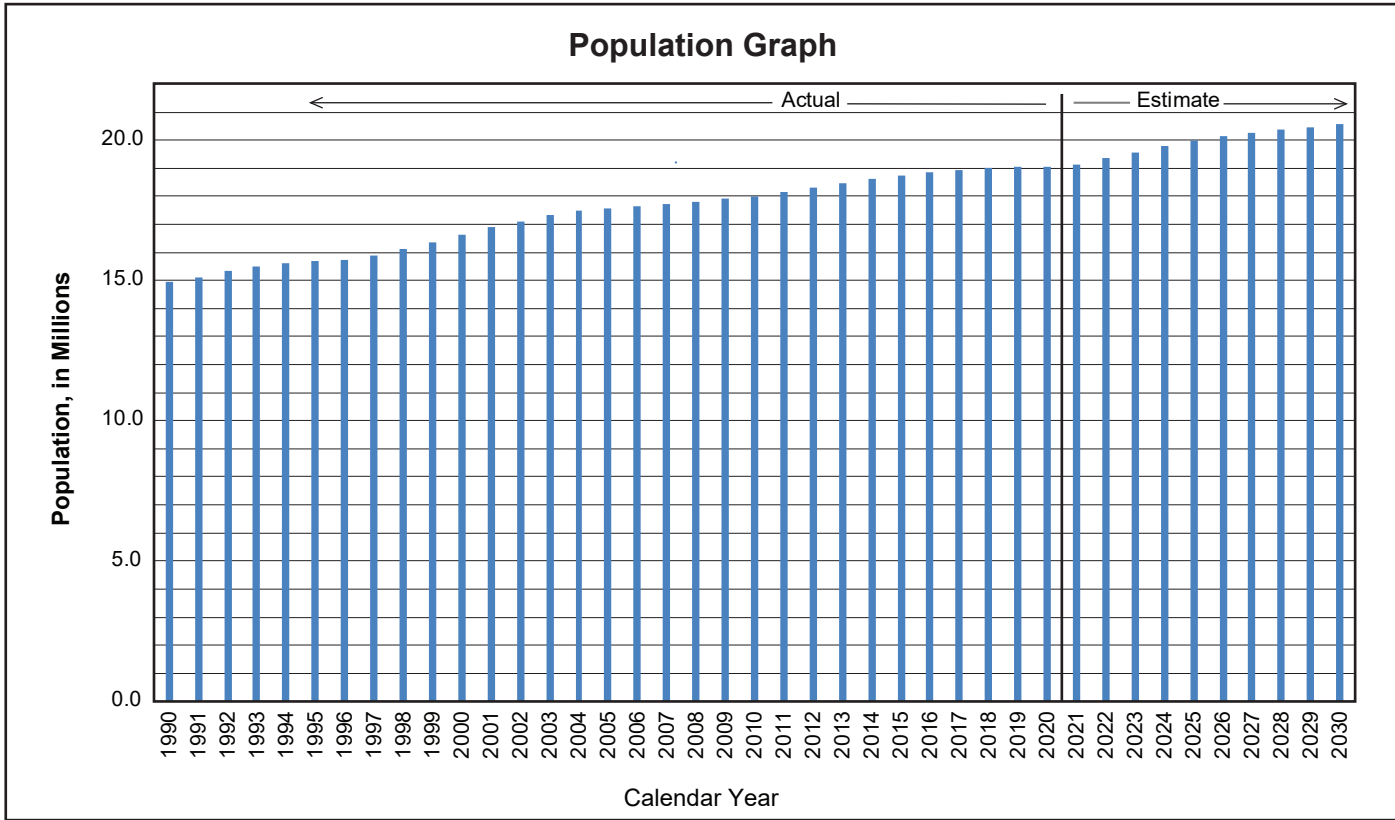


Figure 3-7. Population Growth

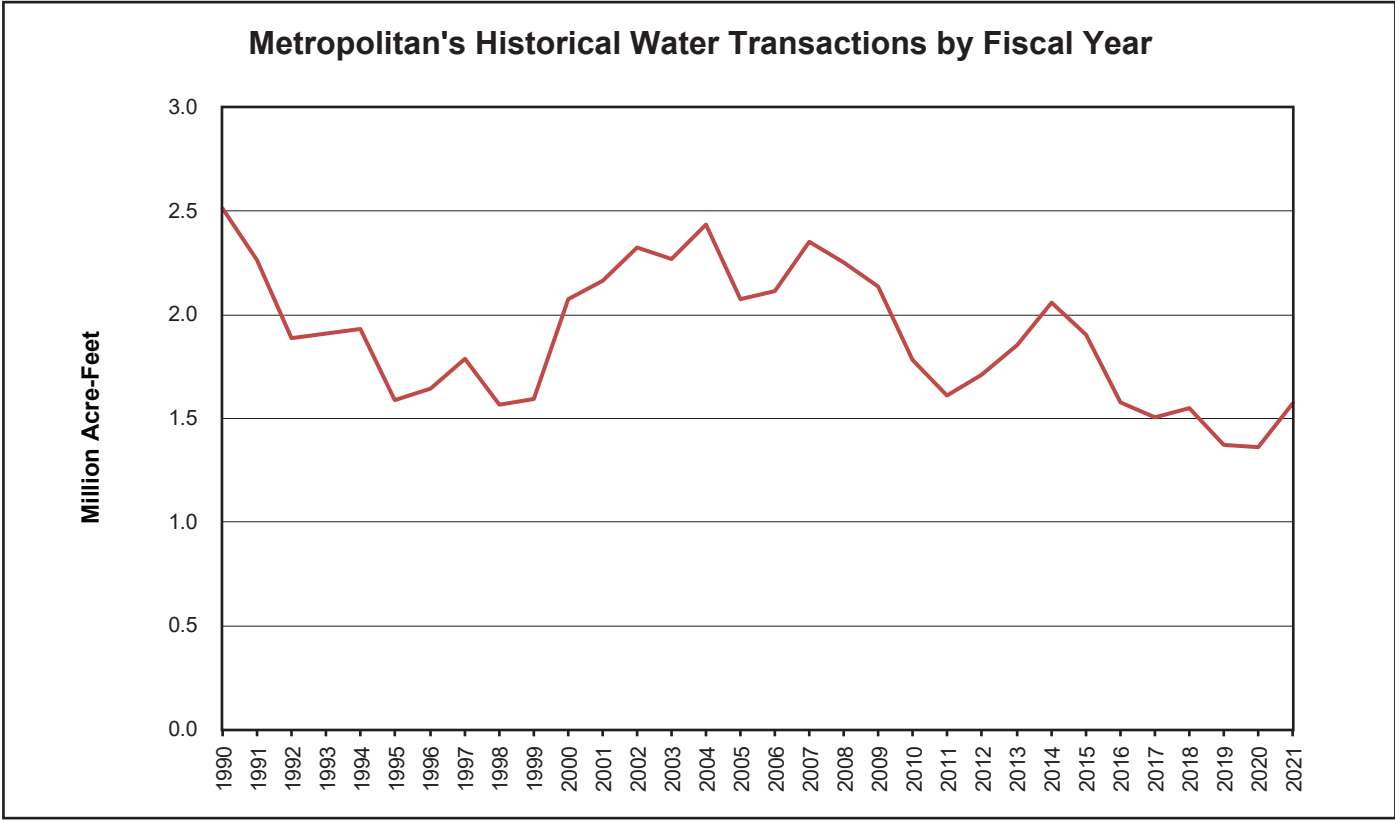


Figure 3-8. Metropolitan's Historical Water Transactions (includes sales, exchanges, and wheeling)

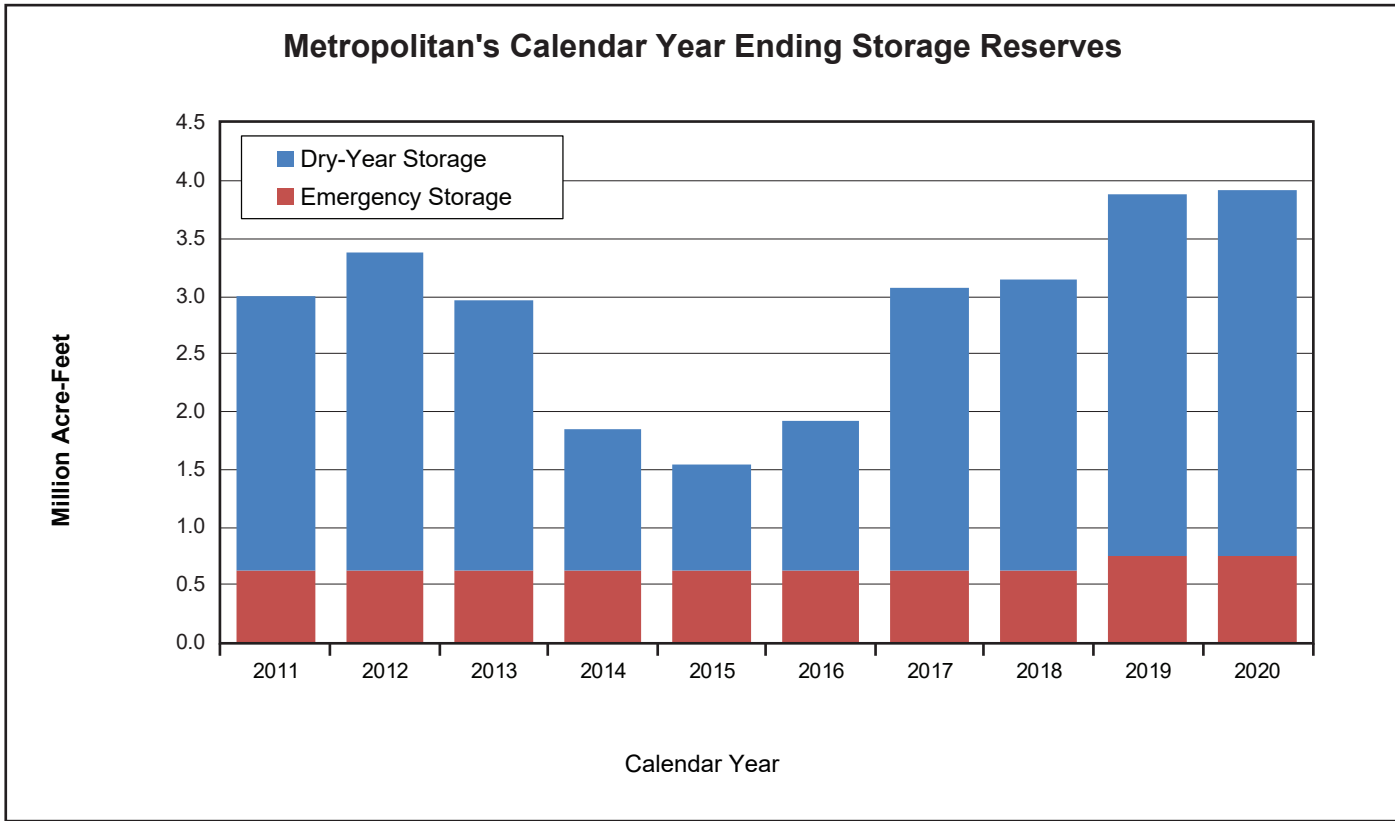
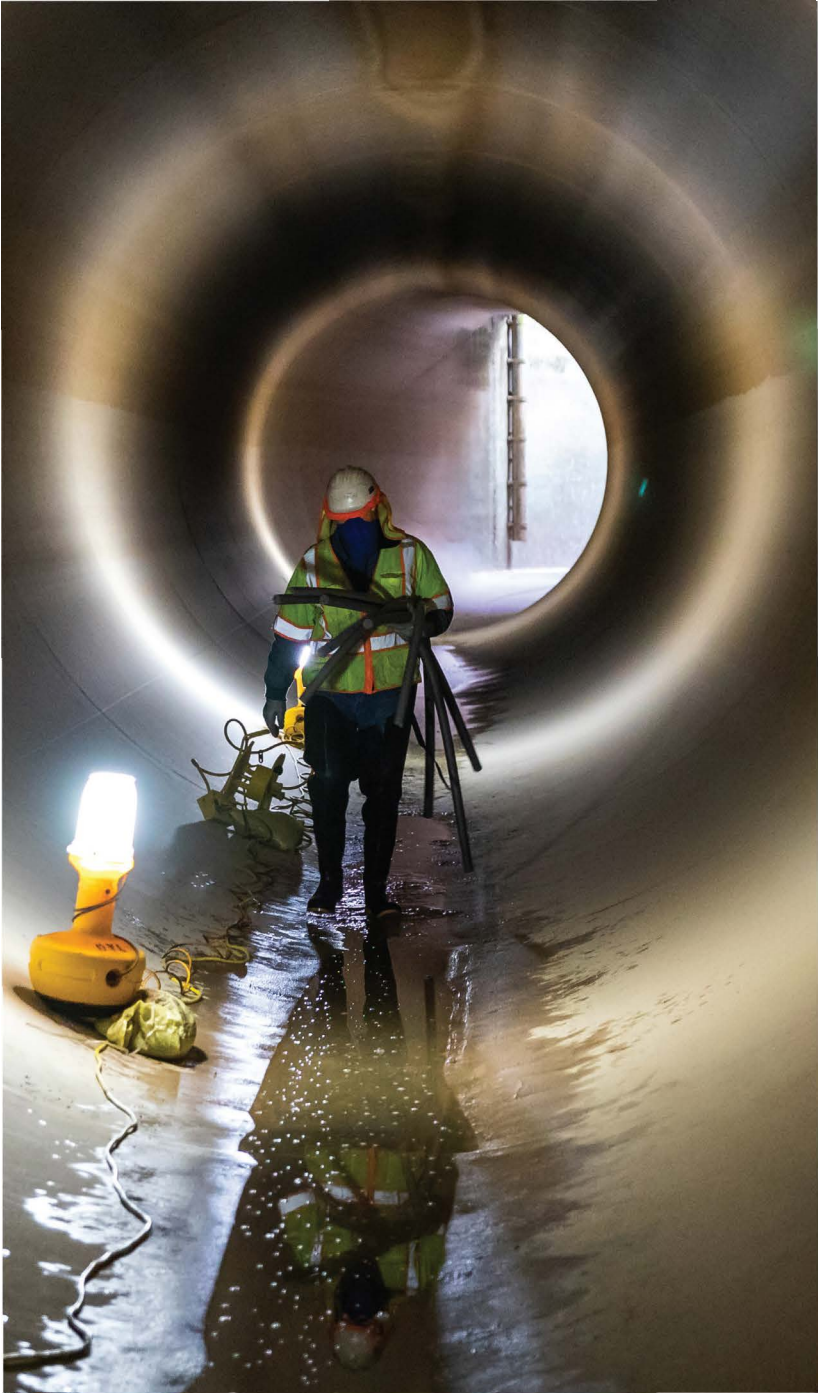


Figure 3-9. Metropolitan's Calendar Year Ending Storage Reserves



*Staff preparing materials for water flow measurement in the San Jacinto Tunnel during the Colorado River Aqueduct shutdown.*

## Water System Operations

The Water System Operations Group conveys, treats and distributes water to member agencies. The member agencies or their sub-agencies serve about 19 million Southern Californians. WSO protects and ensures water quality for Metropolitan's six-county service area, meeting all primary drinking water standards, while operating and maintaining Metropolitan's five treatment plants with a combined capacity of more than 2.3 billion gallons of water per day. WSO balances demand and supply as it operates, manages and maintains Metropolitan's water and power systems. It also provides manufacturing and fabrication services to support Metropolitan infrastructure; offers technical advice and support to member agencies, customers and other entities; provides technical training to ensure an effective, efficient and safe work environment; runs Metropolitan's Apprenticeship Program; assists in planning, design and construction of new facilities; and responds to emergencies to restore service in the shortest time possible.

### *Water Treatment*

Metropolitan's five water treatment plants treat water from the Colorado River and Northern California. The Robert B. Diemer Water Treatment Plant in Yorba Linda provides treated water to areas of Orange County and coastal Los Angeles County. The Joseph Jensen Water Treatment Plant in Granada Hills supplements local water supplies in the San Fernando Valley, Ventura County and central Los Angeles, while the F.E. Weymouth Water Treatment Plant in La Verne generally serves eastern Los Angeles County, the San Gabriel Valley and parts of Orange County. The Henry J. Mills Water Treatment Plant in Riverside serves western Riverside County and Moreno Valley. The Robert A. Skinner Water Treatment Plant in Winchester serves parts of Riverside County and meets the supplemental treated water needs of San Diego County. The Jensen and Mills plants only treat State Water Project supplies, while the other three plants treat a blend of supplies from the SWP and Colorado River.



In response to California's severe drought conditions, the Diemer and Weymouth plants solely treated Colorado River water for most of the year and supplied the majority of water demands in the Los Angeles Basin area. This minimized demand on the Jensen plant and SWP usage. The Mills plant also changed its water supply from SWP to Colorado River water from Diamond Valley Lake in May to further reduce demands on SWP resources.

All plants continued to operate under COVID-19 prevention plans that include site access restrictions, personal protection guidelines, use of micro-teams, physical distancing modifications, and other policies and procedures to ensure the safety of field staff while maintaining essential treatment operations.

Wildfires within the Diemer service area threatened to disrupt operations and damage facilities. The Blue Ridge, Silverado and Bond fires occurred adjacent to the Diemer plant and within the Orange County conveyance and distribution system area. Several structures experienced precautionary power outages by the local power supplier and some temporarily lost communication service as a result of damaged electrical lines. Despite these challenges, there was no significant damage to Metropolitan infrastructure or interruption to water service.

The Skinner plant upgraded equipment that controls a complex ozone disinfection process that automatically monitors, controls, transmits and receives hundreds of different individual processes. Staff replaced the ozone unit's programmable logic controller and the communications network equipment, ensuring reliable ozone operations.

The Weymouth plant upgraded five pumps that supply water to the La Verne facility from the finished water reservoir. The water is used for potable use, treatment process, fire protection and irrigation. Completion of the facility's domestic water pipeline loop eliminated dead ends on the system to maintain high-quality water, and a surge tank further protected the pipeline.

The Jensen plant replenished 600 tons of anthracite coal that had been lost over a period of several years during normal filter backwash operations. Crews installed more robust filters that resulted in improved turbidity and longer run times between backwashes. New customized equipment allows filter media to be replaced more efficiently and safely.

## *Water Quality*

The quality of Metropolitan's source and treated water is monitored and measured at the Water Quality Laboratory and five water treatment plant laboratories. Previous annual reports generally provided water quality monitoring data for the preceding fiscal year running from July 1 through June 30, with comparisons to historical trends ranging anywhere from 15 to 30 years. This year and moving forward, to be consistent with Metropolitan's regulatory compliance monitoring reports, the annual report will provide calendar year data and 15-year trends. Previously published reports may be referenced for historical water quality data trends. Narrative sections of the report continue to reflect activities that occurred during the fiscal year.

### ***Regulations***

Metropolitan must comply with several federal and state regulations governing the treatment, supply and testing of drinking water. The Water Quality Laboratory also is regulated and approved under the State Water Resources Control Board's Environmental Laboratory Accreditation Program. Metropolitan's treated supplies met all regulatory requirements and primary drinking water standards during CY 2020.

#### *New Regulations and Monitoring Requirements*

New regulations summarized here represent the status of planned and promulgated drinking water regulations through June 2021.

The new ELAP laboratory certification regulation became effective on Jan. 1, 2021, with full compliance required on or before Jan. 1, 2024. Metropolitan's six ELAP-certified laboratories will apply for biennial re-certification under the new regulation during the 2023 application period. Implementation efforts to adopt the new, more stringent standards are underway and all laboratories are on target to meet the compliance deadline.

In May 2021, the SWRCB approved the California Revised Total Coliform Rule with an effective date of July 1, 2021. Sample siting plans are being updated to meet requirements of the revised regulation.

No federal regulation currently exists for perchlorate in drinking water because EPA found that perchlorate does not occur frequently enough or at levels of public health concern to support a national drinking water regulation. In the meantime, state regulatory actions continue. In October 2020, the SWRCB adopted a proposal to lower the perchlorate detection limit for purposes of reporting from 0.004 milligrams per liter (mg/L) to 0.002 mg/L effective July 1, 2021; the limit will be lowered again to 0.001 mg/L effective Jan.1, 2024. This revised detection limit allows the collection of new occurrence data to support the development of a revised California maximum contaminant level for perchlorate, if appropriate.

In response to [SB 1422](#), the SWRCB continued efforts to standardize a methodology for monitoring microplastics in drinking water and develop requirements for four years of testing and reporting. During FY 2020/21, Metropolitan participated in a method evaluation project coordinated by the Southern California Coastal Water Research Project, in collaboration with the SWRCB. The results of the project will be used to inform the SWRCB's development of a standardized methodology and monitoring strategy.

Concern persisted over the family of manufacturing chemicals known as PFAS (perfluoroalkyl and polyfluoroalkyl substances). There are currently no federal or state MCLs for any PFAS in California's water supplies, but several states, including California, are actively developing health guidance levels. In March 2021, EPA published its decision to regulate PFOA (perfluorooctanoic acid) and PFOS (perfluorooctane sulfonate) in drinking water. This launched a 24-month deadline to publish for public comment proposed MCLGs (maximum contaminant level goals) and MCLs for PFOA and PFOS.

In 2020 and 2021, the SWRCB's Division of Drinking Water took several actions to collect PFAS occurrence data and to regulate PFOA and PFOS. Public water systems in the vicinity of groundwater wells with prior PFAS detections were required to conduct initial monitoring by December 2020, with continued quarterly monitoring thereafter. Systems with annual average PFAS levels at or above DDW's notification levels of 5.1 and 6.5 nanograms per liter (ng/L) for PFOA and PFOS, respectively, were required to report monitoring findings in their 2020 Consumer Confidence Reports. Notification levels are non-regulatory, precautionary health-based measures for chemicals in

drinking water that warrant public notification, further monitoring and assessment.

In March 2021, DDW issued a notification level of 0.5 micrograms per liter ( $\mu\text{g/L}$ ) for PFBS (perfluorobutane sulfonic acid). This level is approximately 100 times higher than those for PFOA and PFOS, an indicator that PFBS is less toxic than either PFOA or PFOS.

Also in March, DDW established a PFBS reporting level of 5  $\mu\text{g/L}$ , the level (based on a running four-quarter average) at which water providers are recommended to take mitigating action.

Staff continue to closely track the development of state and national health and regulatory guidelines. Additional information on PFAS and their impact on regional water supplies can be found in Metropolitan's [PFAS at a Glance](#) and [Frequently Asked Questions](#).

In May 2021, the California Office of Environmental Health Hazard Assessment submitted to SWRCB recommended notification levels for four cyanotoxins. OEHHA recommended 4  $\mu\text{g/L}$  for anatoxin-a as the level at which humans could consume drinking water for up to one month without toxic effects. Interim levels were recommended for saxitoxins at 0.6  $\mu\text{g/L}$  for 1-day exposure, microcystins at 0.03  $\mu\text{g/L}$  for up to three months; and cylindrospermopsin at 0.3  $\mu\text{g/L}$  for up to three months.

EPA published the final [Revised Lead and Copper Rule](#) in June 2021 but delayed the effective date until Dec. 16, 2021. The delay provided additional time for EPA to engage with stakeholders on possible rule revisions. The new rule will affect all of Metropolitan's member agencies and its small desert water systems. Compliance monitoring under Title 22 is required at treatment plant effluents.

### *Water Quality Monitoring*

Water Quality staff performed over 178,000 analytical tests using more than 170 methods on more than 42,500 samples to ensure that Metropolitan's water met regulatory requirements and was safe for public consumption and continued this work throughout the COVID-19 pandemic. When all treatment process monitoring measurements of turbidity, pH and chlorine are included, each water treatment plant laboratory contributed an additional 150,000 test results.

## ***Chemical/Physical***

### *Organic Chemicals (VOCs, Herbicides, Pesticides, SOCs)*

Herbicides, pesticides and synthetic organic compounds (including 1,2,3-trichloropropane) are on a three-year monitoring cycle. None of these compounds were detected in the last monitoring period (2018), and new compliance monitoring will be completed by the end of CY 2021.

### *Trace Metals, General Physical and Chemical Analyses*

Tables 4-1 and 4-2 show locations and monitoring results for trace metals and general mineral and physical analysis of Metropolitan's water supplies. Table 4-1 summarizes CY 2020 average trace metal levels found at source water locations and plant effluents. Boron is typically detected at less than 200 µg/L, well below the 1,000 µg/L MCL. Other detected trace metals include vanadium, strontium, molybdenum, manganese, lithium, iron, barium, arsenic and aluminum. No results exceeded the MCLs.

Table 4-2 summarizes CY 2020 average general mineral and physical constituents found at source water locations and plant effluents. The three treatment plants able to receive a blend of SWP supplies and Colorado River Aqueduct water—Weymouth, Diemer, and Skinner—received between 6 and 32 percent SWP supplies in 2020. No monitoring results exceeded the primary or secondary MCLs.

### *Radionuclides*

Table 4-3 summarizes CY 2020 radionuclide levels found at source water locations and plant effluents. Uranium was the only radionuclide detected in treated water. The highest average quarterly source water sample results were 3.0 pCi/L for uranium at Lake Mathews and 6.0 pCi/L of gross beta also at Lake Mathews. No results exceed the MCLs.

**TABLE 4-1  
TRACE METALS IN METROPOLITAN'S WATER SUPPLIES  
Calendar Year 2020**  
(in micrograms per liter [µg/L])

	Maximum Contaminant Level (MCL)	Minimum Reporting Level	SOURCE WATERS												TREATMENT PLANT EFFLUENTS				
			Lake Havasu	San Jacinto Tunnel	Lake Mathews	Castaic Lake	Silverwood Lake	Mills Influent	Lake Perris	Weymouth Influent	Diemer Influent	Diamond Valley Lake	Lake Skinner	Weymouth	Diemer	Jensen	Skinner	Mills	
Aluminum	1,000 (200*)	10	31	26	31	46	24	15	16	53	24	ND	27	150	140	89	120	63	
Antimony	6	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Arsenic	10	0.5	2.3	2.3	2.3	1.7	2.3	2.2	1.2	2.2	2.2	2.0	2.2	1.5	1.6	1.2	1.1	0.7	
Barium	1,000	5	110	110	100	26	30	30	50	110	110	29	91	100	110	25	91	28	
Beryllium	4	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Boron	1,000#	20	130	130	130	180	150	150	170	130	130	160	130	130	140	170	130	140	
Cadmium	5	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Chromium, Total	50	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Chromium 6**	NA	0.03	ND	ND	ND	0.06	0.15	0.12	ND	ND	ND	ND	ND	ND	ND	0.07	0.06	0.15	
Copper	1,300## (1,000*)	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Iron	300*	10	32	35	68	26	43	24	34	59	56	ND	30	ND	ND	ND	ND	ND	
Lead	15##	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Lithium	NA	10	42	45	42	ND	ND	ND	ND	41	43	ND	33	40	43	ND	34	ND	
Manganese	50* (500#)	5	ND	ND	6	6	21	8	6	ND	7	ND	6	ND	ND	ND	ND	ND	
Mercury	2	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Molybdenum	NA	2	4	4	5	ND	ND	ND	2	5	5	ND	4	5	5	ND	4	ND	
Nickel	100	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Silver	100*	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Strontium	NA	20	990	1010	960	240	240	230	230	980	990	230	820	980	990	240	840	220	
Thallium	2	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Vanadium	50#	1	2.3	2.2	2.5	1.8	3.4	3.3	1.9	2.6	2.7	1.5	2.4	2.5	2.5	2.0	2.0	3.0	
Zinc	5,000*	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	

NA - Not Applicable

ND - Not Detected

\* Secondary standard based on consumer acceptance rather than health.

\*\* MCL invalidated in 2017 due to court action.

# California Notification Level: a health-based advisory level.

**TABLE 4-2**  
**GENERAL MINERAL AND PHYSICAL ANALYSIS OF METROPOLITAN'S WATER SUPPLIES**  
 Calendar Year 2020 Averages

CONSTITUENTS	UNITS	SOURCE WATERS								TREATMENT PLANT EFFLUENTS				
		LAKE HAVASU	SAN JACINTO TUNNEL	LAKE MATHEWS	CASTAIC LAKE	SILVER-WOOD LAKE	LAKE PERRIS	DIAMOND VALLEY LAKE	LAKE SKINNER	WEYMOUTH	DIEMER	JENSEN	SKINNER	MILLS
SILICA	mg/L	7.6	7.7	7.6	11.1	10.5	2.5	4.5	6.8	7.8	7.6	11.1	7.1	10.0
CALCIUM	mg/L	71	70	66	26	22	24	22	51	63	63	26	54	22
MAGNESIUM	mg/L	25	25	26	11	10	12	12	20	25	25	12	21	10
SODIUM	mg/L	88	89	91	42	48	56	51	72	94	94	47	83	57
POTASSIUM	mg/L	4.5	4.6	4.6	2.5	2.5	3.3	3.3	4.0	4.5	4.5	2.6	4.2	2.7
CARBONATE	mg/L	0	0	0	0	0	0	4	0	0	0	0	0	0
BICARBONATE	mg/L	163	158	150	93	97	105	82	133	142	141	98	128	92
SULFATE	mg/L	209	211	213	50	36	40	46	140	208	207	54	157	46
CHLORIDE	mg/L	86	88	90	50	58	76	68	78	92	91	54	84	65
NITRATE	mg/L	1.2	1.1	0.4	1.6	1.6	0.2	0.5	0.5	0.7	0.6	1.7	0.7	1.9
FLUORIDE	mg/L	0.3	0.3	0.3	0.1	<0.1	<0.1	0.1	0.2	0.7	0.8	0.7	0.7	0.8
TOTAL DISSOLVED SOLIDS (TDS)	mg/L	574	576	574	240	237	266	251	438	565	563	258	475	263
TOTAL HARDNESS AS CaCO <sub>3</sub>	mg/L	275	272	264	109	90	106	98	200	256	254	110	215	92
TOTAL ALKALINITY AS CaCO <sub>3</sub>	mg/L	133	131	123	76	80	87	73	110	117	116	82	105	77
FREE CARBON DIOXIDE	mg/L	2.0	1.4	1.7	3.7	1.3	1.8	1.8	1.4	1.8	1.8	0.7	1.6	0.6
pH	pH	8.14	8.29	8.18	7.67	8.16	8.08	8.41	8.22	8.12	8.12	8.39	8.15	8.41
SPECIFIC CONDUCTANCE	µS/cm	936	944	945	426	423	504	471	742	936	933	459	800	472
COLOR	CU	4	3	3	10	6	4	4	4	1	1	2	2	2
TURBIDITY	NTU	0.84	0.59	2.0	0.76	0.91	0.73	0.45	0.80	0.04	0.04	0.04	0.06	0.06
TEMPERATURE	°C	19	21	20	14	17	17	17	21	19	22	18	23	20
ASBESTOS	MFL	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMIDE	mg/L	0.08	0.06	0.09	0.15	0.18	0.24	0.21	0.12	--	--	--	--	--
TOTAL ORGANIC CARBON	mg/L	3.08	3.17	3.01	2.67	3.43	3.81	2.93	3.11	--	--	--	--	--
CYANIDE	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FOAMING AGENTS (MBAS)	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
THRESHOLD ODOR NUMBER (TON)	NA	7	3	10	3	5	9	2	7	2	2	2	2	2
SATURATION INDEX	NA	--	--	--	--	--	--	--	--	0.53	0.55	0.34	0.49	0.28
AGGRESSIVENESS INDEX	NA	13	13	12	11	12	12	12	12	12	12	12	12	12
STATE PROJECT WATER	%	0	0	0	100	100	100	100	34	6	8	100	32	100

NA - Not Applicable

µS/cm - microSiemen per centimeter

ND - Not Detected

CU - Color Units

**TABLE 4-3**  
**RADIONUCLIDES IN METROPOLITAN'S WATER SUPPLIES**  
 Calendar Year 2020\*  
 (in picoCuries per liter [pCi/L])

Location	Gross Alpha	Gross Beta**	Combined Radium (226 + 228)	Strontium-90	Tritium	Uranium	Radon-222
<b>DLR</b>	3	4			1,000	1	100
<b>MCL</b>	15	50	5	8	20,000	20	NA
Lake Havasu	ND	5.5	ND	ND	ND	2.7	ND
San Jacinto Tunnel	ND	5.0	ND	ND	ND	2.3	ND
Lake Mathews	ND	6.0	ND	ND	ND	3.0	ND
Silverwood Lake	ND	ND	ND	ND	ND	2.1	ND
Lake Perris	ND	ND	ND	ND	ND	1.4	ND
Diamond Valley Lake	ND	ND	ND	ND	ND	ND	ND
Lake Skinner <sup>#</sup>	ND	ND	ND	ND	ND	1.9	ND
Castaic Lake (Jensen Influent)	ND	ND	ND	ND	ND	ND	ND
Weymouth Effluent	ND	ND	ND	ND	ND	2.4	ND
Diemer Effluent	ND	ND	ND	ND	ND	2.4	ND
Jensen Effluent	ND	ND	ND	ND	ND	ND	ND
Mills Effluent	ND	ND	ND	ND	ND	ND	ND
Skinner Effluent	ND	ND	ND	ND	ND	1.4	ND

DLR - Detection Limit for the Purposes of Reporting

MCL - Maximum Contaminant Level

NA - Not Applicable

ND - Not detected. All results less than DLR were reported as ND

\*Results obtained during triennial monitoring completed in 2020. Data for gross alpha, radium, and uranium are reported for three years until the next scheduled monitoring. Gross beta data are quarterly annual averages. Strontium and tritium data are annual results. Annual radon monitoring is voluntary

\*\*The gross beta particle activity MCL is 4 millirem/year annual dose equivalent to the total body or any internal organ. 50 pCi/L is used as a screening level.

<sup>#</sup>Represents the combined effluent from Skinner plants 1 and 3.



### *Total Dissolved Solids*

The salinity of supplies delivered through the Colorado River Aqueduct is higher than the SWP (Figure 4-1), primarily due to natural mineral salt deposits within the Colorado River watershed. Changes in salinity tend to occur more rapidly in SWP supplies as opposed to the CRA due to the hydrodynamic fluctuations of the state system. Figure 4-2 presents salinity as flow-weighted averages of the total dissolved solids levels in the effluents from all five treatment plants. Salinity levels at all the plants were generally higher than the previous year due to below-normal precipitation. Flow-weighted TDS averages were higher at two of the five treatment plants and exceeded Metropolitan's water quality goal of less than 500 mg/L. The remaining three treatment plants did not exceed this goal.

### *Disinfection Byproducts*

Metropolitan has monitored for disinfection byproducts in treatment plant effluents since 1979. Compliance under the Stage 2 Disinfectants and Disinfection Byproducts Rule began in 2012. This rule requires drinking water systems to monitor distribution system locations with the highest levels of TTHM and HAA5 and report results as locational running annual averages. Figures 4-3 and 4-4 summarize TTHM and HAA5 quarterly monitoring data, respectively, at locations throughout the distribution system. The highest locational running annual averages were below the MCLs of 80 µg/L for TTHM and 60 µg/L for HAA5. Changing source water conditions and operational changes can cause locational averages to periodically fluctuate.

Figure 4-5 summarizes plant influent levels of bromide and total organic carbon, which are DBP precursors. Bromide levels naturally fluctuate every spring and summer because of mountain snowmelt in the Sierra Nevada and increased outflow from the Sacramento-San Joaquin Delta. Bromate, a byproduct of ozone treatment, was monitored after ozone came online at Mills in 2003, Jensen in 2005, Skinner in 2010, Diemer in 2015, and Weymouth in 2017. Figure 4-6 shows trends in effluent bromate levels for each treatment plant. Bromate was below the MCL of 10 µg/L all year.

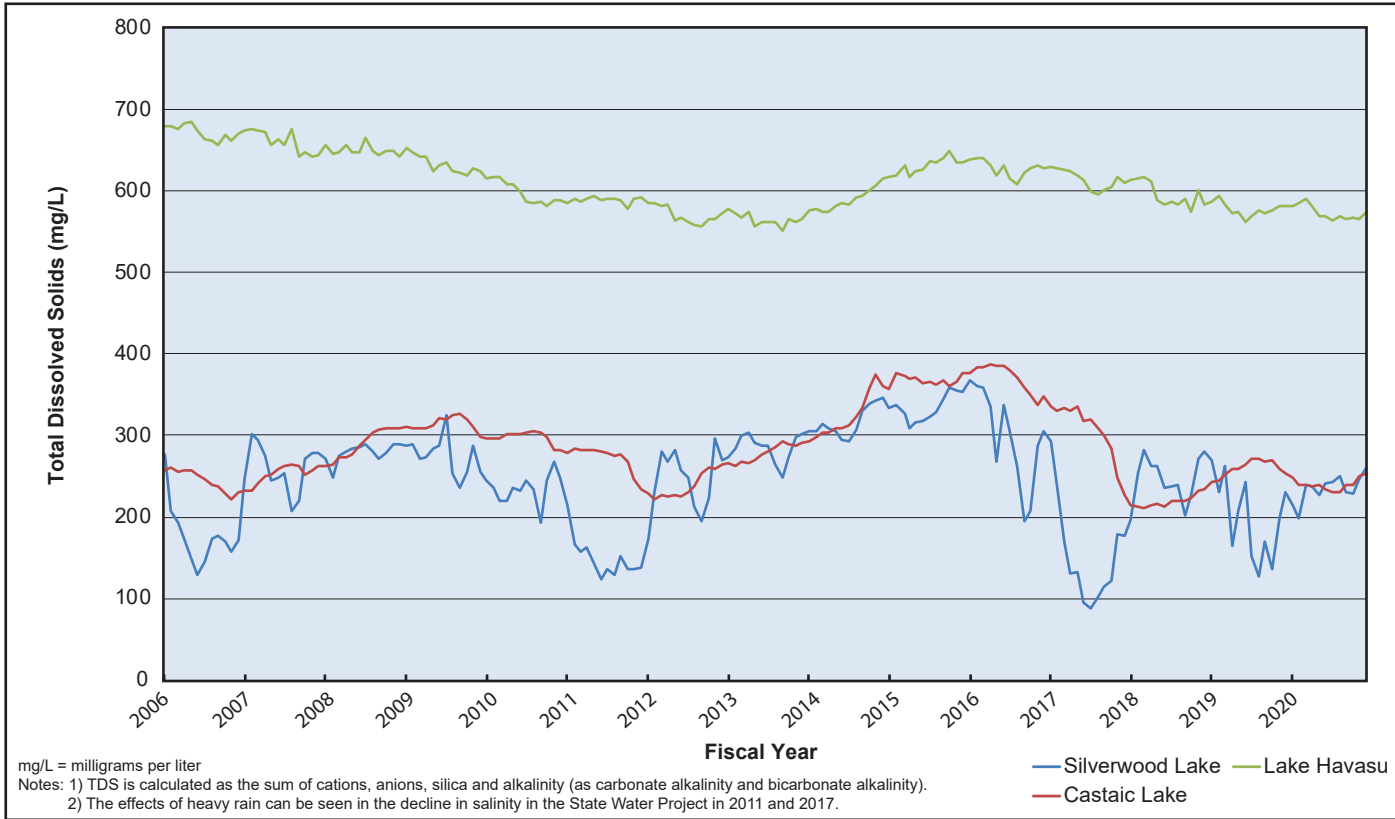


Figure 4-1. Total Dissolved Solids in East Branch State Water Project (Silverwood Lake), West Branch State Water Project (Castaic Lake), and Colorado River Aqueduct (Lake Havasu), Calendar Years 2006 to 2020

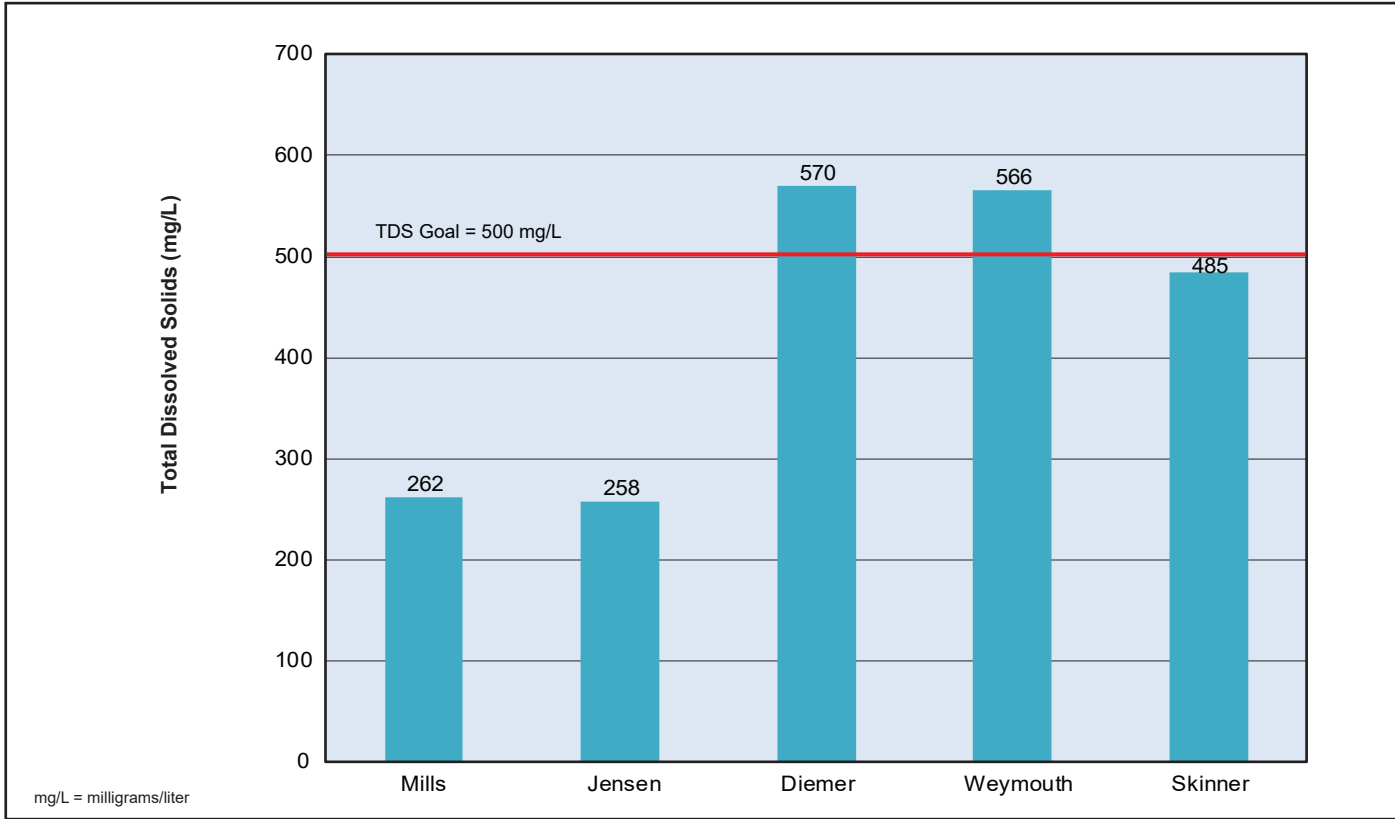


Figure 4-2. Total Dissolved Solids in Plant Effluent, Annual Flow-Weighted Averages, Calendar Year 2020

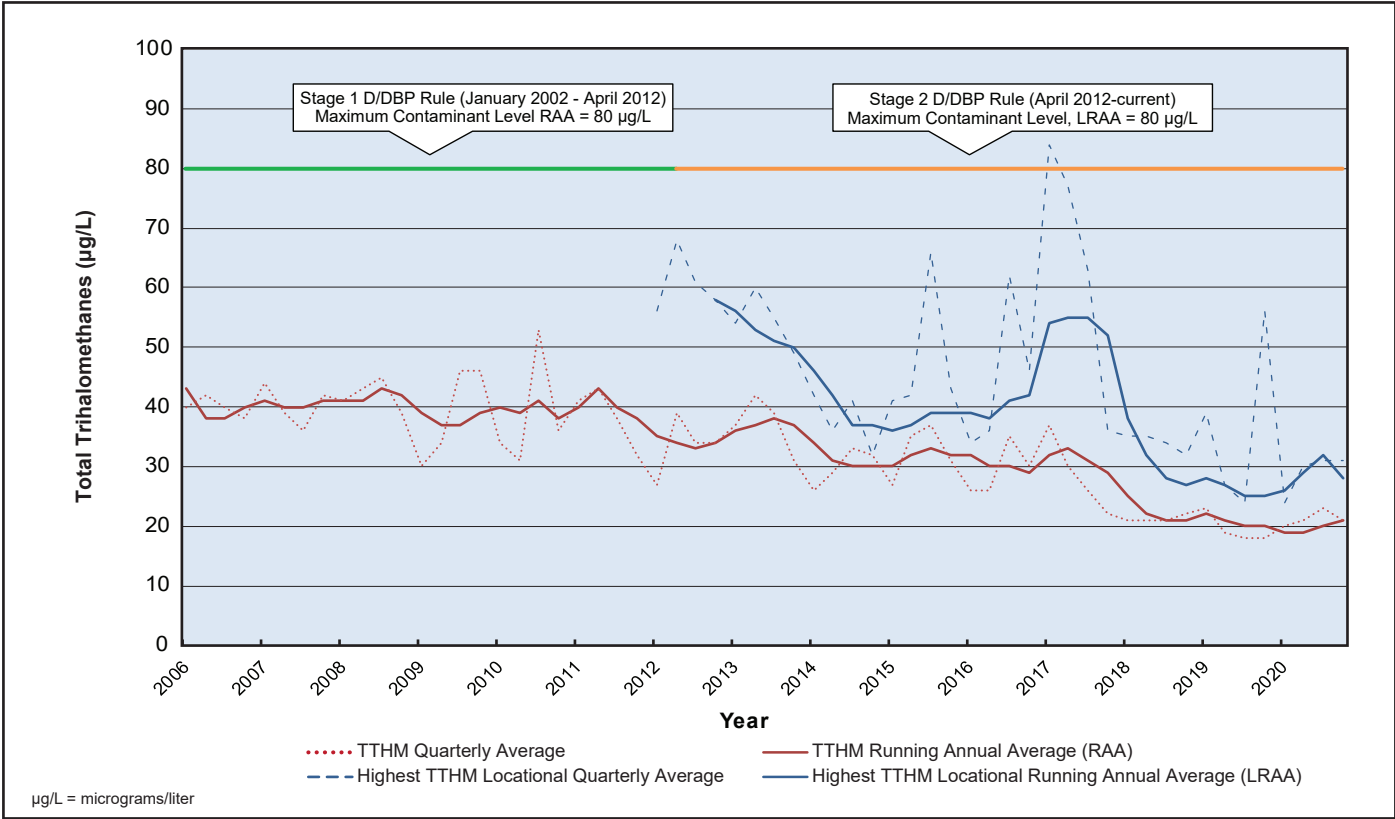


Figure 4-3. Total Trihalomethane Levels in Metropolitan's Distribution System, Quarterly and Running Annual Averages, Calendar Years 2006 to 2020

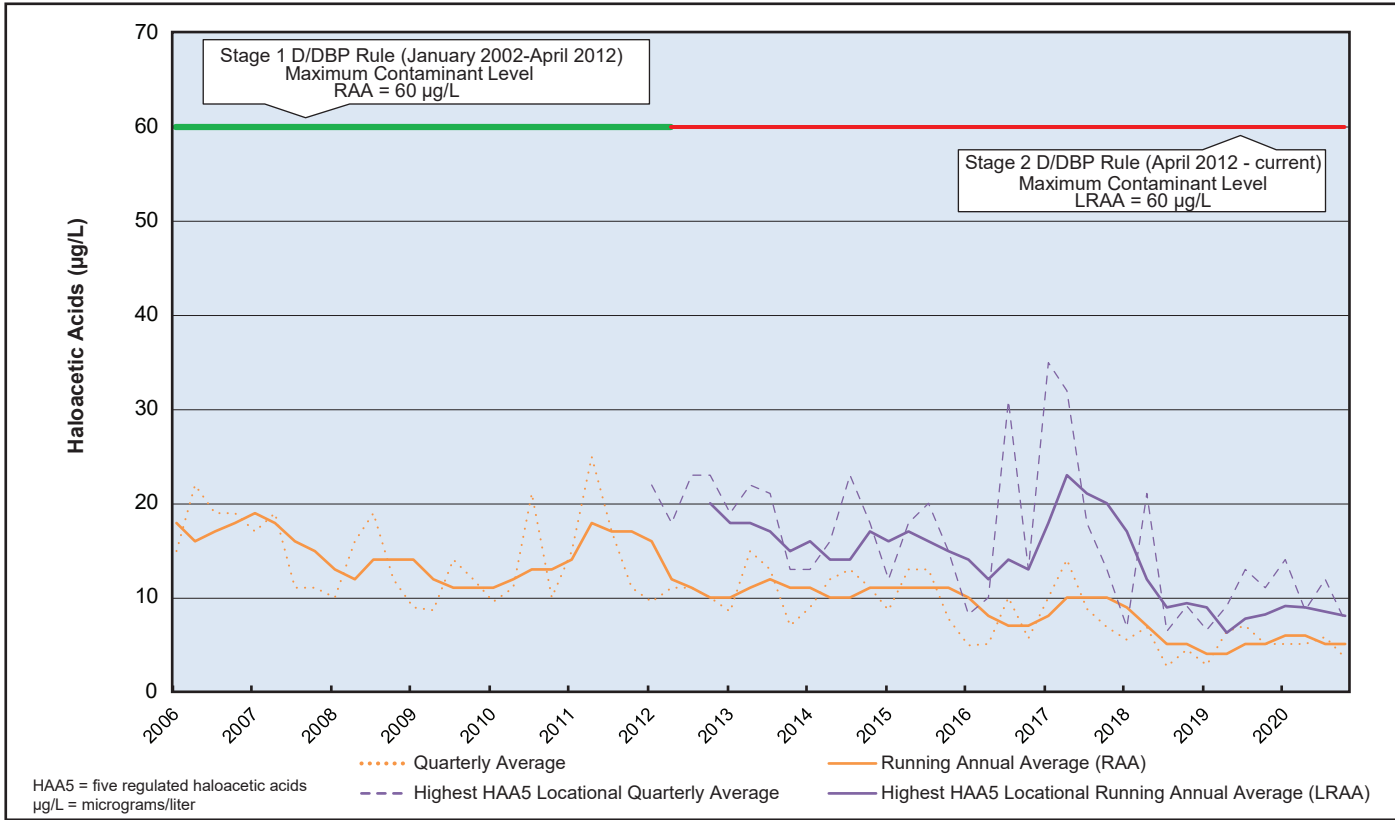


Figure 4-4. Haloacetic Acids in Metropolitan’s Distribution System, Quarterly and Running Annual Averages, Calendar Years 2006 to 2020

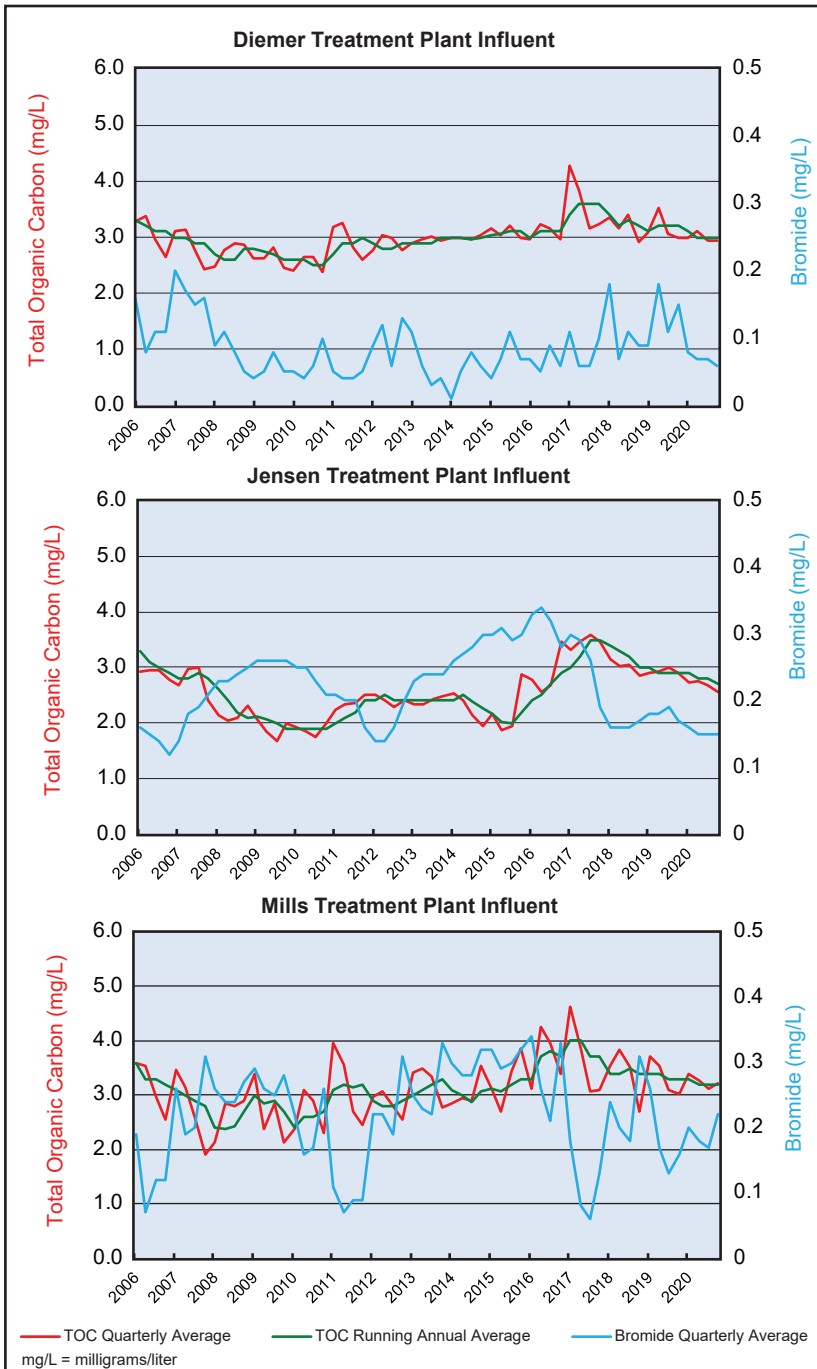


Figure 4-5. TOC (Total Organic Carbon) and Bromide Levels in Treatment Plant Influent, Calendar Years 2006 to 2020

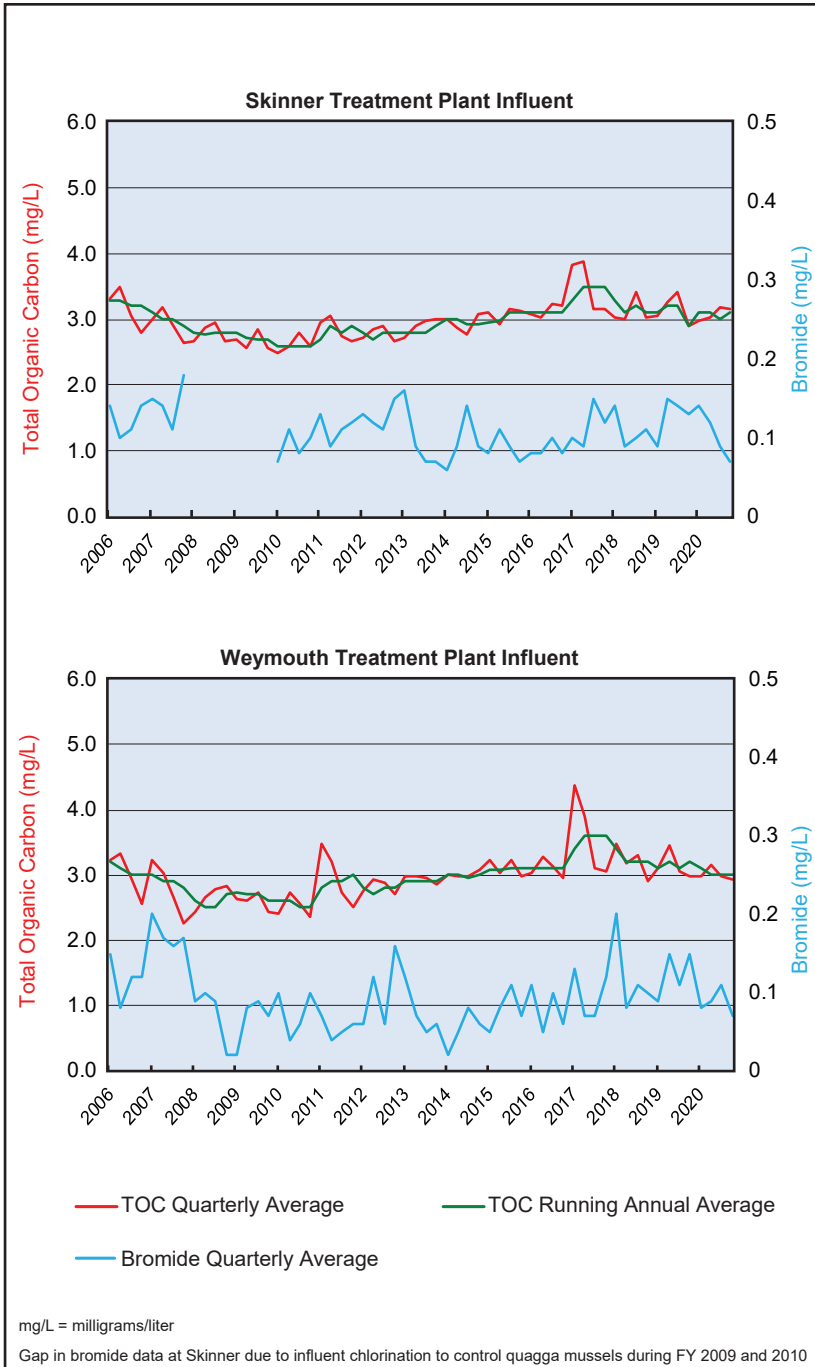


Figure 4-5 (continued). TOC (Total Organic Carbon) and Bromide Levels in Treatment Plant Influent, Calendar Years 2006 to 2020

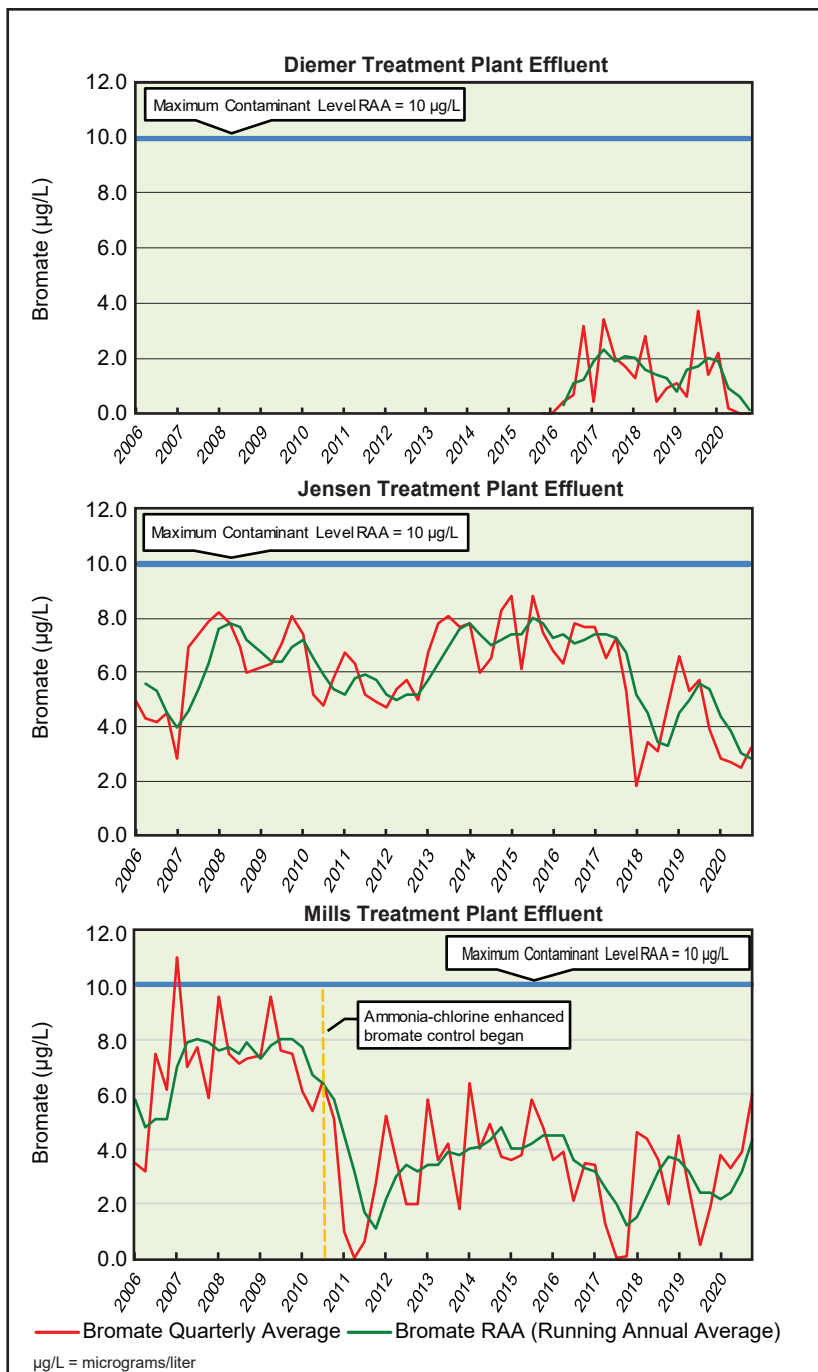


Figure 4-6. Bromate Levels in Treatment Plant Effluent, 2006 to 2020 (Ozone came online at Mills, Jensen, Skinner, Diemer and Weymouth in 2003, 2005, 2010, 2015 and 2017, respectively)



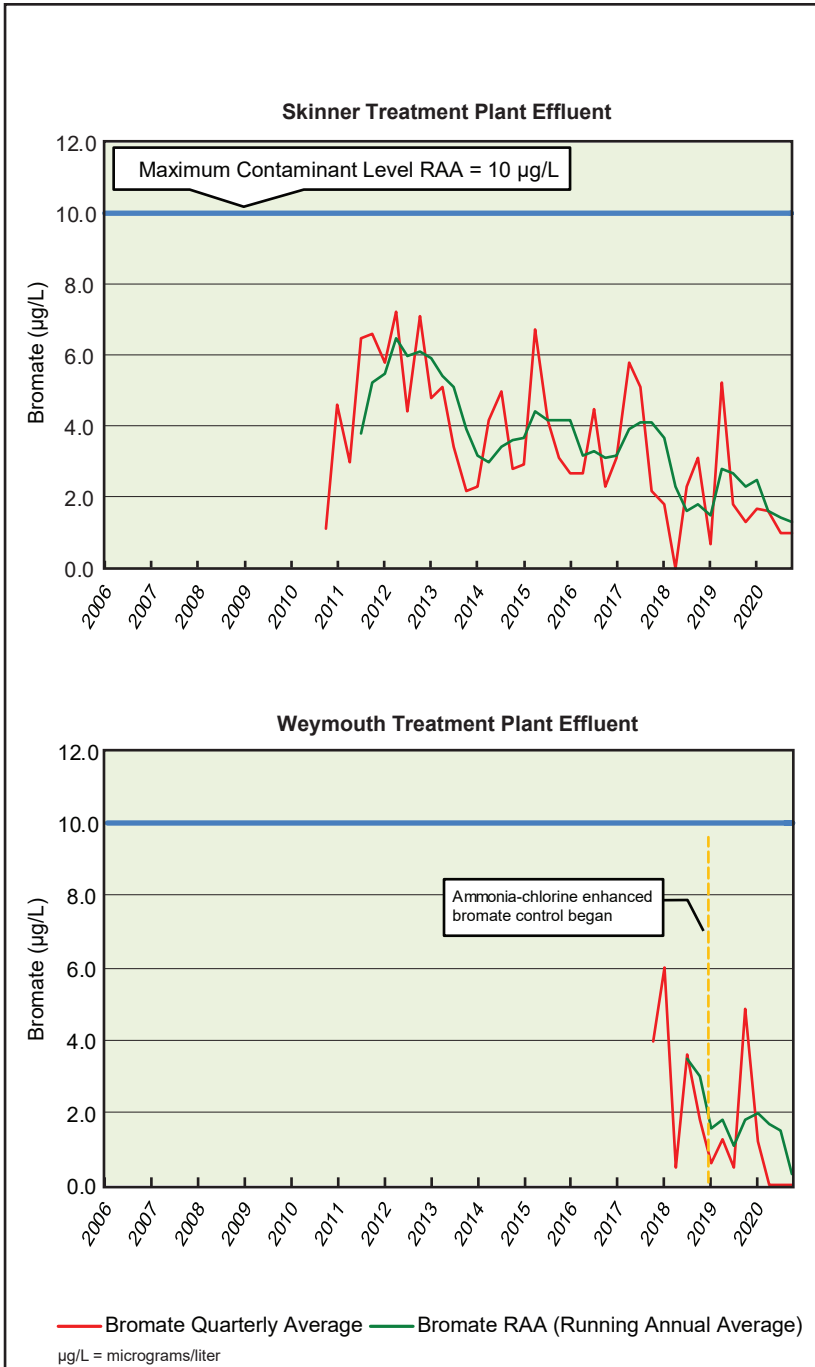


Figure 4-6 (continued). Bromate Levels in Treatment Plant Effluent, 2006 to 2020 (Ozone came online at Mills, Jensen, Skinner, Diemer and Weymouth in 2003, 2005, 2010, 2015 and 2017, respectively)

### Microbiological

To comply with [state](#) and [federal](#) coliform monitoring regulations, Metropolitan tested for coliforms in nearly 9,100 treated drinking water samples in the distribution system. The monthly average of 0.01 percent total coliform-positive samples was well below the regulatory standard of 5 percent. *Escherichia coli*, a specific type of coliform, was not detected in any treated water samples. Coliforms and *E. coli* are bacteria that are used to assess the quality of untreated and treated drinking water.

Metropolitan also complied with state and federal drinking water regulations by monitoring treatment plant influents for total coliforms and *E. coli* (Table 4-4). The natural variability of raw water coliforms, storm events, changes in source water, and other factors can influence the coliform concentration observed at the plants; the coliform concentration ranged from below 1 to 14,000 per 100 mL in CY 2020.

**TABLE 4-4**  
**RAW WATER COLIFORM RESULTS**  
Calendar Year 2020

	Treatment Plant Influent <sup>1</sup>				
	Diemer	Jensen	Mills	Skinner	Weymouth
	(MPN/100 mL) <sup>2</sup>				
Total Coliforms					
Range	ND-14,000	10-7,800	11-2,100	52-14,000	ND-5,500
Average <sup>3</sup>	1,800	1,200	300	3,200	1,000
<i>E. coli</i>					
Range	ND-14	ND-1	ND-35	1-10	ND-49
Average <sup>3</sup>	1	ND	4	5	4

Notes:

<sup>1</sup> Samples were collected weekly and analyzed by Quanti-Tray.

<sup>2</sup> Most Probable Number per 100 mL is a measure of coliform concentration.

<sup>3</sup> Annual average of monthly averages.

ND = Not Detected; method detection limit is 1 coliform per 100 mL.

Metropolitan tests plant influents and effluents monthly for the protozoan parasites *Cryptosporidium* and *Giardia*. During CY 2020, neither parasite was detected in treatment plant influent or effluent samples. In the last 22 years of monitoring, less than 1 percent of monthly plant influent samples tested positive for *Cryptosporidium* or *Giardia*.

## ***Other Monitoring***

### *PFAS (Per- and Polyfluoroalkyl Substances)*

While Metropolitan supplies were not subject to DDW's monitoring orders, Metropolitan did conduct voluntary PFAS monitoring in October 2020. Results of this PFAS monitoring were reported in the [2021 Annual Water Quality Report](#) published on Metropolitan's website and are summarized below.

PFOA and PFOS were not detected in any samples in CY 2020. Perfluorohexanoic acid (PFHxA) was the only PFAS detected in Metropolitan's source and treated water samples above the 2.0 ng/L minimum reporting level. The highest detected concentration of PFHxA was 3.7 ng/L at Lake Perris, which is below the Consumer Confidence Report detection level of 4 ng/L established in 2020 by the SWRCB. PFHxA is a common PFAS that is thought to be an impurity produced during the manufacture of other PFAS. PFHxA is not currently regulated in California or at the federal level and is believed to present negligible human health risk in drinking water. No other PFAS have been detected in any samples since Metropolitan began monitoring in 2013.

### *Nitrosamines*

N-nitrosodimethylamine and other nitrosamines are unregulated contaminants sometimes found in treated drinking water. Metropolitan has monitored for nitrosamines at treatment plant effluents and in the distribution system since 1999. Currently, there are three nitrosamines with established NLs of 10 nanograms per liter (ng/L) in California. In CY 2020, NDMA concentrations ranged from not detected to 5.2 ng/L in treatment plant effluents and distribution system locations. Seven other nitrosamines were analyzed but not detected at any location.

### *Other Constituents of Emerging Concern*

As a wholesale water agency, Metropolitan is not required to monitor under the [Unregulated Contaminant Monitoring Rule](#), so monitoring is done for informational purposes only. In November 2020, Metropolitan conducted a round of voluntary monitoring for a subset of "List 1" contaminants at the five water treatment plant effluents and five distribution system maximum residence time locations. DBP and DBP precursor samples were collected in October 2020, as part of routine quarterly monitoring.

Manganese was detected slightly above the EPA-required minimum reporting levels at all sample locations. Manganese is a naturally occurring element, often found in minerals in combination with iron. High levels of manganese can cause water discoloration. Additionally, HAA9s were detected at all locations, with total concentrations ranging from 1.9 to 8.5 µg/L. HAAs form as a result of the disinfection process, and HAA9s are the sum of HAA5s (five regulated haloacetic acids) plus four additional unregulated haloacetic acids.

## *Source Water Protection*

### *Watershed Management and Protection*

Metropolitan continued its oversight, coordination and leadership on water quality issues with key Colorado River stakeholders by actively participating in the Lower Colorado River Water Quality Partnership and Clean Colorado River Sustainability Coalition. Staff also collaborated with DWR and the State Water Contractors on Delta and SWP water quality monitoring and forecasting programs.

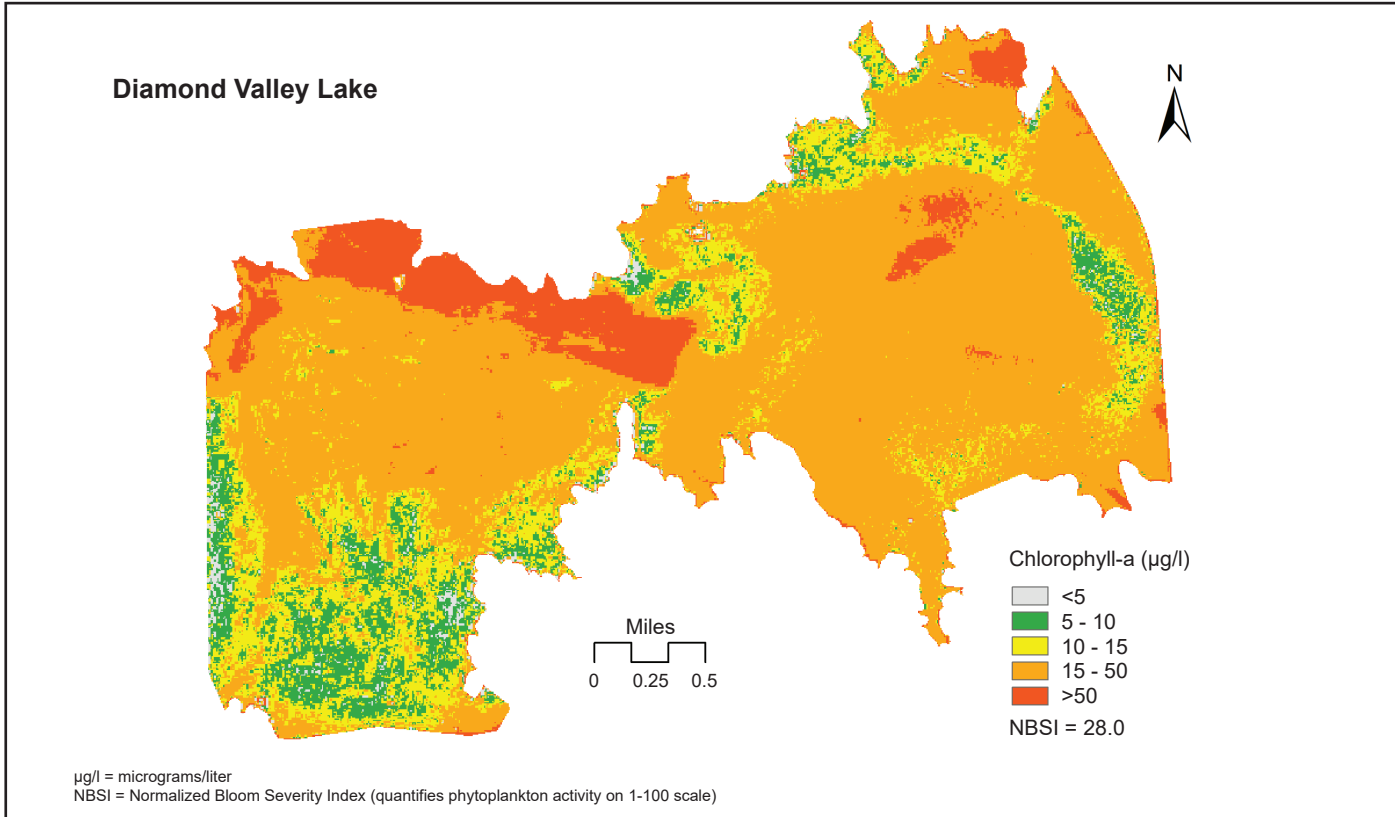
### *Cyanobacteria and Algae Control Program*

Metropolitan uses several tools to monitor lakes and assess the likelihood of taste and odor events and make management decisions. These include satellite-based sensor data that staff converts into color-coded images indicating levels of algal and cyanobacterial activity in Metropolitan's source water reservoirs, including chlorophyll (a general indicator of algal and cyanobacterial activity) and the density of cyanobacteria in the reservoirs (Figure 4-7).

Metropolitan also routinely assesses source and treated water for T&O (taste and odor) using a certified Flavor Profile Analysis Panel to smell the source water and smell and taste the treated water. A suite of management options is used to address any source water quality issues early, when possible.

### *Taste-and-Odor Control*

During CY 2020, staff analyzed more than 2,700 samples for the earthy/musty compounds 2-methylisoborneol and geosmin to monitor and manage T&O events in Metropolitan's source waters. Sampling



*Figure 4-7. Chlorophyll-a concentrations and phytoplankton activity during a 2020 bloom in Diamond Valley Lake.*

was used to evaluate T&O problems in both SWP and Metropolitan waters. To control cyanobacteria, DWR treated its lakes several times during the year, while Metropolitan treated Lake Skinner twice with a total of 14 tons of copper sulfate.

### ***Quagga Mussel Control Program***

Chlorinating the CRA system for quagga mussel control continued to be effective, as demonstrated by the continued operation of the CRA with no reports of damaged infrastructure or out-of-service equipment. Metropolitan analyzed 63 samples for veligers (microscopic mussel larvae) for routine monitoring and system maintenance. No adult mussels or veligers were detected in SWP supplies and there were no restrictions on Metropolitan's use of water from the SWP.

### ***Salinity Control***

Metropolitan continued to engage in salinity control efforts through the [Colorado River Basin Salinity Control Forum](#) to address salt loading into the Colorado River. Metropolitan supported fixes for the Paradox Valley Unit project in Colorado, which when operational, reduced 10 percent of the salt load into the Colorado River. The Bureau of Reclamation identified a "No Action Alternative" as the preferred alternative for Paradox Valley Unit improvements. Metropolitan, however, will participate in the future investigation of viable alternatives. Through the forum, Metropolitan also worked with Reclamation to update the salinity economic impact model, which is used to evaluate economic effects in the Colorado River Basin from high salinity water.

### ***Uranium Mill Tailings Cleanup***

Metropolitan continued to monitor the removal of the [uranium mill tailings pile](#) along the banks of the Colorado River near Moab, Utah. Since 2009, the U.S. Department of Energy has shipped via rail close to 11.7 million tons of mill tailings (from a total of 16 million tons) to an engineered disposal site about 30 miles northwest of Moab. Metropolitan and other stakeholders successfully advocated to maintain increased levels of funding for FY 2020/21 to help meet DOE's targeted completion in the 2030s.

### ***Chromium 6 Remediation***

Metropolitan continues to actively participate in workgroups to ensure effectiveness of chromium 6 groundwater remediation and long-term protection of the Colorado River near Topock, Ariz. Pacific Gas & Electric began construction in October 2018 on a treatment system and expects completion by 2025, followed by operation for an estimated 30 years. Concurrently, PG&E is conducting a soil remedial investigation and proposes to develop a long-term soil remedy plan by 2023.

Interim measures, consisting of groundwater extraction and treatment, have been in place since 2004 to prevent chromium 6 migration to the Colorado River. Concentrations of chromium 6 in the river are typically below detection level (less than 0.03 µg/L).

### ***Perchlorate Remediation***

Metropolitan's quarterly monitoring for perchlorate showed that at all locations, levels were below the state's new detection reporting limit of 0.002 mg/L.

Regional efforts continued, despite the federal decision not to issue a national perchlorate regulation. Perchlorate levels continued to decline at the Las Vegas Wash. Perchlorate loading there has decreased more than 90 percent since 1998 as a result of remediation at the former Tronox, Inc. site, now owned by the Nevada Environmental Response Trust. Levels have consistently remained below 2 µg/L at Metropolitan's Lake Havasu intake (Figure 4-8).

Metropolitan monitored the disbursement of funds from a \$1.1 billion settlement between Tronox and its predecessors for site cleanup. Staff participated in site visits and reviewed interim results to be included in feasibility studies scheduled for completion in 2024, followed by design of a long-term remediation strategy.

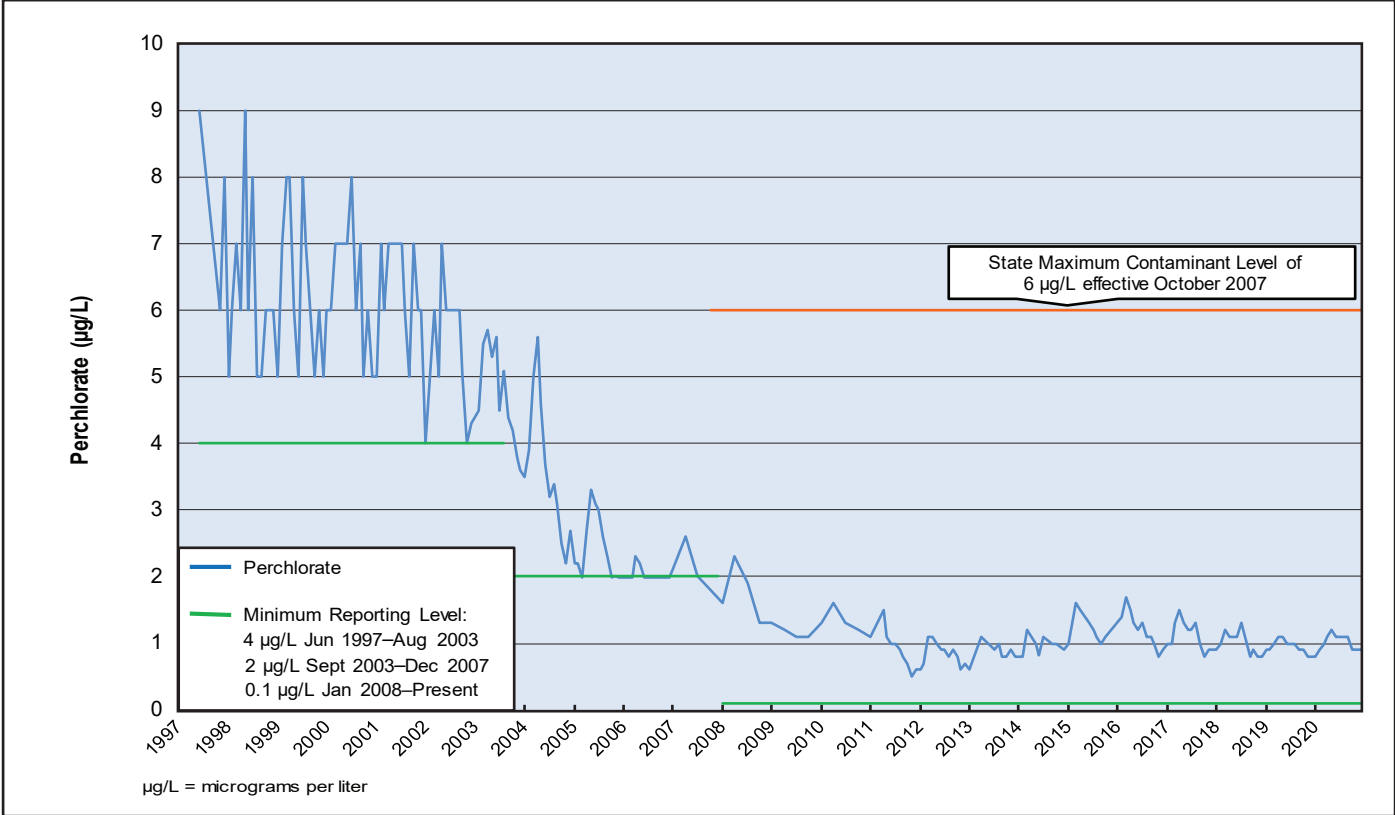


Figure 4-8. Perchlorate Levels at Lake Havasu, 1997 to 2020



## *Technology Assessment*

### ***Treatment Process Optimization and Development***

Metropolitan participates in the [Partnership for Safe Water](#), a cooperative effort among six national drinking water organizations focused on encouraging water suppliers to improve drinking water quality by optimizing treatment plant and distribution system operations. Metropolitan has been a member since 1996 and submits annual assessments to maintain PSW award status for its treatment plants and distribution system. The Diemer, Jensen and Weymouth plants received and maintain President's Awards for achieving the highest possible levels of individual filter turbidity performance. In addition, Metropolitan's treated water distribution system was honored for achieving the highest level of optimization and demonstrating commitment to continuous improvement.

### ***Potable Reuse***

In July 2020, Metropolitan, in partnership with the Los Angeles County Sanitation Districts, began baseline testing at the Regional Recycled Water Advanced Purification Center in Carson. The 500,000-gallon-per-day demonstration facility is being used to determine the effectiveness of membrane bioreactors for removing the protozoan pathogens *Cryptosporidium* and *Giardia* and to demonstrate that the overall treatment train can produce high-quality reliable water for potable reuse. After successful baseline testing, challenge testing started in November 2020, during which MBR fibers were intentionally compromised to understand system performance in a damaged condition. Data were collected to evaluate the robustness of MBR as a pathogen barrier and to develop correlations between surrogates and pathogen removal.

The scientific, technical and regulatory issues associated with the project are objectively reviewed by an independent science advisory panel. A virtual workshop in December 2020 provided opportunities for the panel to review and discuss all aspects of the project. The first phase of testing, during which secondary wastewater effluent is treated, is scheduled for completion in late 2021. The next phase will evaluate treatment of primary effluent and testing in this configuration will begin in 2022. Data collected at the RRWAPC will be used to

facilitate regulatory acceptance of the proposed treatment process for potable reuse. Metropolitan's website contains more information about the [Regional Recycled Water Program](#).

### ***Applied Research***

Metropolitan conducts applied research to optimize water treatment; improve contaminant detection and identification methods; evaluate alternative sources of water such as potable reuse; and ensure readiness to address emerging and future water quality challenges. When appropriate, Metropolitan partners with external funding agencies to support these research efforts. Metropolitan continued to manage a Water Research Foundation funded project (\$416,000 awarded to Metropolitan) that aimed to improve and streamline analytical procedures for monitoring cyanotoxins in water, providing water utilities with practical analytical guidelines to improve the precision, accuracy, and overall data quality of the detection methods. Also, a \$750,000 grant from the Bureau of Reclamation supported the evaluation of pathogen removal at the RRWAPC using MBRs to treat non-nitrified secondary effluent for potable reuse.



*Staff collecting membrane bioreactor filtrate samples for chemical analysis at the Advanced Purification Center.*

### ***Service to Member Agencies and Drinking Water Industry***

Metropolitan continued its long-running Member Agency Water Quality Managers' forum with quarterly meetings and workshops.

Metropolitan's membership in and support of key drinking water trade associations allowed continued leverage of many of its member and retail agencies on a variety of key water quality concerns, including the federal Lead and Copper Rule Revision and the establishment of an economic feasibility requirement in drinking water standards. The Water Research Foundation funded several key water treatment and water quality projects that will support Metropolitan initiatives, including potable reuse and problematic cyanobacteria.

With a decision by state and federal regulators to develop standards for two of the more persistent PFAS constituents, PFOA and PFOS, in drinking water, Metropolitan staff continued to provide technical support in conjunction with the American Water Works Association and the Association of California Water Agencies toward efforts at PFAS legislation and subsequent regulatory rulemaking by the EPA and the SWRCB. Staff also engaged with a variety of organizations and participated in a methods evaluation study to ensure that robust and reliable methods are used for statewide microplastics monitoring as required by SB 1422.

## ***Conveyance, Distribution and Support***

### ***Conveyance and Distribution***

Staff performs preventive and corrective maintenance activities throughout the year with the objective of ensuring reliable deliveries to member agencies. In addition, staff plan and perform shutdowns to complete pipeline and facility inspections, repair pipelines or equipment, and support capital projects. During this fiscal year, Metropolitan continued with the micro-team structure for field staff in response to the COVID-19 pandemic. This consisted of dividing larger teams into smaller workgroups and strategically deploying them to temporary reporting locations across Metropolitan's service area. Use of micro-teams allowed critical operational and maintenance practices

to continue while helping to ensure the health and safety of the workforce.

In FY 2020/21, Metropolitan pumped about 1 million AF through the CRA and successfully completed planned shutdowns on the aqueduct and pipelines throughout its service area.

Throughout the fiscal year, maintenance efforts ensured 8-pump flow capability on the CRA. To ensure continued reliable operation, CRA refurbishment work took place during a [35-day CRA shutdown](#) from late January to early March. Work included completing installation of pump discharge line isolation couplings, finalizing work for the replacement of large radial gates, replacing pump plant station back-up batteries and the Copper Basin flow meter, and inspecting and testing high-voltage equipment. To maintain the CRA's hydraulic capacity, crews performed tunnel and sand trap cleaning, canal scraping and debris removal. Workers also conducted critical maintenance on the 230kV high-voltage transmission system.

To help address California's drought conditions and the low SWP allocation, efforts continued throughout the year to maintain high flows along the CRA. This included starting 8-pump flow operations in April. Operations and engineering staff worked closely to maximize flow while ensuring safe operations and protection of the aqueduct. Actions taken included targeted chlorination to reduce biofilm and buildup on the canal, scraping the canal at strategic locations, and adding equipment to monitor water levels and chlorine residuals for safe and reliable deliveries. Eight-pump flow operations continued through the end of the fiscal year.

Throughout the fiscal year, staff performed preventive and corrective maintenance activities along the Colorado River Aqueduct and inside the five desert pump plants to minimize unscheduled outages, maximize equipment life, and provide reliable access to Colorado River resources for Metropolitan.

Within the service area, staff used visual inspections and eddy-current inspection technology to inspect about 34 miles of pipeline to assess the condition of steel mortar-lined pipe and prestressed concrete cylinder pipe. Metropolitan completed urgent relining of 1,200 feet of PCCP in the Allen McCulloch Pipeline during a scheduled one-month shutdown. Staff worked closely with member agencies to ensure

continued reliable deliveries during shutdown periods, taking advantage of the distribution system's operational flexibility.

The coatings program protects Metropolitan's physical assets from corrosion and harsh environments to maximize the useful life of pumps, valves, meters, pipes, buildings, other structures and delivery lines. Staff coated equipment and structures at pumping plants, treatment plants and pressure control structures, including 240 valves. Staff also addressed a leaking pipe joint on the 11-foot-diameter Lakeview Pipeline by fabricating and welding an internal band and completing mortar lining repairs as part of the overall project that allowed Diamond Valley Lake water to supply the Mills plant as a drought mitigation action.

During FY 2020/21, crews performed over 305,190 hours of maintenance on conveyance and distribution infrastructure, including shutdowns. See Table 1-5 for a full list of shutdowns that occurred during the year. Diligent inspection of the Lake Mathews Forebay during a planned shutdown revealed a crack on the slide gate that controls flow into the Upper Feeder. Staff quickly performed repairs to reinforce the cracked section of the gate within the original shutdown period allowing the forebay to be placed back into service. The repair allows the gate to be used while a new gate is being fabricated. Installation is planned during a shutdown scheduled in 2022.

### ***Operations Support Services***

Staff provides a wide range of support services to Metropolitan's core operational functions and on a reimbursable contract basis to DWR, member agencies and other public entities. Services include maintenance and reliability engineering, manufacturing, rehabilitation, new construction and emergency response.

#### *Manufacturing Services*

Manufacturing services provided by the La Verne shops include fabrication, machining and coating services, valve and pump testing and repairs, equipment refurbishment, dive inspections, and floating reservoir cover maintenance, as well as crane maintenance and annual certification.

The La Verne shops manufactured and refurbished a wide variety of critical equipment for Metropolitan's conveyance and distribution system, including the hydroelectric plants. The shops repaired a 42-inch regulating sleeve valve at the Red Mountain Pressure Control Structure, refurbished gate and turbine components for the Red Mountain and Temescal HEPs, and manufactured valve supports to install a 42-inch butterfly valve and multi-orifice control valve at the West Valley Feeder. The shops also manufactured multiple components used for testing and operation of Greg Avenue pump station, fabricated a 133-inch diameter internal steel band to repair a small leak on the Lakeview Pipeline, and fabricated a saddle clamp assembly to repair a small leak on the Upper Feeder at service connection CB-01.

Using a reimbursable agreement, the La Verne shops supported DWR's SWP facilities. The shops manufactured a new packing box and three sets of large lantern rings for Gianelli Pump Generating Plant and refurbished two flow control wing gates for the John E. Skinner Delta Fish Protective Facility at the Banks Pumping Plant.

This year, the La Verne shops fabricated pipeline repair components for the South Coast Water District, a Municipal Water District of Orange County member agency, through the CALWARN (California Water/Wastewater Agency Response Network) mutual assistance program.

#### *Construction Services*

This unit provides a range of support services, including heavy equipment operation; construction of new facilities; welding, fabrication, and electrical support; access road maintenance; and emergency services such as pipeline and erosion repair.

Staff installed structural reinforcements on the Perris Pressure Control and Pumpback Facility to support drought operations and replaced sections of damaged concrete liner at the Lake Mathews main dam and dike. Staff also installed a replacement flow meter at the LA-17 meter structure and repaired a small joint leak on the Lakeview Pipeline by installing an internal butt-strap at the pipe joint.

Staff refurbished the De Soto valve structure on the West Valley Feeder No. 1 by replacing a butterfly valve with a new sectionalizing butterfly valve and multi-orifice valve. The new butterfly valve provides positive isolation for pipeline inspections and maintenance, and the orifice valve regulates flow to support flexible operations, including an interconnection with the Los Angeles Department of Water and Power.

### *Power Equipment and Reliability*

This unit evaluates maintenance and equipment reliability engineering issues, and also performs technical investigations related to water billing meters. Staff likewise maintains hydroelectric power plants, high-voltage systems, and HVAC (heating, ventilation, and air conditioning) systems throughout Metropolitan's facilities.

This year, staff completed the refurbishment and recommissioning of the 5.9-MW turbine generator for Red Mountain HEP and performed electrical and mechanical testing at several hydroelectric plants. Metropolitan certified its compliance for CY 2020 with all applicable NERC (North American Electric Reliability Corporation) standards for the CRA 230 kilovolt (kV) transmission system, as well as with the delegated requirements from AEPCO (Arizona Electric Power Cooperative), which is Metropolitan's registered transmission system operator. Metropolitan must comply with applicable reliability standards due to its ownership of the CRA transmission system.

Staff applied condition-based monitoring to increase the reliability of pressure vessels, as part of a multi-year effort that will include electrical motors and mechanical gearboxes. Staff also provided member agency technical support for several service connections.

### *Fleet Services*

In FY 2020/21, staff completed over 6,000 preventive maintenance work orders and more than 2,000 corrective work orders on about 1,430 fleet assets and 600 facility assets. Staff also replaced aging vehicles and equipment while meeting all applicable air quality regulations. Metropolitan implemented changes as the California Air Resources Board revised the Heavy-Duty Diesel Vehicle and Periodic Smoke Inspection Program. Staff have been certified for new testing and reporting methods and inspection intervals have been updated during FY 2020/21.

### *Asset Management*

Metropolitan has several programs that have established the organization as a high-performing utility with a reliable and flexible system. These programs have allowed Metropolitan to consistently meet member agency service demands by maximizing the service life of critical infrastructure and keeping asset downtime to a minimum.

In FY 2020/21, Metropolitan continued working on several initiatives to evaluate current asset management practices and identify areas of improvement to achieve best-in-class status. Staff conducted several workshops with industry experts that led to the development of a strategic asset management plan. Completed in April 2021, the Strategic Asset Management Plan establishes an asset management framework focused on improving processes, maximizing the value of all Metropolitan assets and fostering a strong internal asset management culture. A new organizational unit assists cross-functional teams in developing foundational elements of an asset management program, including risk and data management, asset lifecycle management, and tactical asset management plans for critical asset classes. A new risk tool was developed and used to support the capital program and to identify hazards each capital project is trying to mitigate, and anticipated consequences to Metropolitan if not addressed. This risk tool will be used to help prioritize capital projects and optimize the proposed capital budget.

### *Emergency Management*

During FY 2020/21, Emergency Management staff continued to monitor and plan for the continuing COVID-19 response. From the introduction of vaccines to the emergence of the Delta variant, COVID-19 continued to influence how Metropolitan conducted its operations and prepared for future emergencies. Many lessons learned from the 2020 COVID-19 response were implemented in 2021 to better prepare for future emergencies.



Among the lessons learned during the 2020 COVID-19 response was the importance of coordinated communications during an emergency. Emergency management and GIS (Geographic Information System) staff developed a common map that displays multiple threats, warnings, and events on one map, which can be viewed online by members of Metropolitan's Emergency Response Organization. This allows staff to quickly determine the location of earthquakes, brushfires, severe weather events and other emergencies to see how they could impact operations.

Another key development for Emergency Management was the creation of a new duty officer position to complement various 24-hour security and operational centers. This rotating on-call position ensures the coverage of Metropolitan's Emergency Operations Center and serves as a one-stop communication point for any emergency that could affect Metropolitan. The duty officer receives real-time emergency information from various sources that can be shared immediately with various disciplines in Metropolitan so any necessary action can be taken. Since September 2020, duty officers have monitored or responded to over 100 events in or near Metropolitan's service area.

Metropolitan continued training and exercising its emergency response staff during 2021, even with many staff working remotely. Metropolitan performed over 50 emergency exercises in FY 2020/21, including a virtual functional exercise in October 2020 as part of the Great California ShakeOut. During that exercise, EOC staff responded using an online emergency management system called WebEOC and conducted virtual EOC meetings through Zoom. In another exercise series, over 140 staff participated in virtual exercises that focused on emergency communication and action planning between remote command centers and the EOC.

## *Energy Management*

### *2020 Energy Crisis*

When a 1-in-35-year heat storm struck the western United States in August 2020, the California Independent System Operator was forced to initiate rolling blackouts to preserve the integrity of the electric system for the first time since 2001. Metropolitan responded to the crisis and

statewide call by the governor's office to reduce electric demand and offer additional generation resources to the electric grid by undertaking several actions:

- Reduced pumping operations on the CRA from 7 pumps to 3 pumps.
- Worked with DWR to adjust system flows to increase hydropower generation at Devil Canyon.
- Initiated hydropower generation at Diamond Valley Lake.
- Switched from energy-intensive ozone to chlorine disinfection at water treatment plants.

Metropolitan's actions contributed about 300 megawatts of loading relief and additional generation resources to the overstressed transmission system.

### ***Hydroelectric Power Recovery Plant Operations***

Metropolitan has had 16 small-conduit hydroelectric power recovery plants in previous annual reports. During FY 2020/21, Greg Avenue was reclassified as a pump station and no longer generates electricity. Metropolitan now has 15 small-conduit HEPs that generated a total of 129 million kilowatt-hours (kWh) for FY 2020/21 (Table 4-5) and earned revenues of \$6.8 million. This was about 75 million kWh less generation and \$3.6 million less revenue than FY 2019/20. This reduction in generation output from the HEPs was driven primarily by changes in water flows across the conveyance and distribution systems due to the low SWP allocation. The sale of generation from 11 of the 15 HEPs is governed under contractual agreements with Pacific Gas & Electric, Southern California Public Power Authority, LADWP, and DWR agreements. Four of the HEPs are no longer governed by a contractual agreement and are now under Metropolitan's power assets. The average revenue for energy generated from Metropolitan's HEPs was about \$53/megawatt-hour.

### ***Solar Power Energy Production***

Metropolitan has four solar photovoltaic energy facilities located at the Skinner (rated at 1 megawatt), Weymouth (3 MW), and Jensen (1 MW) plants, as well as the Diamond Valley Lake Visitor Center

(0.52 MW). During FY 2020/21, solar facilities at the Skinner plant produced 2,098 MWh of energy, Weymouth plant produced 4,890 MWh, Jensen plant produced 2,097 MWh, and DVL Visitor Center produced 492 MWh, all of which offsets retail energy costs at the four locations from the local energy utility company.

### ***Greenhouse Gases***

In November 2020, Metropolitan submitted allowances to cover its obligation for energy imported into California to serve the CRA pumping load in CY 2019. This was the sixth year Metropolitan made such a submittal to the California Air Resources Board, which requires power utilities to surrender these [allowances](#) if they release greenhouse gases from power plants or import energy into California from facilities that emitted greenhouse gases when the energy was produced.

### ***Colorado River Aqueduct Power***

In FY 2020/21, Metropolitan pumped nearly 1 million AF through the CRA compared to 550,000 AF the previous year, requiring about 2 billion kWh of electricity compared to about 1.1 billion kWh in the previous year.

Energy costs for pumping Colorado River water are shown in Table 4-6. The current and historical energy resources used to meet CRA water delivery energy requirements are shown in Table 4-7 and Figures 4-9 and 4-10.

In FY 2020/21, Metropolitan relied entirely on AEPCO to be the purchasing agent for supplemental power to balance CRA load and resources. Net supplemental energy purchases increased from a net sale of 54 million kWh in FY 2019/20 to a net purchase of about 803 million kWh in FY 2020/21 from the CAISO energy market. CRA energy costs increased from about \$9.7 million in FY 2019/20 to \$28.7 million in FY 2020/21. The higher cost in FY 2020/21 was attributed to increased CRA pumping demand and higher CAISO market prices due to supply constraints.

**TABLE 4-5  
HYDROELECTRIC POWER RECOVERY PLANTS<sup>1</sup>  
PRODUCTION FOR THE PAST TWO FISCAL YEARS**

<b>Power Plant<sup>2,3</sup></b>	<b>Nameplate Capacity (Megawatts)</b>	<b>2020/21 Production (kWh)</b>	<b>2019/20 Production (kWh)</b>
Lake Mathews	5	23,895,893	5,745,509
Foothill Feeder	9	56,138,281	46,631,021
San Dimas	10	0	21,957,942
Yorba Linda	5	11,561,572	21,035,708
Sepulveda Canyon	9	0	6,261,940
Venice	10	0	0
Temescal	3	17,084,393	0
Corona	3	13,796,096	6,162,579
Perris	8	0	6,566,324
Rio Hondo	2	0	0
Coyote Creek	3	27	0
Red Mountain	6	0	0
Valley View	4	0	3,319,588
Etiwanda	24	0	54,560,718
Wadsworth (DVL)	30	6,302,532	31,470,043
<b>TOTAL</b>	<b>130</b>	<b>128,778,794</b>	<b>203,711,372</b>

Notes:

<sup>1</sup> Annual Power generation varies significantly, depending on member agency demands, mix of water sources (Colorado River Aqueduct vs. State Water Project), what shutdowns/outages are taking place, and each generator's operational constraints.

<sup>2</sup> Power plants are listed in the order they became operational.

<sup>3</sup> Greg Ave HEP was removed from service as a generator on Nov. 1, 2019, and converted to a pump-only installation.

**TABLE 4-6**  
**ENERGY COST FOR PUMPING**  
**COLORADO RIVER WATER**  
 Fiscal Year 2020/21

<b>Energy Source</b>	<b>Cost (\$)</b>
Hoover Power Plant	16,072,967
Parker Power Plant	3,420,150
Energy Purchases/Sales <sup>1</sup>	20,732,466
Colorado River Water Pumping Revenue <sup>2</sup>	<b>(3,046,885)</b>
Reduction in Energy Surcharge <sup>3</sup>	24,660
<b>TOTAL</b>	<b>37,203,358</b>

Notes:

<sup>1</sup> Energy Purchases/Sales. A negative number indicates net revenue to Metropolitan.

<sup>2</sup> Payments received for energy costs associated with moving non-Metropolitan water on the CRA.

<sup>3</sup> Reduction in tax due to transmission losses and small hydro generation.

### *Agreements for CRA Operations*

Metropolitan continued to maintain agreements with CAISO and WAPA (Western Area Power Administration) to provide balancing services for Metropolitan’s pump loads and ensure transmission for energy deliveries from Hoover and Parker dams. Long-term agreements with CAISO and AEPCO were executed in October 2017. The CAISO agreement establishes the operational relationship between CAISO and Metropolitan. One agreement with AEPCO provides for the scheduling and trading of energy resources needed to operate the CRA. A second operational services agreement establishes AEPCO as the transmission operator for the CRA and identifies tasks to be delegated to Metropolitan to comply with the national electricity reliability standards.

### *Energy Sustainability Plan*

In fall 2020, a cross-functional team composed of staff from across Metropolitan completed a comprehensive [Energy Sustainability Plan](#) to manage future energy use and move Metropolitan toward energy independence and sustainability. The ESP examined changing energy markets, evaluated Metropolitan’s energy use and exposure to price volatility, and identified potential projects and initiatives to contain

**TABLE 4-7  
METROPOLITAN'S HISTORICAL CRA ELECTRIC ENERGY USE**

Kilowatt Hours

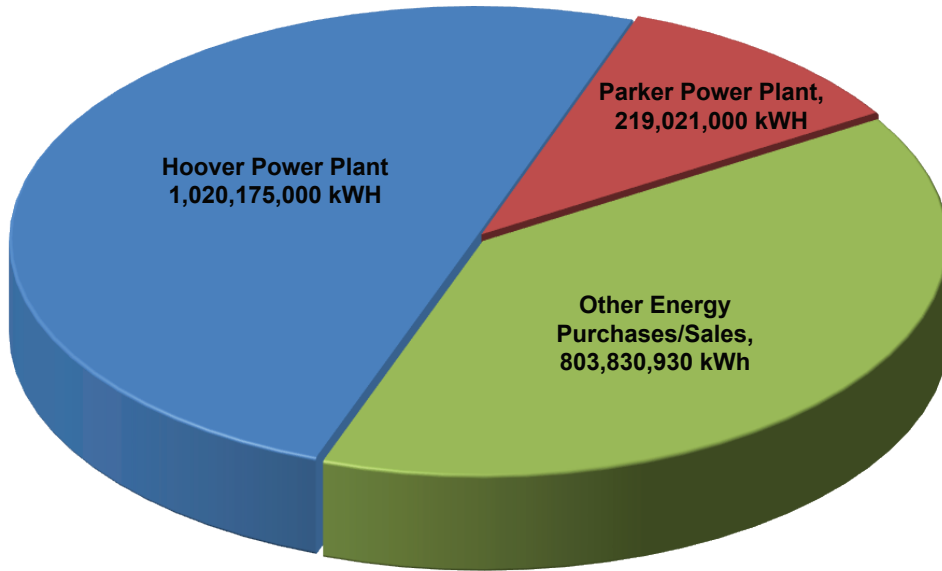
	Hoover	Parker	Edison Benefit <sup>1</sup>	Edison Exchange <sup>2</sup>	DWR Exchange <sup>2</sup>	Edison & DWR	Energy	Other Energy	
						Exchange & Edison Benefit			Purchases/Sales <sup>3</sup>
1987/88*	1,432,001,000	290,400,000	216,981,190	1,764,000	0	218,745,190	832,498,639	2,773,644,829	1,051,243,829
1988/89	1,231,206,000	237,142,000	215,485,363	(27,764,000)	0	187,721,363	735,276,330	2,391,345,693	922,997,693
1989/90	1,205,476,000	230,545,000	219,139,828	24,777,000	0	243,916,828	754,629,485	2,434,567,313	998,546,313
1990/91	1,130,155,000	223,831,000	221,837,010	13,298,000	0	235,135,010	871,799,953	2,460,920,963	1,106,934,963
1991/92	1,086,888,000	206,513,000	210,490,214	16,145,000	0	226,635,214	891,296,400	2,411,332,614	1,117,931,614
1992/93	966,614,000	182,606,000	208,800,738	(28,220,000)	0	180,580,738	1,035,586,974	2,365,387,712	1,216,167,712
1993/94	1,256,009,000	214,961,000	199,304,945	(16,175,000)	0	183,129,945	914,591,730	2,568,691,675	1,097,721,675
1994/95	1,166,517,000	217,365,000	186,648,325	(88,977,000)	0	97,671,325	680,010,352	2,161,563,677	777,681,677
1995/96	1,357,937,000	237,627,000	286,971,075	(32,150,000)	0	254,821,075	401,318,041	2,251,703,116	656,139,116
1996/97	1,292,375,000	243,993,000	253,134,785	47,302,000	0	300,436,785	595,050,513	2,431,855,298	895,487,298
1997/98	1,370,317,000	302,069,000	200,076,045	90,000,000	(123,316,955)	166,759,090	327,992,313	2,167,137,403	494,751,403
1998/99	1,411,403,000	297,219,000	212,312,000	13,490,000	108,417,736	334,219,736	329,691,494	2,372,533,230	663,911,230
1999/00	1,392,515,000	262,383,000	263,326,907	(26,405,000)	3,967,942	240,889,849	646,961,000	2,542,748,849	887,850,849
2000/01	1,311,068,000	243,647,000	173,785,599	21,586,000	0	195,371,599	788,937,000	2,539,023,599	984,308,599
2001/02	1,322,037,000	241,048,000	199,205,189	(54,931,000)	0	144,274,189	804,044,166	2,511,403,355	948,318,355
2002/03	1,193,682,000	230,871,000	284,085,067	50,371,800	(162,807,504)	171,649,363	232,051,017	1,828,253,380	403,700,380
2003/04	1,179,118,000	229,886,000	164,721,756	(61,823,800)	105,280,095	208,178,051	-141,923,768	1,475,258,283	66,254,283
2004/05	931,893,000	198,606,000	381,481,989	18,022,000	5,059,196	404,563,185	-39,632,380	1,495,429,805	364,930,805
2005/06	1,158,901,000	212,687,000	405,612,265	(116,265,000)	37,054,891	326,402,156	74,465,049	1,772,455,205	400,867,205
2006/07	1,143,870,000	229,881,000	387,630,441	(38,400,000)	68,876	349,299,317	-421,365,512	1,301,684,805	-72,066,195
2007/08	1,117,068,000	217,106,000	431,283,980	70,272,000	0	501,555,980	-250,140,000	1,585,589,980	251,415,980
2008/09	1,075,217,000	223,056,000	260,209,614	90,363,000	0	350,572,614	371,765,025	2,020,610,639	722,337,639
2009/10	994,222,000	195,063,000	233,871,837	21,870,000	0	255,741,837	595,894,000	2,040,920,837	851,635,837
2010/11	1,094,130,000	225,236,000	227,018,084	(160,574,000)	0	66,444,084	583,958,000	1,969,768,084	650,402,084
2011/12	1,165,206,000	214,680,000	35,860,567	(33,725,000)	0	2,135,567	33,603,000	1,415,624,567	35,738,567
2012/13	1,075,958,000	236,045,000	234,852,498	53,437,000	0	288,289,498	-100,968,000	1,499,324,498	187,321,498
2013/14	1,099,377,000	224,957,000	574,836,315	90,393,000	0	665,229,315	203,715,000	2,193,278,315	868,944,315
2014/15	1,023,690,000	214,130,000	401,355,532	44,943,000	0	446,298,532	709,652,000	2,393,770,532	1,155,950,532
2015/16	1,023,789,000	214,109,000	289,902,322	(41,954,000)	0	247,948,322	689,547,000	2,175,393,322	937,495,322
2016/17	939,410,000	211,118,000	340,445,225	(15,061,000)	0	325,384,225	32,092,255	1,508,004,480	357,476,480
2017/18 <sup>4</sup>	967,444,000	220,368,000	142,816,615	74,391,000	0	217,207,615	93,741,708	1,498,761,323	310,949,323
2018/19	925,705,000	211,291,000	0	0	0	0	395,306,715	1,532,302,715	395,306,715
2019/20	916,824,000	205,557,000	0	0	0	0	-53,861,886	1,068,519,114	-53,861,886
2020/21	1,020,175,000	219,021,000	0	0	0	0	803,830,930	2,043,026,930	803,830,930

Notes:

\* Includes June 1987 data

<sup>1</sup> Energy provided by Southern California Edison (SCE) at no cost pursuant to 1987 Service and Interchange Agreement. <sup>2</sup> Energy exchange with SCE. Negative number indicates net energy banked with SCE.

<sup>3</sup> Energy purchases and sales. A negative number indicates net energy sold to other parties. <sup>4</sup> The operating agreement with SCE terminated on 9.30.2017. Effective 10.1.2017, MWD purchased Supplemental energy from the Southwest spot market and the California Independent System Operator to meet its incremental energy needs.



**Total Energy Requirement 2,043,026,930 kWh**

Note: Other Energy Purchases made from Southwest Spot Market or CAISO

*Figure 4-9. Metropolitan's CRA Electric Energy Use (kWh) Fiscal Year 2020/21*

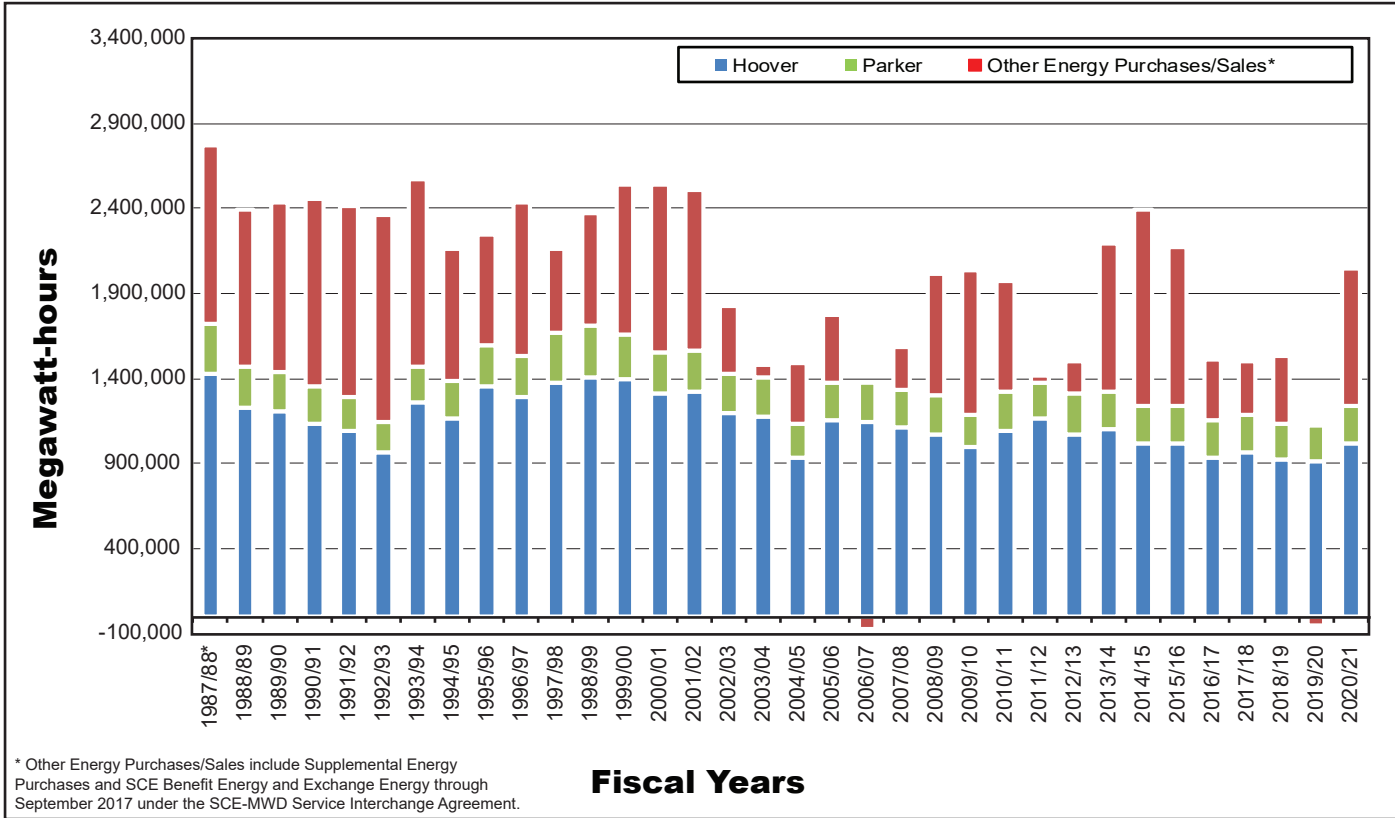


Figure 4-10. CRA Energy Mix 1987 to 2021



energy costs and increase operational flexibility. Potential energy management projects included Yorba Linda HEP modifications; retail battery storage systems at several water treatment and distribution facilities; and evaluation of variable-speed pump drives at Intake and Gene pumping plants. FY 2020/21 saw significant progress toward designing battery storage projects for Weymouth, Skinner, and Jensen water treatment plants, which will receive financial incentives under the state's Small Generator Incentive Program.

## *Safety and Regulatory Services*

Metropolitan complies with environmental and safety regulations and procedures through regular site inspections that proactively address environmental and safety issues. There were 65 routine regulatory inspections in the areas of air quality, wastewater, hazardous materials, hazardous waste, stormwater, underground and aboveground petroleum storage tanks, and safety. Staff coordinates and tracks all identified corrective actions and responds appropriately to the corresponding agency.

### *Regulatory*

Metropolitan completed over 220 compliance documents and reports required for air quality, wastewater, stormwater, underground storage tanks and hazardous materials/hazardous waste. Staff also managed about 450 environmental permits for portable and stationary equipment, industrial wastewater discharge, and hazardous materials/waste. Metropolitan submitted annual disclosures and updates to local health and fire departments for business plans addressing hazardous materials at 36 Metropolitan facilities.

A busy 2020/21 shutdown season included last-minute shutdowns and unexpected leaks, as staff expedited dewatering permit approvals and provided numerous regulatory agency notifications in support of Metropolitan's shutdown projects. Examples included flood control permit approvals for dewatering of the East Valley, Second Lower, South Coast and West Valley feeders.

Staff also successfully renewed the Diemer plant's de minimis wastewater discharge permit coverage and successfully negotiated with the Santa Ana Regional Water Quality Control Board to reduce the monthly reporting requirement to quarterly, which reduces staff resources and compliance deliverables.

For the Palos Verdes Reservoir, staff submitted the required FY 2020/21 industrial wastewater discharge reports and surcharge fees as required under the new permit from the Los Angeles County Sanitation Districts for the discharge of groundwater and reservoir seepage water.

Staff submitted raw water discharge plans to the California Department of Fish and Wildlife and obtained approval to dewater the Upper and Lower feeders, San Diego Pipeline No. 5, Lake Skinner Outlet Conduit and the San Diego Canal. Staff also is developing new raw water discharge checklists and training materials to ensure that quagga mussel control measures are properly implemented.

Staff continued to provide regulatory support to ensure Metropolitan-wide compliance with applicable chlorine and aqueous ammonia regulations and industry standards, aimed at preventing releases, employee injuries and environmental impacts. During this fiscal year, staff coordinated two, five-year process hazard analyses for two of Metropolitan's California Accidental Release Prevention/Risk Management Plan and Process Safety Management Program facilities.

Staff continued supporting PCB (polychlorinated biphenyl) remediation and abatement projects for the Diemer basins and west filter building rehabilitation projects and the upcoming Weymouth basins rehabilitation project. Staff also supported Real Property by coordinating Phase I environmental site assessments for Palo Verde Irrigation District for land acquisitions. Staff supported 15 asbestos, lead and mold abatements for various Metropolitan facilities. Staff also initiated an interdisciplinary internal working group to discuss, develop and recommend strategies for managing PFAS and other water quality constituents of emerging concern as they relate to ongoing Metropolitan operations and future capital projects.

Staff coordinated and completed more than 70 routine and non-routine hazardous waste management service operations with Metropolitan staff and hazardous waste vendors. Notable projects included a comprehensive cleaning of the ozone demonstration plant at the Weymouth facility and an 80,000-gallon sulfuric acid tank cleanout at the Jensen plant.

Management of Metropolitan's 398 air quality permits included 11 new permits and submittal of 14 compliance reports for annual operating, fuel and fleet emissions. Additionally, due to the increased wildfire and [public safety power shutoff](#) events, staff obtained approval for a variance from the South Coast Air Quality Management District to allow continued operation of the emergency generator at the Pleasants Peak Telecommunications site beyond its permitted annual hours.

In the dynamic air quality regulatory arena, staff actively engaged in key rulemaking efforts that include meeting California's zero-emission mobile source goals, allowing for compliant operation and maintenance of emergency generators during PSPS events, and reducing particulate matter emissions at agricultural sites in the Palo Verde Valley. Staff continue to work closely with agency coalitions to ensure that the state-proposed advanced clean fleet and equipment regulations allow continued reliability of essential public services. A new initiative helped launch Metropolitan's transition towards a state-mandated zero-emission vehicle fleet. Actions included introducing clean renewable diesel at the Lake Mathews facility for fleet use.

### ***Health & Safety***

Health and Safety Program staff played a key role in preventing work-related COVID-19 illnesses by enhancing protocols and control measures to protect Metropolitan employees, contractors and vendors. Staff added multiple layers of protection at the facilities, such as (1) adding more micro-team trailers and portable toilets to minimize sharing of workspace and equipment and increase social distancing; (2) installing physical barriers and hands-free hygiene equipment; (3) inspecting and modifying HVAC systems to optimize air filtration and intake of fresh air; and (4) increasing frequency of cleaning disinfection. Staff also developed customized COVID-19 prevention plans for the desert lodgings, skills testing, and shutdowns. In

compliance with new regulations from the California Occupational Safety and Health Administration, staff developed a written COVID-19 prevention program and conducted online training to all employees.

In response to new Cal/OSHA wildfire regulations, staff developed a wildfire smoke protection program to notify employees of nearby wildfires causing unhealthy air quality. Staff also developed online training in emergency procedures, while providing approved dust masks and other personal protective equipment necessary to protect employees performing emergency essential work.

During the FY 2020/21 shutdown, staff minimized accidents and injuries through safe work practices, toolbox training and ventilation monitoring for all underground operations. In addition to voluntary temperature checking stations, COVID-19 prevention measures included safety equipment stations where employees could easily obtain face coverings and masks, N95 respirators, disinfectants, hand sanitizers, disposable gloves and other related supplies.

Other measures included site inspections to identify safety performance issues which are then addressed through communication, training, and updated procedures if needed. Staff also prepared a book of safety talks to use when conducting weekly safety toolbox meetings. Table 4-8 shows the injuries, illnesses and incidents that required time off from work during FY 2020/21 for each Metropolitan facility. The Occupational Safety and Health Administration defines Total Incident Rate (also known as injury/illness rate) as the number of recordable incidents in a year per 100 employees. Overall, Metropolitan's Total and DART (Days Away, Restricted, or Transferred) Incident Rates remained below the federal and state rates for water utilities. A recordable incident is generally defined as a new work-related injury or illness that results in death, lost time from work, work restriction, or medical treatment beyond first aid.

### ***Safety and Technical Training***

Due to ongoing issues related to the pandemic, staff continued to expand online and webinar training sessions. In FY 2020/21, eLearning and webinar training accounted for 97 percent of all training provided. Metropolitan training staff provided 382 in-person or webinar sessions covering 68 individual safety and regulatory compliance topics. Of these classes, 300 were webinars and 82 were in-person and observed

physical distancing protocols. Additionally, 9,544 registrations were recorded for online safety classes covering 43 individual topics. Of the total of 12,668 enrollments recorded, 75 percent were conducted via eLearning.

Staff provided 2,360 toolbox sessions to 27,614 attendees. Staff also conducted 885 respirator fit tests and training sessions for 514 attendees. Staff assisted and supported 1,873 medical exams which were conducted by the MedVan/Clinic.

### ***Apprenticeship Program Training***

The Apprenticeship Program trains prospective industrial mechanics and electricians to ensure skilled trade persons are available to repair and maintain Metropolitan's water treatment and conveyance and distribution system. The state Division of Apprenticeship Standards continues to recognize Metropolitan's curriculum as meeting the breadth and level commensurate with journey-level mechanical and electrical trades.

Metropolitan's Apprenticeship Program has several classes in progress to train electricians and mechanics to the journey level. During a four-year period, apprentices attend over 700 hours of classroom instruction, must pass more than 90 tests, and complete more than 7,200 hours of on-the-job training. Since its inception in 2003, the Apprenticeship Program has graduated 141 journey-level mechanical and electrical craft persons, comprising over 50 percent of Metropolitan's current apprentice-specific trades workforce. Apprentices continued learning during the pandemic through remote applications. Lectures were held using an online training platform and hands-on training was conducted using virtual training equipment, such as augmented reality welders.

**TABLE 4-8**  
**ACCIDENT INCIDENTS**  
Fiscal Year 2020/21

<b>Location</b>	<b>Total* Incident Rate</b>	<b>DART** Incident Rate</b>
Diamond Valley Lake	5.6	5.6
Diemer	5.9	4.4
Eagle Mountain	0	0
Eagle Rock	0	0
Gene	4.3	1.1
Hinds	14.1	14.1
Iron Mountain	0	0
Jensen	8.6	4.3
Lake Mathews	8.5	5.7
Mills	2.0	2.0
Sacramento	0	0
San Diego	0	0
Skinner	6.4	6.4
Soto Street	0	0
Sunset	0	0
Union Station	0.3	0.3
Washington, D.C.	0	0
Weymouth	2.0	2.0
<b>AVERAGE RATE</b>	<b>2.2</b>	<b>1.7</b>
<b>Federal Utility Average</b>	<b>5.5</b>	<b>2.8</b>
<b>State Utility Average</b>	<b>3.4</b>	<b>2.4</b>

\*Total Incident Rate – Number of recordable incidents in a year per 100 employees.

Total Incident Rate is calculated by multiplying the number of recordable incidents by 200,000 and then dividing that number by the number of total labor hours at the facility.

\*\*DART Incident Rate – Number of incidents with days away, restriction, and/or transfer in a year per 100 employees.



*Diemer West Basins and Filter Rehabilitation Project – setting of the turntable support cage in Basin 8.*

## Engineering Services

The Engineering Services Group is a full-service engineering organization that is responsible for delivering a variety of projects so that Metropolitan can treat and distribute water reliably to its member agencies. Engineering Services provides a wide range of technical services, with a focus on providing innovative and cost-effective solutions to its project partners and stakeholders. Key functions within the group include program management, engineering design, construction management, facility planning, dam surveillance, corrosion engineering, geodetics and field survey. A significant responsibility for Engineering Services is oversight of Metropolitan's Capital Investment Plan, which represents the district's commitment to constructing and rehabilitating facilities that enable long-term, reliable water deliveries. Additionally, Engineering Services provides a core suite of operation and maintenance activities to support numerous ongoing initiatives.

This past year, staff further transitioned to a virtual telework environment to maintain planning and design activities for both capital and O&M work. Adaptations to field work—including construction management and other engineering support activities—ensured safe work practices during the pandemic. Highlights of the year included completing rehabilitation of the Greg Avenue Pump Station and completing Metropolitan's Dam Inundation Mapping project in compliance with state regulatory requirements. Construction advanced for building improvements at the Los Angeles headquarters building, including fire alarm systems, security, and board and committee rooms upgrades. Staff also successfully received board authorization to begin the environmental planning phase of the Regional Recycled Water Program.



## *Capital Investment Plan*

Metropolitan's CIP consists of 12 major capital programs based on project type, business driver and location. Metropolitan's CIP projects get prioritized and scheduled to reflect the strategic goals of providing a reliable supply of high-quality water at the lowest cost possible. During the fiscal year, Engineering Services managed and executed more than \$250 million in CIP projects.

During fiscal year 2020/21, CIP expenditures totaled about \$262 million for all capital programs as depicted in Figure 5-1, while Figure 5-2 shows long-term expenditures for each capital program. Both charts cover a range of activities for each program, including planning, design and construction, and project closeout. The fiscal year saw completion of 18 construction contracts with a total constructed value of \$164 million (Table 5-1), while 15 construction contracts remained underway with a total value of \$198 million (Table 5-2). Metropolitan also had 97 major capital projects in various stages of design (Table 5-3). Additionally, the group managed 14 ongoing procurement contracts with a total value of \$60 million.

Below are highlights of Engineering Services' major activities for each capital program during FY 2020/21:

### ***Regional Recycled Water Program***

These projects aim to demonstrate feasibility of recycling wastewater for recharge of Southern California groundwater basins as part of a potential regional recycled water system developed jointly with the Los Angeles County Sanitation Districts. During FY 2020/21, staff received board authorization for the environmental planning phase work, which includes preparation of environmental documentation, technical studies and public outreach studies. Metropolitan began recruiting consultants to provide technical support for advanced treatment, conveyance and groundwater recharge facilities, while also providing support for secondary MBR testing, operation, and public outreach. This work is being conducted with budgeted O&M funding.

Staff developed and obtained letters of intent with potential project participants, including Three Valleys Municipal Water District, Upper San Gabriel Valley MWD, West Basin MWD, the Main San Gabriel Basin Watermaster, the cities of Long Beach and Torrance, the Water Replenishment District of Southern California, the Los Angeles County Flood Control District, Southern Nevada Water Authority, and the Arizona Department of Water Resources/Central Arizona Project. As part of environmental planning phase work, staff approved amendments with the county Sanitation Districts, SNWA and CAP.

### ***Water Quality/Oxidation Retrofit Program***

This program adds or upgrades facilities to ensure compliance with water quality regulations at Metropolitan's treatment plants and throughout the distribution system. During FY 2020/21, staff continued preparation of record drawings for the Weymouth enhanced bromate control facilities.

### ***Treatment Plant Reliability Program***

Projects under this program maintain reliability and improve the operating efficiency of Metropolitan's water treatment plants. During the year, staff completed rehabilitation of the module 2 and 3 flocculators at the Jensen plant, and upgrades to the domestic water system at the Weymouth plant, while substantially completing upgrades to Weymouth's chlorination system and water quality instrumentation. Staff also substantially completed rehabilitation of the [west basins and filter building](#) at the Diemer plant and continued electrical upgrades at the Jensen plant.

### ***Distribution System Reliability Program***

This program maintains delivery reliability to Metropolitan's member agencies. Projects completed during the fiscal year included improvements to the Lakeview Pipeline, electrical upgrades at 15 structures in the Orange County region and a permanent service center for the Orange County operating region. Staff also rehabilitated service connection A-06 on the East Orange County Feeder No. 2, replaced a deteriorated meter as Service Connection LA-17, and lined approximately 1,500 feet of the Lake Perris Bypass Pipeline.

### ***Colorado River Aqueduct Reliability Program***

Projects within this program maintain the reliability of the Colorado River Aqueduct and its pumping plants. During the fiscal year, staff completed fabrication and installation of 44 isolation [coupling](#) assemblies at the five CRA pumping plants and replaced deteriorated metering equipment at Whipple Mountain Tunnel. Staff also substantially completed replacement of deteriorated radial gates along the CRA.

### ***PCCP Reliability Program***

This long-term, comprehensive program will rehabilitate 100 miles of Metropolitan's 163 miles of prestressed concrete cylinder pipe. During the fiscal year, staff relined approximately 10 miles of PCCP on the Second Lower Feeder, including 4.5 miles for Reach 2 and the urgent relining of a 2,900-linear-foot portion for Reach 8. Staff also relined approximately 1,200 feet along the Allen-McColloch pipeline and continued design efforts for rehabilitation of PCCP on the remaining at-risk PCCP lines.

### ***Right of Way and Infrastructure Protection Program***

This comprehensive program protects access rights, minimizes erosion and secures programmatic environmental permits along all of Metropolitan's pipelines throughout the distribution system. This enables long-term rehabilitation work and operational activities to proceed with minimal delays and will provide relief from escalating permitting costs. During the year, staff completed construction of six sites in the Orange County region, while negotiations continued for right of way and permitting for 35 additional project sites within the same region. Final design continued for the first group of project sites in the Western San Bernardino region.

### ***System Flexibility/Supply Reliability Program***

In response to the recent drought and the reduced availability of State Water Project supplies, staff continued executing projects that expand the reach of CRA water throughout Metropolitan's distribution system. The fiscal year saw construction completed on rehabilitation of the [Greg Avenue Pump Station](#), with the facility placed online to move treated CRA supplies to the western portions of Metropolitan's distribution system.

### ***System Reliability Program***

This program improves or modifies facilities throughout Metropolitan's service area to incorporate new processes and/or technologies, and to improve facility safety and overall reliability. During the fiscal year, staff substantially completed seismic improvements at the Los Angeles headquarters building, and continued other building improvements including fire alarm systems, security, and [board and committee room upgrades](#).

### ***District Housing & Property Improvements Program***

Refurbishing and upgrading workforce housing at Metropolitan provides enhanced living conditions that attract and retain skilled employees. During the year, staff completed the employee village enhancement master planning documents for Eagle Mountain, Hinds, Iron Mountain and Gene pumping plants.

### ***Dam and Reservoir Improvements Program***

This new program will update or refurbish Metropolitan's dams, reservoirs, and appurtenant facilities in order to reliably meet water storage needs and regulatory compliance. During the year, Engineering staff completed a preliminary assessment and identified safe operating levels for the Lake Skinner outlet tower seismic upgrade, while also continuing to identify areas of need and prioritize instrumentation replacement as part of the Lake Mathews and Lake Skinner monitoring system upgrades.

### ***Minor Capital Projects Program***

Minor capital projects involve refurbishments, replacements, or upgrades at Metropolitan facilities that cost less than \$400,000. During FY 2020/21, Metropolitan authorized 31 projects and completed 28 minor capital projects.

### Fiscal Year 2020/21 Capital Investment Expenditures

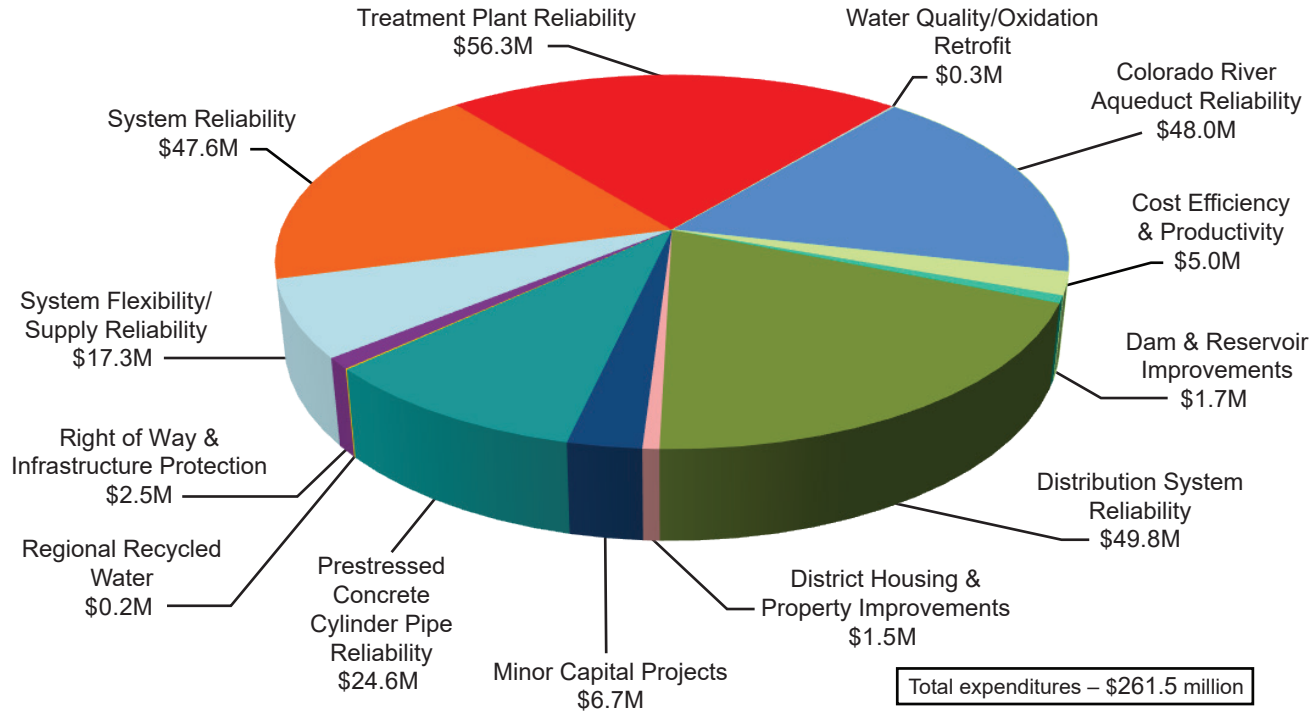


Figure 5-1. Fiscal Year 2020/21 Capital Investment Expenditures

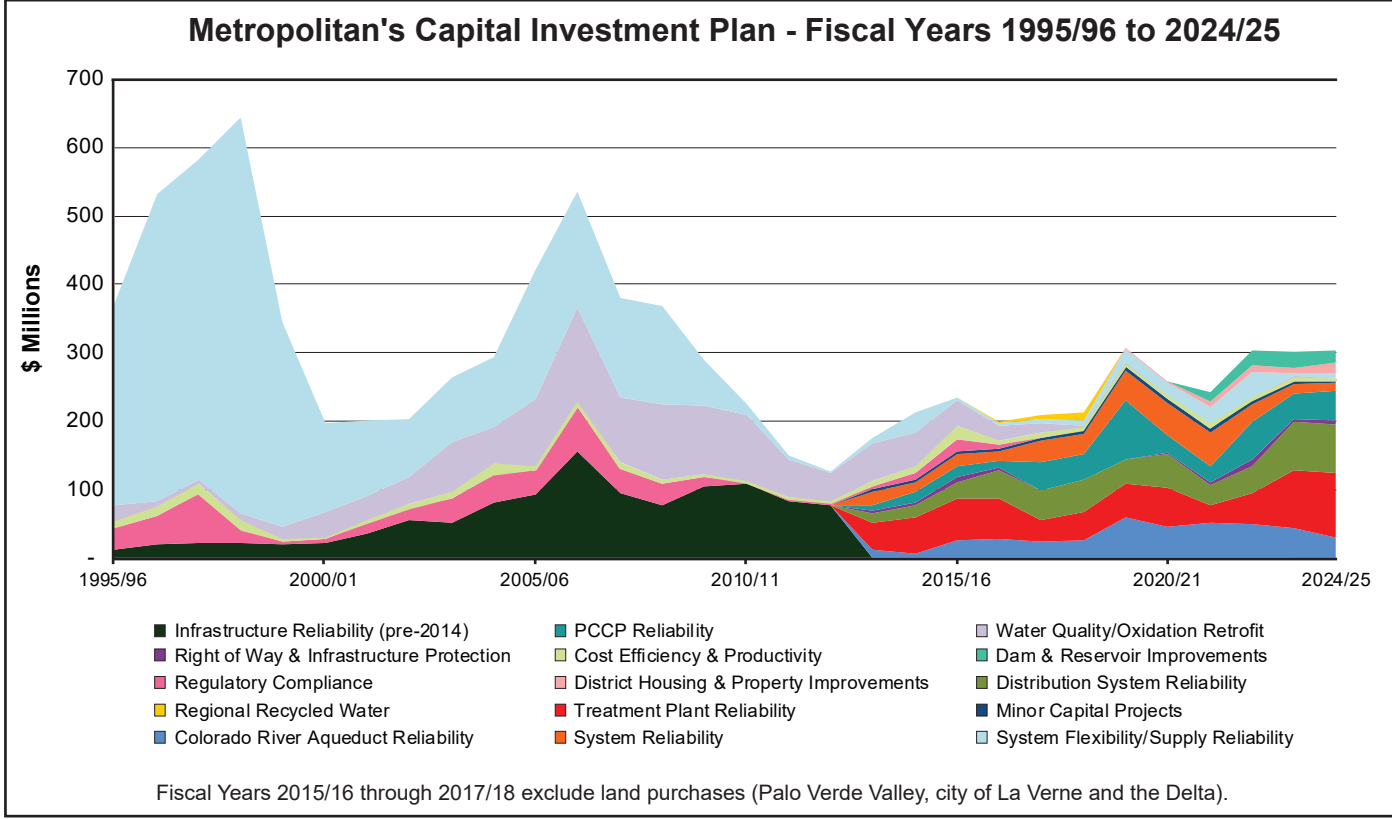


Figure 5-2. Metropolitan's Capital Investment Plan - Fiscal Years 1995/96 to 2024/25

**TABLE 5-1**  
**CAPITAL CONSTRUCTION CONTRACTS COMPLETED AS OF JUNE 30, 2021 (UNAUDITED)**

<b>Completion Date</b>	<b>Contract/Spec. No.</b>	<b>Project</b>	<b>Base Bid Amount (\$)</b>	<b>Final Amount (\$)</b>
7/30/2020	1893/1893	Electrical Upgrades at 15 Structures in the Orange County Region	2,606,700	2,611,056
9/14/2020	M-3014/M-3014	Underground Storage Tank Modifications at MWD HQ Building	51,855	164,227
10/12/2020	1880/1837	Orange County Region Service Center	9,257,483	9,717,619
10/26/2020	1882/1864	Weymouth Domestic Water System Improvements	3,740,000	3,965,000
11/13/2020	M-3033/M-3033	CRA Housing - Fencing Installation	191,027	191,027
11/19/2020	1915/1809	Colorado River Aqueduct Pumping Plants 6.9 kV Power Cable Replacement	16,452,832	11,927,829*
1/8/2021	1943/1943	East Orange County Feeder No. 2 Service Connection A-06 Rehabilitation	594,480	552,541
2/22/2021	M-3041/M-3041	Weymouth Sedalia Property Grading and Drainage Improvements	38,000	38,000
3/2/2021	M-3036/M-3036	Skinner Survey Building Roof Replacement	81,500	81,500
3/24/2021	1931/1830	Joseph Jensen Water Treatment Plant Modules 2 and 3 Flocculator Rehabilitation	8,888,000	8,896,191
5/4/2021	1923/1834	CRA Discharge Line Isolation Coupling and Bulkhead Installation	32,946,000	32,946,000
5/14/2021	1988/1988	Allen-McColloch Pipeline PCCP 2021 Urgent Relining	2,435,000	2,452,375
5/18/2021	1979/1979	Diamond Valley Lake Floating Wave Attenuator Repair	276,373	274,600*
5/20/2021	1924/1821	Orange County Region Erosion Control Improvements - Stage 1	429,295	560,597*
5/27/2021	1972/1972	Lake Perris Bypass Pipeline Relining	5,410,000	5,410,000
5/27/2021	1977/1977	Lakeview Pipeline Improvements	3,270,000	3,270,000*
6/4/2021	1902/1902	Second Lower Feeder PCCP Rehabilitation - Reach 2	53,273,196	58,063,181
6/18/2021	1911/1828	Greg Avenue Pressure Control Structure - Pump Modification and New Control Building	20,975,000	22,433,506*

\* Final contract amounts represent actual earnings through end of June 2021 and may change as resolution of pending issues are finalized.

**TABLE 5-2  
MAJOR CONSTRUCTION CONTRACTS IN PROGRESS  
AS OF JUNE 30, 2021 (UNAUDITED)**

Accrual Basis

Contract No.	Project	Percent Contract Complete through 6/30/2021	Estimated Contract Completion Date	Contract Earnings (\$) through 6/30/2021 <sup>1</sup>	Contract Amount (\$) 6/30/2021 <sup>2</sup>	Base Bid Amount (\$)
1884	Garvey Reservoir Sodium Hypochlorite Feed System	3%	Jul. 2022	\$61,250	\$2,418,149	\$2,418,149
1878	Gene Wash Reservoir Discharge Valve Replacement	43%	Nov. 2021	\$2,302,659	\$5,319,066	\$5,316,900
1883	Weymouth Water Treatment Plant Chlorination Systems Upgrades	93%	Aug. 2021	\$8,180,099	\$8,726,530	\$8,487,170
1900	Diemer Water Treatment Plant West Basin & Filter Building Rehab	99%	Jul. 2021	\$39,818,691	\$39,878,691	\$38,539,196
1905	Metropolitan Headquarters Building Improvements	93%	Jul. 2022	\$48,524,905	\$48,732,099	\$43,998,000
1908	CRA Pumping Plants - Sump Rehabilitation	20%	Jul. 2022	\$5,388,610	\$26,921,840	\$26,900,000
1914	Joseph Jensen Water Treatment Plant Electrical Upgrade - Stage 2	83%	Aug. 2022	\$12,483,886	\$15,087,406	\$14,784,000
1920	CRA - Installing Radial Gates at Seven Facilities	99%	Aug. 2021	\$10,456,211	\$10,501,211	\$10,439,354
1921	Weymouth Plant Water Quality Instrumentation Improvements	97%	Aug. 2021	\$2,873,402	\$2,973,077	\$2,944,000
1926	CRA Mile 12 Flow Monitoring Station Upgrades	0%	Jul. 2022	\$0	\$2,022,000	\$2,022,000
1938	Metropolitan HQ Building Physical Security Improvements	39%	Feb. 2022	\$2,277,501	\$5,843,525	\$5,822,000
1945	Lake Mathews IT Disaster Recovery Facility Upgrades	40%	Oct. 2021	\$179,140	\$448,900	\$448,900
1946	CRA Pumping Plants - Overhead Crane Replacement	3%	Sep. 2023	\$347,300	\$13,419,000	\$13,419,000
1962	MWD HQ Building Fire Alarm & Smoke Control Improvements	14%	Jan. 2023	\$2,018,650	\$13,999,000	\$13,999,000
1970	Garvey Reservoir Drainage and Erosion Improvements - Areas 6, 7, 8, 10, and 11	60%	Nov. 2021	\$774,830	\$1,294,800	\$1,294,800

<sup>1</sup> Earnings reflected represent the value of work performed by the contractor as of the date indicated and include contract retention and other similar deductions from amounts earned by the contractor but otherwise required to be withheld by Metropolitan by law or contract.

<sup>2</sup> The contract amount may differ from the bid amount due to periodic change orders approved by the General Manager or, if required, by the board.



**TABLE 5-3  
MAJOR PROJECTS UNDER DESIGN DURING FISCAL YEAR 2020/21**

<b>Appropriation Number</b>	<b>Appropriation Title</b>	<b>Appropriation Estimate</b>	<b>Project Description</b>	<b>Estimated or Actual Completion Date for Final Design</b>
<b>Colorado River Aqueduct Reliability Program</b>				
15320	Cabazon Radial Gate Facility	\$5,000,000	Cabazon Radial Gate Facility Improvements	March 2023
15373	CRA Conveyance Reliability	\$186,000,000	Copper Basin Discharge Valve Replacement	September 2023
15384	CRA Electrical/Power Systems Reliability	\$48,600,000	CRA Auxiliary Power Systems CRA Main Transformer Replacement Iron Mountain Auxiliary Power System Rehabilitation	May 2025 June 2023 December 2022
15438	CRA Reliability - FY2006/07 Through FY2011/12	\$110,200,000	Iron Mountain Pumping Plant Generator Replacement Seismic Evaluation of CRA Structures	December 2023 July 2023
15481	CRA Main Pump Reliability	\$177,200,000	CRA Main Pump Rehabilitation	November 2023
15483	CRA Reliability - FY2012/13 Through FY2017/18	\$67,600,000	CRA Conduit Erosion Control Improvements CRA Conduit Structural Protection CRA Domestic Water Treatment System Replacement CRA Pumping Plant Drainage Improvements CRA Pumping Plant Storage Buildings at Hinds, Eagle Mountain and Iron Mountain CRA Utility Replacement - Intake CRA Utility Replacement - Iron Mountain and Gene CRA Utility Replacement - Hinds and Eagle Mountain 2.3kV and 480V Switch Rack Rehab (Iron Mountain) Black Metal Mountain 2.4 Kv Electrical Power Upgrades	June 2024 June 2022 November 2021 June 2025 February 2022 April 2023 September 2023 September 2022 June 2024 September 2023
<b>Distribution System Reliability Program</b>				
15377	Conveyance & Distribution System Rehab	\$119,500,000	Orange County Feeder Relining West Valley Feeder No. 1 Access Roads & Structures Improvements - Stage 3	June 2022 July 2022
15425	Perris Valley Pipeline	\$151,000,000	Perris Valley Pipeline - Tunnels	May 2022
15417	Reservoir Cover and Replacement	\$41,500,000	Jensen Finished Water Reservoir No. 1 Cover Rehabilitation Jensen Finished Water Reservoir No. 2 Rehabilitation Mills Finished Water Reservoirs Rehabilitation	December 2022 December 2022 October 2023
15419	Dam Rehabilitation & Safety Improvements	\$8,900,000	Dam Monitoring Upgrades Lake Mathews Dam Monitoring Upgrades Lake Skinner Diamond Valley Lake Dam Monitoring System Upgrade	December 2025 December 2024 December 2023

**TABLE 5-3 (Continued)**  
**MAJOR PROJECTS UNDER DESIGN DURING FISCAL YEAR 2020/21**

<b>Appropriation Number</b>	<b>Appropriation Title</b>	<b>Appropriation Estimate</b>	<b>Project Description</b>	<b>Estimated or Actual Completion Date for Final Design</b>
15441	Conveyance and Distribution System Rehabilitation - FY2006/07 Through FY2011/12	\$182,700,000	Etiwanda Pipeline Mortar Lining Repair OC-88 Pump Plant Surge Tank Upgrade San Gabriel Tower Seismic Upgrade Santiago Lateral Sectionalizing Valve Replacement Sepulveda Canyon Control Facility Water Storage Tanks Seismic Upgrade	April 2022 June 2022 June 2023 December 2021 July 2023
15458	Hydroelectric Power Plant Improvements	\$39,300,000	Foothill Hydroelectric Plant Rehabilitation Foothill Hydroelectric Plant Seismic Upgrades San Dimas Hydroelectric Plant Rehabilitation Sepulveda Canyon Hydroelectric Plant Rehabilitation	March 2023 March 2022 August 2023 August 2023
15480	Conveyance and Distribution System Rehabilitation - FY2012/13 Through FY2017/18	\$332,500,000	C & D System Electrical Structures Rehabilitation Casa Loma Siphon Barrel No. 1 Seismic Upgrades East Lake Skinner Bypass #2 Screening Structure Upgrade Lake Mathews Electrical Upgrades Lake Skinner Pipelines Cathodic Protection Lakeview Pipeline Repair Live Oak Pipelines Cathodic Protection Hollywood Tunnel North Portal Equipment Upgrades Orange County and Riverside/San Diego County Operating Regions Valve Replacement San Diego Canal Radial Gate VO-8 Rehabilitation San Dimas and Red Mountain Power Plants Standby Diesel Engine Generator Replacement Santa Monica Feeder Cathodic Protection Sepulveda Canyon Control Facility Reliability Improvements West Orange County Feeder Valve Replacement West Orange County Feeder Cathodic Protection West Orange County Feeder OC-09 Rehabilitation	September 2023 August 2021 November 2022 December 2023 October 2021 June 2024 October 2021 July 2022 December 2021 June 2022 June 2022 December 2021 May 2024 June 2024 December 2021 December 2022
<b>Minor Capital Projects Program</b>				
15498	Capital Program for Projects Costing Less Than \$250,000 for FY 16/17 to FY 17/18	\$10,000,000	Multiple projects - streamlined design	N/A
15504	Capital Program for Projects Costing Less Than \$250,000 for FY 18/19 to FY 19/20	\$15,500,000	Multiple projects - streamlined design	N/A
15518	Capital Program for Projects Costing Less Than \$400,000 for FY 20/21 to FY 21/22	\$15,000,000	Multiple projects - streamlined design	N/A

**TABLE 5-3 (Continued)**  
**MAJOR PROJECTS UNDER DESIGN DURING FISCAL YEAR 2020/21**

<b>Appropriation Number</b>	<b>Appropriation Title</b>	<b>Appropriation Estimate</b>	<b>Project Description</b>	<b>Estimated or Actual Completion Date for Final Design</b>
<b>System Reliability Program</b>				
15395	La Verne Shop Facility Upgrades AC	\$2,500,000	La Verne Shops - Stage 4 Building Completion & Equipment Installation	September 2021
15516	Paving and Roofing Rehabilitation		Lake Skinner AC Paving and Roofing Rehabilitation	May 2022
<b>PCCP Reliability Program</b>				
15497	Second Lower Feeder PCCP Rehabilitation	\$606,400,000	Second Lower Feeder PCCP Rehabilitation - Package 3	Reach 3 December 2021 All Reaches December 3035
15502	Allen McColloch Pipeline, Calabasas Feeder, and Rialto PCCP Rehabilitation	\$986,976,000	Allen McColloch Pipeline PCCP Rehabilitation - Stage 2 Calabasas Feeder PCCP Rehabilitation Rialto Feeder PCCP Rehabilitation	March 2024 December 2024 June 2028
<b>Potential Regional Recycled Water Program</b>				
<b>Regulatory Compliance Program</b>				
15385	CRA Discharge Containment	\$19,800,000	CRA Pumping Plant Wastewater System Replacement - Gene & Iron Mountain	June 2022
<b>Right of Way &amp; Infrastructure Protection Program</b>				
15474	Right of Way and Infrastructure Protection	\$71,200,000	Infrastructure Improvements for L.A. County region (Stages 1&2) Infrastructure Improvements for Orange County region Infrastructure Improvements for Riverside/San Diego County region (Stages 1&2) Infrastructure Improvements for western San Bernardino County region (Stages 1&2)	June 2024 November 2022 June 2025 December 2022
<b>System Flexibility/Supply Reliability Program</b>				
15402	Hayfield Groundwater Storage	\$32,310,000	Lake Perris Seepage Water Conveyance Pipeline	June 2022
15495	Operation Support Facilities Improvement	\$35,100,000	Water Quality Laboratory Building Upgrades & Equipment Improvements La Verne Engineering Building Replacement	March 2025 December 2024
<b>Treatment Plant Reliability Program</b>				
15369	Weymouth Improvements - FY2000/01 Through FY2005/06	\$240,700,000	Weymouth Administration Building Seismic Upgrades Wheeler Gate Security Improvements Weymouth Filter Valve Replacement - Phase 1 Weymouth Filter Valve Replacement - Phase 2	June 2023 June 2023 November 2021 June 2024
15371	Jensen Improvements - FY2000/01 Through FY2005/06	\$75,100,000	Jensen Modules 2&3 Traveling Bridge & Basin Rehabilitation Jensen Entrance Security Upgrades	December 2024 September 2023
15380	Diemer Improvements	\$238,000,000	Diemer Wastewater Reclamation Plant Improvements Mills	June 2024
15381	Mills Improvements	\$8,200,000	Solid Removal Automation	June 2024
15436	Diemer Improvements - FY2006/ Through FY2011/12	\$79,500,000	Diemer Chemical Feed System Improvements Diemer Filter Valve Actuator Refurbishment	October 2022 June 2022

**TABLE 5-3 (Continued)**  
**MAJOR PROJECTS UNDER DESIGN DURING FISCAL YEAR 2020/21**

<b>Appropriation Number</b>	<b>Appropriation Title</b>	<b>Appropriation Estimate</b>	<b>Project Description</b>	<b>Estimated or Actual Completion Date for Final Design</b>
15440	Weymouth Improvements - FY2006/07 Through FY2011/12	\$57,000,000	Weymouth Treatment Basins Nos. 5-8 Refurbishment Weymouth Dry Polymer System Upgrade	November 2021 December 2024
15442	Jensen Improvements - FY2006/07 Through FY2011/12	\$146,000,000	Jensen Electrical Systems Reliability - Three Stages	July 2024
15452	Mills Improvements - FY2006/07 Through FY2011/12	\$27,500,000	Mills Electrical Improvements - Three Stages Chemical Unloading Facility - Dechlorination System Upgrade	August 2021 June 2024
15477	Weymouth Improvements - FY2012/13 Through FY2017/18	\$81,000,000	Weymouth Basin Inlet Channel Seismic Upgrades Weymouth Washwater Pump Station Improvements	November 2021 October 2024
15478	Diemer Improvements - FY2012/13 Through FY2017/18	\$10,400,000	Diemer Chemical Tank Farm Improvements Diemer Slope Erosion Remediation	October 2022 December 2024
15479	Mills Improvements - FY2012/13 Through FY2017/18	\$36,500,000	Mills Fluoride Tank Replacement Mills Plant Perimeter Security and Environ Improvements	July 2022 March 2024
15505	Weymouth Improvements - FY2018/19 Through FY2023/24	\$3,500,000	Weymouth Hazardous Waste Staging & Containment	March 2023
15508	Jensen Improvements - FY2018/19 Through FY2023/24	\$19,701,000	Jensen Plant Site Security Upgrades Jensen Ozone Power Supply Unit/Critical Components Upgrade Jensen Plant New Caustic Tank Farm @ Combined Filter Effluent Jensen Control Room HVAC Upgrades Jensen Sulfuric Acid Tank Rehabilitation	August 2022 June 2021 March 2024 June 2023 December 2022
15510	Diemer Improvement - FY2018/19 Through FY2023/24	\$60,000,000	Diemer Power & Distribution Panel Upgrades Diemer Filter Rehabilitation	March 2022 December 2023
15520	Mills Improvement - FY2018/19 Through FY2023/24	\$5,380,000	Mills Ozone Generation PLC Control	September 2022
<b>Water Quality/Oxidation Retrofit Program</b>				
15472	Enhanced Bromate Control		Mills Bromate Control Facilities	October 2023

The following sections present highlights of Engineering Services' operation and maintenance activities during FY 2020/21:

## *Delta Conveyance*

Engineering Services provided direct support for the Delta Conveyance Project in collaboration with Metropolitan's Bay-Delta Initiatives office. Key activities during the fiscal year included providing reviews and comments on conceptual engineering reports and submittals for the Central, East, and Byron Bethany alignment options. Engineering staff also reviewed and provided comments on cost estimates for Central and East tunnel options to the Delta Conveyance Design and Construction Authority.

## *Infrastructure Protection*

Engineering Services regularly monitors critical facilities, including dams, reservoirs, pipelines and chemical storage tanks to assess their condition and identify needed repairs to maintain reliable operation. Staff also reviews third-party requests for crossings or use of Metropolitan's right-of-way. Engineering continued to conduct condition assessments of pipelines and related structures within the distribution system and monitoring corrosion control systems, including nine PCCP inspections and two non-PCCP pipeline inspections. Staff also validated results of a condition assessment of the Santa Monica Feeder using a new pipe inspection tool that measures the pipe wall thickness while the pipeline remains in service and performed 85 corrosion assessments, non-destructive examinations and 62 coating inspections.

## *Dam Safety*

Engineering Services regularly performs inspection of Metropolitan's 24 dams and conducts deformation monitoring to ensure public safety, reliability and avoidance of unplanned outages. During the fiscal year, staff completed the Dam Inundation Mapping project in compliance with state regulatory requirements, which gives Metropolitan an important tool to assess its overall risk and facilitates coordination with downstream agencies and local governments with their planning. Additionally, staff continued developing initiatives that

responded to newly adopted state regulations, performed regular inspections and deformation monitoring of all dams, prepared Emergency Action Plans and performed comprehensive evaluations of dam structures as required by the California [Division of Safety of Dams](#).

## *Seismic Resilience*

Engineering Services has developed a proactive resilience strategy with the goal of minimizing interruptions of water deliveries after a major seismic event. Key activities included seismic upgrades of the West Filter Building and basins at the Diemer Water Treatment Plant, seismic evaluation of multiple inlet/outlet towers at Metropolitan's reservoirs to proactively identify potential vulnerabilities, and meeting with domestic and international peers to exchange knowledge in seismic resilience. These activities were part of an approach that involved regularly assessing the seismic resilience of specific facilities and performing upgrades as needed; evaluating the seismic vulnerability of the system as a whole and increasing operational flexibility when needed; and improving the seismic resilience of the distribution system over time by incorporating new, seismic-resilient components, such as flexible pipe joints, where effective and economical.

## *Cooperative Education Program*

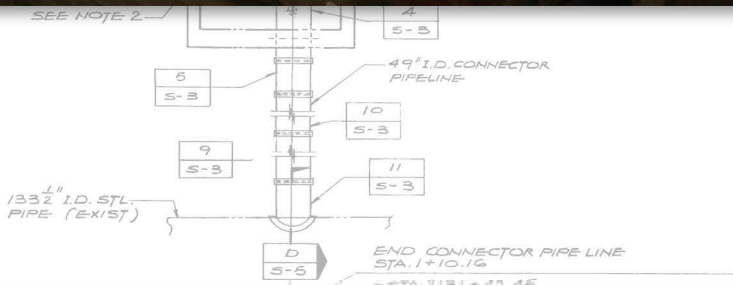
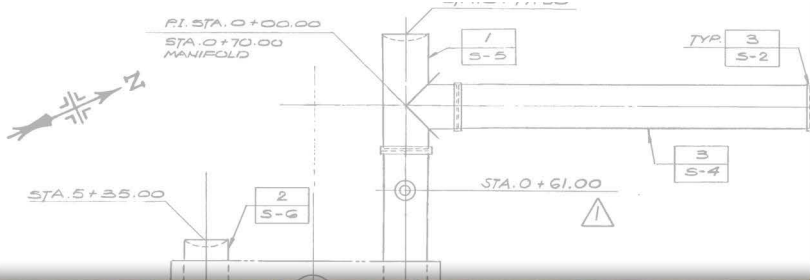
Engineering Services continued to offer year-round student intern positions for the 19th consecutive year. This program provides opportunities for engineering students to augment their studies with practical work experience in the water industry. The original recruiting class totaled 15 students, but due to the COVID-19 pandemic only six were brought on board to participate in the program and support construction management activities. About 250 students have participated in the program since its 2002 inception.

## *Technical Leadership*

Engineering Services staff continued active participation on committees of professional organizations, including the American Society of Civil Engineers, American Water Works Association, American Society for Testing and Materials, American Academy of Environmental Engineers & Scientist, California Land Surveyors Association, Greenbook Committee and SAVE International.

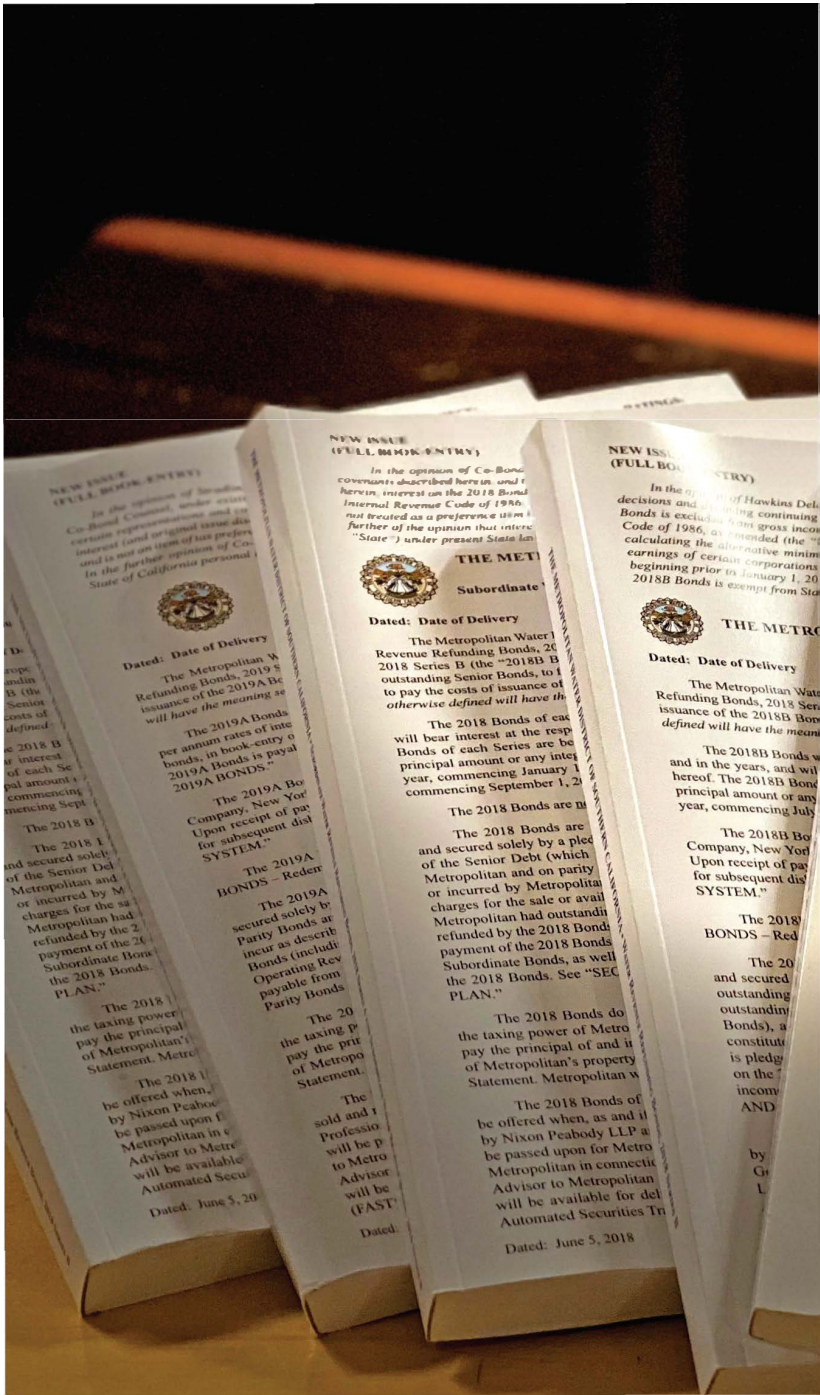
Staff published a number of technical papers and gave presentations on seismic resilience, water reuse, PCCP rehabilitation, and earthquake response with a focus on vulnerability assessments and rehabilitation of water conveyance tunnels in high seismic hazard regions. Staff also continued to lead in organizing and maintaining the activities of the CLEAN-17 workgroup, which is comprised of engineering managers from large western water agencies that provide peer-to-peer collaboration on project issues and new industry developments. Additionally, staff continued to conduct an annual member agency engineering managers forum to network and collaborate on engineering issues of mutual interest to the member agencies.

Furthermore, staff continued to engage in Metropolitan's innovation initiatives including completion of two pilot studies, representing Metropolitan on WaterStart's board of directors, and presenting at the WaterStart's "Channel Connections" fall 2020 virtual conference. Staff also participated in the Isle Utilities western water technical advisory group meetings to identify opportunities for cleantech innovation and research.



A bulkhead welding crew works on the Lakeview Pipeline improvements project.





With Legal's participation, Metropolitan completed 13 short-term and long-term debt transactions totaling more than \$2.8 billion, to finance Metropolitan's infrastructure projects.

## CHAPTER 6

# Legal

The Legal Department represents Metropolitan, its directors, officers and, on occasion, employees in litigation and administrative proceedings; renders legal advice; prepares or reviews contracts; and monitors litigation, administrative proceedings, and state and federal legislative and regulatory proposals that could affect Metropolitan.

### *Major Events*

#### ***Bay-Delta/State Water Project***

##### *California WaterFix Litigation*

Although the state of California terminated the California WaterFix project, related litigation continued. The Legal Department continued to represent Metropolitan and work collaboratively with the Department of Water Resources and the State Water Contractors on final resolution of these cases. Metropolitan prevailed in the appeal of litigation filed by Food & Water Watch and Center for Food Safety challenging the action of the Metropolitan board authorizing Metropolitan to finance a portion of the WaterFix project. Metropolitan prevailed at the trial court; the appellate court affirmed the trial court's decision.

##### *Delta Conveyance Project*

In early 2020, DWR initiated the Delta Conveyance Project to modernize the State Water Project conveyance in the Delta to address climate change, sea level rise and seismic risks. The Legal Department's work on this program included collaborating with DWR in consultation with the Delta Stewardship Council regarding the consistency of the proposed DCP with the Delta Stewardship Plan, reviewing DCP environmental documents, analyzing and assisting in review of financing options, assisting with preparation of documents and drafting of agreements, providing support for the Delta Conveyance Design and Construction Authority and participating in Endangered Species Act science initiatives. Metropolitan is also a party to and supports DWR's

lawsuit seeking to validate its authority to issue revenue bonds to finance the project.

#### *State Water Project Operations*

As Metropolitan continued supporting State Water Contractors in litigation regarding the 2019 biological opinions, it also filed litigation to challenge the state Department of Fish & Wildlife incidental take permits for long-term SWP operations, the final Environmental Impact Report for long-term operations, and DWR actions taken in violation of Metropolitan's State Water Contract. Legal staff also participated in the ongoing negotiation of voluntary agreements regarding Sacramento River and Delta flows, habitat restoration and funding for scientific research.

#### *State Water Project Contract*

The Legal Department participated in negotiating three proposed amendments to Metropolitan's long-term SWP contract. Legal staff also participated in pending litigation challenging the first of three current amendments, as well as negotiations with DWR regarding the annual statement of charges.

#### *Oroville Dam Litigation*

Metropolitan filed a motion to intervene in a request for summary judgment to dismiss litigation brought by the Butte County District Attorney seeking over \$50 billion in penalties against DWR. A similar motion from DWR was granted by the court. The case was dismissed and is now on appeal. In other matters, staff researched legal bases for the allocation of repair costs and monitored the Federal Emergency Management Administration's determination of eligibility of repair costs for federal funding and amount of reimbursement provided.

#### *Transfers, Exchanges and Agency Coordination*

Legal helped review potential transfers and exchanges during the current drought and as part of the State Water Contractors Dry Year Transfer Program. Legal also assisted the General Manager's staff in resolving issues regarding Metropolitan's groundwater storage agreements and helped negotiate a new Coordinated Operating Agreement with San Bernardino Valley Municipal Water District.

### ***Colorado River***

#### *Support*

Legal helped with implementing the Colorado River Drought Contingency Plan and assisted with continued implementation of the

Lower Colorado River Multi-Species Conservation Plan, including negotiation with state and federal entities regarding the Dennis Underwood Habitat Conservation Area. Metropolitan also continued to defend and support implementation of the Quantification Settlement Agreement.

### *Litigation*

Legal successfully defended at trial litigation filed by Imperial Irrigation District challenging Metropolitan's CEQA analysis of the Drought Contingency Plan (the matter is now on appeal). Legal also defended litigation filed by IID in December 2020 alleging Metropolitan violated the 2007 California Intentionally Created Surplus Agreement; staff engaged in pre-trial settlement discussions. Legal continued to defend Metropolitan in the Navajo Nation litigation challenging the Secretary of Interior's Colorado River operations and lack of allocation of Colorado River water to the Navajo Nation.

Metropolitan monitored litigation among the Agua Caliente tribe, Coachella Valley Water District and Desert Water Agency regarding the tribe's claim for ownership of space in the groundwater basin within the service areas of CVWD and DWA. In two cases titled *Williams v. Arizona*, Legal successfully defended Metropolitan in litigation filed by an individual tenant farmer who leases land from the state of Arizona on Yuma Island, claiming that Metropolitan and others deprived him and others of their rights to both ownership of the land and Colorado River water.

Metropolitan continued to participate in monitoring the cleanup of perchlorate and other contaminants from the Tronox facility in Henderson, Nev. Legal staff also monitored and provided assistance to Water System Operations to respond to a newly identified waste disposal site near Hoover Dam and the Bureau of Reclamation's position regarding allocation of cleanup costs.

### ***Water Planning***

#### *Support*

Legal assisted in developing operational cost-offset programs to provide flexibility during drought and maintain SWP storage levels. Staff also provided analyses of state and federal legislation and actions relating to drought relief.

#### *Regional Recycled Water Program*

Legal assisted with environmental review and site investigations and provided legal advice regarding agreements with the Los Angeles County

Sanitation Districts and other entities. Staff helped to negotiate and draft an agreement with Southern Nevada Water Authority for contribution of funds for the environmental planning phase of the project.

### *Litigation*

Legal continued to monitor and represent Metropolitan in the *Orange County Water District v. Metropolitan* litigation relating to the cleanup of contaminants in the Orange County groundwater basin. After trial and appeal, the case was remanded to the trial court without a trial date being set. Staff continues to monitor these proceedings.

### **Groundwater**

Legal advised and assisted with issues relating to cyclic storage and conjunctive use agreements including the preparation of cost-offset agreements.

### **Water Quality**

The Legal Department monitored Regional Water Quality Control Board actions regarding discharge permits that may impact Metropolitan. Legal continued to participate with Water Quality staff in the advisory process for the cleanup of chromium 6 contamination near Pacific Gas & Electric's Topock compressor station adjacent to the Colorado River. Legal also assisted the General Manager's office with resolving permit issues for Foothill Feeder Power Plant. Staff continued to monitor and report on revised regulations and litigation relating to the Clean Water Act, prepared comments on proposed state and federal regulatory changes potentially impacting Metropolitan, and assisted with the response to the detection of quagga mussels in Colorado River and SWP supplies.

### **Real Estate Matters**

Legal staff coordinated with Security and Real Property to develop protocols on how to handle illegal trespass and encampments. Legal also assisted with drafting new lease agreements and procedures for employee housing and helped with resolution of eminent domain cases filed against Metropolitan, while assisting Real Property with management of leases and other issues on the Delta Islands and the Palo Verde Valley.

### **Finance**

#### *Issuance of Bonds/Debt*

Legal worked with Finance and outside counsel to complete issuance or remarketing of approximately \$728 million in water revenue refunding

bonds, \$189 million in revenue bonds and \$36 million of short-term revenue certificates. Staff assisted bond counsel with replacement of four liquidity instruments, extension of a private placement and amended paying agent agreements. Legal also assisted with replacement of remarketing agents for outstanding bonds totaling over \$564 million in existing bonds. Total debt service savings resulting from refinance transactions was \$100.7 million.

#### *Rate Litigation*

Legal continued to represent Metropolitan in *San Diego County Water Authority v. Metropolitan Water District*. In the 2010 and 2012 cases, following remand, Metropolitan appealed the form of the judgment, issuance of a writ and the ruling on prevailing party. The 2014, 2016 and 2018 cases have been taken off stay, consolidated and are scheduled for trial in May 2022.

### ***Infrastructure/Corporate Resources***

#### *Capital Projects*

Legal provided outside counsel to assist in discussion of project labor agreements, collaborated on revision of standard construction contract general conditions, and assisted with solicitation for upgrade of the SCADA (Supervisory Control and Data Acquisition) control system.

#### *Litigation*

The Legal Department worked with outside counsel representing Metropolitan in various cases. *OHL USA, Inc. v. Metropolitan* dealt with the contract for rehabilitation of Palos Verdes Reservoir. A 2020 mediation proved unsuccessful, with a second mediation scheduled for August 2021. *Baker Electric, Inc. v. Metropolitan* concerned the contract for replacement of 6.9kv power cables at the Colorado River Aqueduct pumping plants; staff participated in an unsuccessful mediation in April 2021. *Systems Integrated, LLC v. Metropolitan* was filed by an entity that provides services to Metropolitan's SCADA system, alleging that Metropolitan intended to disclose its proprietary trade secrets.

### ***Energy Management***

#### *Transactions*

Legal assisted Water System Operations staff with transactions related to Metropolitan's operating agreement with the California Independent System Operator, the Arizona Electric Power Cooperative and the Hoover

Electric Service Agreement. Legal staff assisted in obtaining approval to sell Metropolitan's unused hydropower capacity into CAISO's centralized resource adequacy market. Legal also assisted with documentation and approval of a power purchase and sale agreement for the sale of energy from four small hydroelectric plants within Metropolitan's system.

### *Operations*

Legal assisted with the development of a Climate Action Plan and Energy Sustainability Plan and participated in proceedings at state and federal agencies impacting electricity operations and costs for Metropolitan and the SWP. Legal supported WSO staff on compliance with mandatory federal electric reliability standards. Staff also assisted with procurement and contracting relating to California's Small Generator Incentive Program and Metropolitan's battery energy storage system

### *Federal Energy Regulatory Commission*

Legal prepared comments and appeals regarding changes to CAISO's resource adequacy program that would detrimentally impact Metropolitan. Staff worked with outside counsel on other FERC matters, including proposed increase in the Transmission Access Charge paid by the SWP.

## ***Workforce/Human Resources***

### *Litigation*

Legal settled two cases filed by employees terminated during their probationary period.

### *Labor Agreements and Investigations*

Legal assisted with the interpretation and implementation of bargaining unit Memoranda of Understanding. Legal staff handled six appeals/grievances filed by bargaining units. Four were resolved, with two pending. Legal also handled three Public Employment Relations Board matters, of which one was settled, with two pending. Following referral from Human Resources or management, Legal contracted with independent outside investigators to conduct investigations of Equal Employment Opportunity complaints. Legal also oversaw security staff and outside consultants who conducted investigations of threat assessments or potential workplace violence.

### *Human Resources Management*

Legal supported Human Resources' management of workers' compensation matters and assisted with resolution of claims. Legal also

assisted Information Technology and Human Resources with the preparation of new operating policies.

#### *Deferred Compensation*

Legal worked with Human Resources and outside counsel to finish revisions to the deferred compensation plan.

### ***District Governance and Support***

#### *Advice*

Legal monitored COVID-19 legislation and regulations to provide assistance to management and Human Resources and aided in the preparation of the COVID emergency declaration. Legal staff helped with implementing the provision of COVID-related employee benefits, and assisted with the development of work reporting requirements. Legal also helped develop and implement board procedures that complied with emergency regulations and provided support to the Emergency Operations Center regarding public health orders. Staff also provided advice and training to the board on various issues, including the MWD Act and the Brown Act. Legal collaborated with the Ethics Office on various matters, including the provision of joint conflict opinions and joint requests for advice from the Fair Political Practices Commission.

#### *Technology*

Staff worked with IT on cybersecurity issues related to internet abuse, fake domains and malware. Legal also advised on implementation of new technology, including platforms to organize and display board materials, and assisted External Affairs with content review for transition to the new website platform.

### ***Legal Department Administration***

With the assistance of IT, Legal provided support to staff to enable remote working during the COVID emergency. The department also completed remote recruitment and the hiring of one attorney and one administrative staff member.

### ***Public Records Act Requests***

Legal coordinated with staff throughout the district to provide Metropolitan's responses to 191 Public Records Act requests, many involving historical data over many years and across all areas of Metropolitan's business.





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June 30, 2020

*Christopher P. Morill*

Executive Director/CEO

2020



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For the Fiscal Year Beginning

**July 01, 2020**

*Christopher P. Morill*

Executive Director

2020

*Awards received during fiscal year 2020/21 in recognition of  
Metropolitan's commitment to produce financial reports  
in the spirit of full disclosure and transparency.*

## Finance

The Office of the Chief Financial Officer is responsible for providing innovative, proactive and strategic financial direction in support of the mission of Metropolitan, the Board of Directors, management and employees. The Office of the CFO maintains Metropolitan's strong financial position and high credit ratings; helps achieve equitable water rates and charges that generate sufficient revenues; assists in the efficient management of Metropolitan's financial resources; and ensures adequate financial controls are in place to accurately record financial transactions, communicate financial results and protect Metropolitan assets.

### *Finance Overview*

The roles and responsibilities of the Office of the CFO include:

- Developing a [biennial budget](#) to support Metropolitan's mission, business planning and performance measurement programs.
- Managing Metropolitan's Business Continuity Program to ensure critical business processes can continue in the event of a disaster, or an emergency such as the COVID-19 pandemic.
- Maintaining effective financial controls to safeguard assets.
- Providing comprehensive financial analyses and development of the biennial revenue requirement, supporting cost-of-service studies, the recommended water rates and charges, and long-range financial forecasts.
- Maintaining Metropolitan's official accounting records, cash control and accounting services related to vendor, payroll and other payments.
- Collecting, investing, safekeeping and disbursing Metropolitan's funds.

- Administering the debt portfolio, including issuing debt to efficiently fund Metropolitan’s capital expenditures at the lowest possible cost.
- Continuing and improving relations with Metropolitan’s bond investors, including investors supporting Metropolitan’s diversified variable rate bond portfolio.
- Providing timely financial reporting, preparing the annual tax levy and annexation fee calculations, and administering rates and charges.
- Developing and maintaining accounting guidelines and policies for accurate, timely financial reporting and control.
- Accounting for all assets, liabilities, revenues and expenditures, and determining the availability of funds for investment.
- Providing risk management to prevent, control, transfer and minimize exposure to liability risk to protect MWD’s assets.

Details on the biennial budget, rates and charges, financial statements, financial policies and financing documents can be found at the financial information [webpage](#).

### ***FY 2020/21 Major Financial Activities and Accomplishments***

#### *Security Sales/Debt Administration*

Metropolitan maintained S&P Global Ratings’ highest long-term water revenue bond rating of AAA, and the second highest credit rating for Moody’s and Fitch Ratings of Aa1 and AA+ respectively on its senior lien debt. Metropolitan’s long-term subordinate lien debt was rated AA+ by both S&P Global Ratings and AA+ by Fitch Ratings. Metropolitan’s variable rate debt was rated in the highest short-term rating category from each rating agency. Senior-lien variable rate debt was rated MIG 1, A-1+, and F1+, from Moody’s, S&P Global Ratings, and Fitch Ratings, respectively. Subordinate variable rate debt was rated A-1+ by S&P Global Ratings and F1+ by Fitch Ratings.

In July, Metropolitan issued \$268 million of Water Revenue Refunding Bonds, Series 2020 C, which refunded \$350.2 million of

outstanding bonds. This refunding resulted in projected present value savings of \$80.2 million.

In September, Metropolitan issued \$13.7 million, Waterworks General Obligation Refunding Bonds, 2020 Series A, which refunded \$18.7 million of outstanding bonds. This refunding resulted in projected present value savings of \$7.6 million.

In February, Metropolitan issued \$188.9 million of Water Revenue Bonds, 2021 Series A as new money to finance a portion of the Capital Investment Plan in the biennial budget FY 2021 and FY 2022. The bonds were structured with a 30-year term at an all-in true interest cost of 2.76 percent.

In April, Metropolitan remarketed \$271.8 million, Special Variable Rate Water Revenue Bonds, 2020 Series B. Metropolitan successfully lowered by 58 basis points its existing fixed rate of 1.04 percent to 0.46 percent, saving an annualized cost of \$1.6 million.

In May, Metropolitan remarketed \$80 million Subordinate Water Revenue Bonds, 2017 Series C, \$95.6 million 2017 Series D, and \$95.6 million, 2017 Series E. The bonds have a scheduled mandatory redemption date of June 21, 2024. Metropolitan issued the index notes at a 14-point spread to [SIFMA](#) (Securities Industry and Financial Markets Association).

In June, Metropolitan replaced standby bond purchase agreements relating to the \$82.9 million, Special Variable Rate Water Revenue Refunding Bonds, 2016 Series B-1 and 2016 Series B-2, and the \$90.1 million, Special Variable Rate Water Revenue Refunding Bonds, 2018 Series A-1 and 2018 Series A-2.

In June, Metropolitan issued \$222.2 million Variable Rate Subordinate Water Revenue Bonds, 2021 Series A (federally taxable) to refund \$175 million of Subordinate Water Revenue Bonds 2016 Authorization Series A and refund \$46.8 million Short-Term Revenue Refunding Certificates. This refunding was not driven by savings but by the need to change the structure of the original bonds, which were priced using the LIBOR index, set to stop publishing in 2023. Staff found an alternative structure enabling efficient access to the taxable capital markets.

Also in June, Metropolitan drew \$35.7 million from a credit facility, to refund outstanding subordinate water revenue bonds, as part of a larger refunding transaction that closed the following month, and prepaid the \$35.65 million draw.

### *Treasury Operations*

- Monitored performance of managed short-term portfolio and Lake Mathews Trust Fund averaging \$952 million.
- Monitored performance of managed long-term portfolio averaging \$196 million.
- Successfully managed bond reserve portfolio averaging \$1.7 million.
- Earned total returns of 0.40 and 0.45 percent, respectively, for the short-term and long-term portfolios.
- Provided the necessary liquidity to fund approximately \$1.8 billion in expenditures during the fiscal year.
- Managed, calculated and coordinated approximately \$287 million in debt service, swap payments and debt administration expenses.
- Managed net interest exposure within board-approved parameters.

### *Accounting Operations*

- Provided accurate, timely and transparent financial reports to the board and member agencies.
- Recorded and reported Metropolitan's financial activities in a timely manner, ensuring sufficient financial controls to protect Metropolitan's assets.
- Completed the FY 2019/20 external audit with an unmodified (i.e., "clean") opinion.
- Received a report from external auditors on internal control over financial reporting and on compliance and other matters, which noted no material weaknesses or significant deficiencies.

- Achieved internal financial audit reviews with ratings of generally satisfactory or higher and no major findings.
- Received the Award of Excellence for financial reporting from the [Government Finance Officers Association](#) for FY 2019/20.

#### *Budget and Financial Planning*

- Implemented Metropolitan's biennial budget and water rates and charges for FY 2020/21.
- Prepared financial forecasts to evaluate the projected fund balance for the Water Stewardship Fund.
- Implemented expenditure reductions to the FY 2020/21 and FY 2021/22 biennial budget in response to COVID-19.
- Facilitated a rate refinement process with member agencies to review the rate structure framework principles and alternatives for demand management cost recovery.

#### *Business Continuity*

- Monitored and reported on COVID-19 business plan impacts; participated in Emergency Operations Center briefings and the COVID-19 Task Force.
- Facilitated updates of business continuity plans across Metropolitan with an emphasis on strategy development for a loss of technology or cyberattack scenario.
- Administered and distributed MetAlert employee-wide emergency notifications and conducted periodic testing.

#### *Risk Management*

- Completed incident reports involving Metropolitan property damage, liability issues, workplace injuries, regulatory visits, criminal activity and spills; managed Metropolitan's self-insured liability and property claims program.
- Completed risk assessments of professional service agreements, purchase orders, construction contracts, entry permits, easements, special events and film permits within required timeframes.

- Collaborated with the Legal Department on accurately managing liability reserves and provided feedback into the claim's settlement and litigation process; renewed excess and specialty insurance coverages during a historically difficult insurance market for public entities.

## *Financial Information*

Metropolitan operates as a utility enterprise and maintains its accounting records in accordance with generally accepted accounting principles for proprietary funds as prescribed by the Governmental Accounting Standards Board. Metropolitan's financial reports can be found at the financial information [webpage](#).

### ***Revenues***

Metropolitan's principal revenue source consists of revenues received by the district from charges for water transactions and availability of water, including MWD's water rates, readiness-to-serve charge and capacity charge (revenues from water transactions include sales, exchanges and wheeling). Other sources of revenue include property taxes, investment income and power sales. Every two years, the board establishes water rates and charges, which are not subject to regulation by the California Public Utilities Commission or any other regulatory body.

The rate structure implemented on Jan. 1, 2003 unbundled Metropolitan's previous water rate into separate components for rates and charges (a supply rate, a power rate, a treatment surcharge, a system access rate, a water stewardship rate, a readiness-to-serve charge and a capacity charge) to provide transparency regarding the cost of specific functions to member agencies. This rate structure includes a two-tiered block pricing structure for water service. Effective Jan. 1, 2021, the full-service Tier 1 rate (including all rate elements), which is based on recovering the cost of maintaining a reliable amount of service, was \$777 per acre-foot for untreated water. The full-service Tier 2 rate of \$819 per acre-foot is set at Metropolitan's cost of purchasing water transfers north of the Delta and encourages member agencies to maintain existing local supplies and develop cost-effective local supply resources and conservation. A

complete list of current water rates and charges is available in Table 7-1. Overall, Metropolitan increased rates and charges 3 percent effective Jan. 1, 2021.

Metropolitan is empowered under the Metropolitan Water District Act to levy and collect taxes on all taxable property within its boundaries for the purpose of carrying on its operations and paying obligations. The board levies property taxes annually to pay Metropolitan's general obligation bond debt service and part of its State Water Contract costs.

Metropolitan's revenues in fiscal year 2020/21 totaled \$1.76 billion. Sources of revenues included water transactions, readiness-to-serve charges, capacity charges, power sales, property taxes, investment income and other income, such as rents and leases. Total revenues were \$195 million higher than the prior fiscal year, primarily due to \$217 million higher water revenues resulting from higher volumes of water transactions and higher prices partially offset by \$25 million lower investment income due to unfavorable changes in fair value of investments and lower rate of return.



**TABLE 7-1**  
**WATER SALES RATE STRUCTURE-CURRENT**  
(Dollars per acre-foot-unless otherwise specified)

	Calendar Year <sup>1</sup>										
	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Tier 1 Supply Rate	\$ 243	\$ 208	\$ 209	\$ 209	\$ 201	\$ 156	\$ 158	\$ 148	\$ 140	\$ 106	\$ 104
Delta Supply Surcharge <sup>2</sup>	--	--	--	--	--	--	--	--	--	58	51
Tier 2 Supply Rate	285	295	295	295	295	290	290	290	290	290	280
Water Supply Surcharge	--	--	--	--	--	--	--	--	--	--	--
System Access Rate	373	346	326	299	289	259	257	243	223	217	204
Water Stewardship Rate	--	65	69	55	52	41	41	41	41	43	41
System Power Rate	161	136	127	132	124	138	126	161	189	136	127
Full Service Untreated:											
Tier 1	777	755	731	695	666	594	582	593	593	560	527
Tier 2	819	842	817	781	760	728	714	735	743	686	652
Replenishment Water Rate <sup>3</sup>											
Untreated	--	--	--	--	--	--	--	--	--	422	409
Treated	--	--	--	--	--	--	--	--	--	651	601
Interim Agricultural Water Program <sup>4</sup>											
Untreated	--	--	--	--	--	--	--	--	--	537	482
Treated	--	--	--	--	--	--	--	--	--	765	687
Treatment Surcharge	327	323	319	320	313	348	341	297	254	234	217
Full Service Treated:											
Tier 1	1,104	1,078	1,050	1,015	979	942	923	890	847	794	744
Tier 2	1,146	1,165	1,136	1,101	1,073	1,076	1,055	1,032	997	920	869
Capacity Charge (\$ per cubic foot second)	10,700	8,800	8,600	8,700	8,000	10,900	11,100	8,600	6,400	7,400	7,200
Readiness-to-Serve Charge (\$Millions)	130	136	133	140	135	153	158	166	142	146	125

<sup>1</sup> Rates are set on a calendar year basis.

<sup>2</sup> The Delta Supply Surcharge was suspended after 2012.

<sup>3</sup> The Replenishment Program was discontinued after 2012.

<sup>4</sup> The Interim Agricultural Water Program was discontinued after 2012.

Table 7-2 lists revenues by source and the change in revenues from the prior year.

**TABLE 7-2**  
**REVENUES**  
(Dollars in Millions)

	Year Ended June 30,		
	2021	2020	Change
Water Revenues <sup>1</sup>	\$ 1,405	\$ 1,188	\$ 217
Readiness-To-Serve Charges	133	134	(1)
Capacity Charge <sup>2</sup>	32	31	1
Power Sales <sup>3</sup>	19	16	3
Taxes (Net)	161	147	14
Investment Income	4	29	(25)
Other	10	24	(14)
<b>Total</b>	<b>\$ 1,764</b>	<b>\$ 1,569</b>	<b>\$ 195</b>

<sup>1</sup>Water Revenues includes revenues from water sales, exchanges and wheeling.

<sup>2</sup> Previously reported as part of water revenues.

<sup>3</sup> Previously referred to as power recoveries or hydroelectric power sales.

### *Expenses*

Metropolitan continued its efforts to manage finances, control costs, enhance productivity, support conservation and local resource programs, and procure additional supplies during the fiscal year. Major components of Metropolitan operations and maintenance costs include labor, chemicals, utilities, outside services, materials and operating equipment. Table 7-3 lists expenses by function and the changes from the prior year, while Table 7-4 summarizes changes in net position (revenues and expenses).

Metropolitan is one of 29 contractors to the State Water Project. Under the contract, Metropolitan is obligated to pay the state Department of Water Resources its portion of the costs for construction of the system as well as the minimum operations, maintenance, power and replacement costs of the project regardless of the amount of water actually delivered. Variable power charges are based on actual deliveries of SWP supplies.

In addition, Metropolitan has an obligation to pay its share of the ongoing capital and remediation costs of certain off-aqueduct power facilities regardless of the amount of water delivered.

Metropolitan also buys power to pump Colorado River water into its service area. Metropolitan secures this power under federal energy contracts, and from purchases of supplemental energy from a variety of sources as available. In addition, Metropolitan has entered into, and is negotiating, a number of agreements with entities along the Colorado River that have higher priority rights to water on the Colorado River. These agreements supplement Metropolitan's current rights to Colorado River water.

A combination of long-term debt and operating revenues fund the construction required to rehabilitate and repair facilities and provide enhanced water treatment capability. General obligation bond debt service is funded from ad valorem property taxes. Tables 7-5 and 7-6 show assessed valuations and property tax rates for FY 2020/21 and the preceding nine years, while Table 7-7 shows property tax levies and collections. Revenue bond debt service is funded from water revenues. Table 7-8 is a 10-year summary of net operating income and revenue bond service coverage, while Table 7-9 is a listing of Metropolitan's 10 largest water customers.

**TABLE 7-3**  
**EXPENSES**  
(Dollars in Millions)

	Year Ended June 30,		
	2021	2020	Change
Power and Water Costs	\$ 481	\$ 439	\$ 42
Operations and Maintenance	510	557	(47)
Litigation Payments	44	—	44
Depreciation and Amortization	363	353	10
Bond Interest, Net of Amount Capitalized	92	101	(9)
Loss on Disposal of Plant Assets	13	10	3
Other	6	6	—
<b>Total</b>	<b>\$ 1,509</b>	<b>\$ 1,466</b>	<b>\$ 43</b>

Fiscal year 2020/21 expenses totaled \$1.51 billion. Expenses include power and water costs, operations and maintenance costs, litigation payments, depreciation and amortization, interest on debt obligations, loss on disposal of plant assets and other miscellaneous expenses. Total expenses were \$43 million higher than the previous

year. The variance included \$44 million in litigation payments to the San Diego County Water Authority (primarily from a litigation set-aside fund), \$42 million of higher power and water costs due to higher volume of water transactions, and \$10 million in increased depreciation and amortization costs due to a net increase in capital assets. These increases were partially offset by \$47 million in lower operations and maintenance costs primarily due to lower pension expense, lower demand management costs as a result of the COVID-19 pandemic and various board-approved cost containment measures to address COVID-19 financial impacts. In addition, bond interest expense was also \$9 million lower due to savings from bond refunding transactions.

### ***Budget Process***

Metropolitan combines elements of program budgeting and performance reporting in its budget system. These elements provide for funding, analysis, review and control. During FY 2020/21, Metropolitan was in the first year of a biennial budget for FY 2020/21 and 2021/22 that the board approved in April 2020.

The biennial budget process takes place in odd-numbered years, and began in July 2019 for the FY 2020/21 and FY 2021/22 biennial budget. Each group submitted requests for major maintenance and capital projects to Engineering Services. This gave staff adequate time to plan project design and construction schedules and allowed Water System Operations to plan for system shutdowns. Each department and group prepared operating budgets from August to November. Programs got analyzed and reviewed as to resources required and the extent to which each program was consistent with the priorities and strategies of the General Manager's Business Plan. All recommended programs were then incorporated into the overall budget. The proposed biennial budget always includes a 10-year forecast of revenues, expenditures, unrestricted reserve balances and projected rates and charges. These forecasts incorporate projected costs associated with the repair and replacement of existing infrastructure, and also scenarios to show the projected costs of the Delta Conveyance Project and Regional Recycled Water Program, to help member agencies and the general public understand long-term cost trends and potential future water rate impacts.

Monthly variance reports allow board and management to compare budget estimates with actual revenues and take corrective action. All major expense categories are controlled via the board approved biennial budget and authorized appropriations. A mid-cycle update is provided to the Metropolitan board at the midpoint of the two-year period.

### ***Treasury Operations and Cash Management***

Annually, Metropolitan's board approves the Statement of Investment Policy and delegates to the Treasurer the authority to invest Metropolitan funds.

Investments by the Treasurer are limited to those instruments specified in the board-approved Statement of Investment Policy, which prioritizes three fundamental criteria: safety, liquidity and return.

State law and board policy allow Metropolitan to invest in a variety of instruments, including U.S. Treasury securities; federal agencies; repurchase agreements; negotiable certificates of deposit; bankers' acceptances; prime commercial paper; asset and mortgage-backed securities; supranational instruments; and California local agency securities, including Metropolitan-issued securities. Metropolitan can also invest in corporate notes, bank deposits, investment contracts, shares of beneficial interest, money market funds, the Local Agency Investment Fund and the California Asset Management Program.

Treasury activities during the year included the management of Metropolitan's overnight funds and bond reserve portfolios and oversight of the firms that manage Metropolitan's long-term and short-term investment portfolios. Metropolitan's total portfolio averaged about \$1.15 billion during fiscal year 2020/21, with cash-basis investment earnings of about \$12.7 million. As of June 30, 2021, the market value of Metropolitan's investment portfolio was approximately \$1.48 billion.

**TABLE 7-4**  
**TEN-YEAR SUMMARY OF CHANGES IN NET POSITION (UNAUDITED) - ACCRUAL BASIS<sup>1</sup>**  
(Dollars in Millions)

	Fiscal Year Ended June 30,									
	2021	2020	2019	2018 <sup>2</sup>	2017	2016	2015 <sup>3</sup>	2014	2013	2012 <sup>4</sup> As Adjusted
Water Revenues <sup>5</sup>	\$ 1,404.7	\$ 1,188.0	\$ 1,148.7	\$ 1,285.2	\$ 1,150.5	\$ 1,166.0	\$ 1,382.9	\$ 1,484.7	\$ 1,282.5	\$ 1,123.3
Readiness-to-serve charges	133.0	134.5	136.5	137.5	144.0	155.5	162.0	154.0	144.0	135.5
Capacity charge	31.7	30.5	33.0	34.6	39.7	44.7	37.5	28.4	28.7	33.0
Power sales	19.0	15.9	18.3	23.7	20.9	7.5	8.4	14.6	24.5	31.5
<b>Operating revenues</b>	<b>1,588.4</b>	<b>1,368.9</b>	<b>1,336.5</b>	<b>1,481.0</b>	<b>1,355.1</b>	<b>1,373.7</b>	<b>1,590.8</b>	<b>1,681.7</b>	<b>1,479.7</b>	<b>1,323.3</b>
Taxes, net	160.6	146.9	142.7	127.3	115.4	107.9	102.3	94.5	94.8	79.2
Investment income	4.1	28.9	36.0	10.6	6.2	19.4	(3.6)	5.7	(0.4)	4.1
Other	10.4	24.5	10.4	12.9	7.3	10.2	5.4	—	6.1	0.6
<b>Nonoperating revenues</b>	<b>175.1</b>	<b>200.3</b>	<b>189.1</b>	<b>150.8</b>	<b>128.9</b>	<b>137.5</b>	<b>104.1</b>	<b>100.2</b>	<b>100.5</b>	<b>83.9</b>
<b>Total revenues</b>	<b>1,763.5</b>	<b>1,569.2</b>	<b>1,525.6</b>	<b>1,631.8</b>	<b>1,484.0</b>	<b>1,511.2</b>	<b>1,694.9</b>	<b>1,781.9</b>	<b>1,580.2</b>	<b>1,407.2</b>
Power and water costs	(480.9)	(438.7)	(375.8)	(446.5)	(455.4)	(552.3)	(473.6)	(510.1)	(371.3)	(384.0)
Operations and maintenance	(509.8)	(557.4)	(493.9)	(507.4)	(487.5)	(650.1)	(543.4)	(439.7)	(419.8)	(433.5)
Litigation payments	(44.4)	—	—	—	—	—	—	—	—	—
Depreciation and amortization	(362.8)	(353.0)	(361.1)	(330.3)	(301.7)	(376.5)	(374.8)	(261.5)	(265.4)	(290.1)
<b>Operating expenses</b>	<b>(1,397.9)</b>	<b>(1,349.1)</b>	<b>(1,230.8)</b>	<b>(1,284.2)</b>	<b>(1,244.6)</b>	<b>(1,578.9)</b>	<b>(1,391.8)</b>	<b>(1,211.3)</b>	<b>(1,056.5)</b>	<b>(1,107.6)</b>
Bond interest, net of amount capitalized	(91.6)	(100.7)	(126.9)	(124.5)	(134.6)	(126.9)	(132.5)	(146.7)	(150.2)	(135.8)
Interest and adjustments on OAPF <sup>6</sup>	—	—	—	—	(0.6)	(0.8)	(1.2)	(1.6)	(2.1)	(2.6)
Loss on disposal of plant assets	(13.2)	(10.2)	(13.7)	(88.7)	(20.9)	—	—	—	—	—
Other	(6.2)	(5.9)	(5.3)	(68.2)	(9.4)	(4.6)	—	(23.7)	—	—
<b>Nonoperating expenses</b>	<b>(111.0)</b>	<b>(116.8)</b>	<b>(145.9)</b>	<b>(281.4)</b>	<b>(165.5)</b>	<b>(132.3)</b>	<b>(133.7)</b>	<b>(172.0)</b>	<b>(152.3)</b>	<b>(138.4)</b>
<b>Total expenses</b>	<b>(1,508.9)</b>	<b>(1,465.9)</b>	<b>(1,376.7)</b>	<b>(1,565.6)</b>	<b>(1,410.1)</b>	<b>(1,711.2)</b>	<b>(1,525.5)</b>	<b>(1,383.3)</b>	<b>(1,208.8)</b>	<b>(1,246.0)</b>
Contributed capital	0.3	—	0.8	1.5	—	2.1	2.3	2.2	1.7	13.6
<b>Changes in net position</b>	<b>\$ 254.9</b>	<b>\$ 103.3</b>	<b>\$ 149.7</b>	<b>\$ 67.7</b>	<b>\$ 73.9</b>	<b>\$ (197.9)</b>	<b>\$ 171.7</b>	<b>\$ 400.8</b>	<b>\$ 373.1</b>	<b>\$ 174.8</b>

<sup>1</sup> Metropolitan implemented Governmental Accounting Standards Board (GASB) Statement No. 63, *Financial Reporting of Deferred Outflows of Resources, Deferred Inflows of Resources and Net Position*, in fiscal year 2012.

This pronouncement requires that the difference between assets and liabilities be reported as net position, therefore, net assets are now referred to as net position.

<sup>2</sup> Adjustment relates to Metropolitan's implementation of GASB Statement No. 75 (GASB 75), *Accounting and Financial Reporting for Postemployment Benefits Other Than Pension*.

GASB 75 requires the reporting of a net Other Postemployment Benefit (OPEB) liability in the basic financial statements when an organization's OPEB liability exceeds the net position available for paying benefits.

<sup>3</sup> Adjustment relates to Metropolitan's implementation of GASB Statement No. 68 (GASB 68), *Accounting and Financial Reporting for Pensions - an amendment of GASB Statement No. 27*, and GASB

Statement No. 71. (GASB 71), *Pension Transition for Contributions Made Subsequent to the Measurement Date - an amendment of GASB Statement No. 68*. GASB 68 requires the reporting of net pension liability in the basic financial statements when an organization's pension liability exceeds the net position available for paying benefits while GASB 71 requires the recognition of beginning deferred outflow of resources for pension contributions made after the measurement date. Fiscal years 2012 through 2014 have not been adjusted.

<sup>4</sup> Adjustment relates to the adoption of GASB Statement No. 65, *Items Previously Reported as Assets and Liabilities*. This pronouncement requires debt issuance costs (except prepaid insurance costs) to be recognized as expense in the period incurred.

<sup>5</sup> Water Revenues includes revenues from water sales, exchanges, and wheeling.

<sup>6</sup> Off-Aqueduct Power Facilities. The state relieved Metropolitan of its obligation during the year ended June 30, 2018.

**TABLE 7-5**  
**TEN MEMBER AGENCIES WITH**  
**LARGEST ASSESSED VALUATIONS**  
**YEAR ENDED JUNE 30, 2021**

(Dollars in Billions)

<b>Member Agency</b>	<b>Assessed Valuation</b>	<b>*Percent of Total</b>
Los Angeles	\$682.0	20.90
San Diego County Water Authority	566.3	17.35
MWD of Orange County	552.4	16.93
West Basin MWD	228.5	7.00
Central Basin MWD	164.8	5.05
Inland Empire Utilities Agency	127.1	3.90
Western MWD	119.0	3.65
Upper San Gabriel Valley MWD	116.1	3.56
Calleguas MWD	112.3	3.44
Eastern MWD	90.0	2.76
	<b>\$2,758.5</b>	<b>84.53</b>
<b>Total Gross Assessed Valuation</b> <b>(All 26 Member Agencies)</b>	<b>\$3,263.4</b>	

\*Total may not foot due to rounding.

**TABLE 7-6**  
**TEN-YEAR SUMMARY OF ASSESSED VALUATIONS**  
**AND PROPERTY TAX RATES**

(Dollars in Billions)

<b>Fiscal Year Ended June 30,</b>	<b>Gross Assessed Valuation <sup>1</sup></b>	<b>Homeowner's Exemption</b>	<b>Net Assessed Valuation <sup>2</sup></b>	<b>Secured Property Percentage Tax Rate</b>
2021	\$ 3,263.3	\$ 15.1	\$ 3,248.2	0.0035
2020	3,092.4	15.3	3,077.1	0.0035
2019	2,916.6	15.4	2,901.2	0.0035
2018	2,740.6	15.6	2,725.0	0.0035
2017	2,583.4	15.8	2,567.6	0.0035
2016	2,451.0	15.9	2,435.1	0.0035
2015	2,314.9	16.2	2,298.8	0.0035
2014	2,183.4	16.3	2,167.0	0.0035
2013	2,097.4	16.7	2,080.7	0.0035
2012	2,067.5	16.9	2,050.5	0.0037

<sup>1</sup> Gross assessed valuations (before deduction of Homeowner's and Business Inventory Exemptions), as of August each year, of all secured and unsecured property within Metropolitan's service area, as certified by the County Auditor-Controllers for the respective counties.

<sup>2</sup> May not foot due to rounding.

**TABLE 7-7**  
**TEN-YEAR SUMMARY OF PROPERTY TAX LEVIES**  
**AND COLLECTIONS (UNAUDITED)**  
**CASH BASIS**  
(Dollars in Thousands)

Fiscal Year Ended	Total Tax Levy	Tax Collections			Outstanding Delinquent Taxes <sup>2</sup>	Percent of Current Taxes Collected to Total Tax Levy	Percent of Total Tax Collections to Total Tax Levy	Percent of Delinquent Taxes to Total Tax Levy
		Current	Delinquent	Total <sup>1</sup>				
2021	\$ 153,026	\$ 153,026	\$ 8,081	\$ 161,107	\$ —	100.0 %	105.3 %	— %
2020	143,646	143,646	3,456	147,102	—	100.0	102.4	—
2019	130,566	130,566 <sup>3</sup>	14,588 <sup>3</sup>	145,154	—	100.0 <sup>3</sup>	111.2	—
2018	121,647	121,647 <sup>3</sup>	8,019 <sup>3</sup>	129,666	—	100.0 <sup>3</sup>	106.6	—
2017	112,727	112,727 <sup>3</sup>	2,410 <sup>3</sup>	115,137 <sup>3</sup>	—	100.0 <sup>3</sup>	102.1 <sup>3</sup>	—
2016	104,829	104,829	5,825	110,654	—	100.0	105.6	—
2015	100,066	97,687	5,320	103,007	2,379	97.6	102.9	2.4
2014	94,963	94,963	3,744	98,707	—	100.0	103.9	—
2013	92,247	89,576	7,078	96,654	2,671	97.1	104.8	2.9
2012	94,810	80,775	9,478	90,253	4,076	85.2	95.2	4.3

<sup>1</sup> Total tax collections exclude cash payments on new annexations.

<sup>2</sup> Delinquent taxes shown are net of the "Allowance for Uncollectibles" - determined by historical trends of collections and payments.

<sup>3</sup> Amounts were updated subsequent to the Annual Report submission deadline.



**TABLE 7-8**  
**TEN-YEAR SUMMARY OF NET OPERATING INCOME AND**  
**REVENUE BOND DEBT SERVICE COVERAGE<sup>1</sup> (UNAUDITED)**  
(Dollars in Millions)

	Fiscal Year Ended June 30,									
	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Water Revenues <sup>2</sup>	\$ 1,405	\$ 1,188	\$ 1,149	\$ 1,285	\$ 1,151	\$ 1,166	\$ 1,383	\$ 1,485	\$ 1,283	\$ 1,062
Additional Revenues <sup>2</sup>	165	165	170	172	184	200	199	182	173	168
Total Revenues	1,570	1,353	1,319	1,457	1,335	1,366	1,582	1,667	1,456	1,230
Operating Expenses	(1,029)	(1,026)	(916)	(963)	(927)	(1,201)	(1,005)	(854)	(793)	(792)
Net Operating Revenues	541	327	403	494	408	165	577	813	663	438
Power Sales and Other	32	30	40	51	39	30	29	34	48	87
Transfer from Reserve Funds	—	—	—	1	33	222	142	—	—	—
Interest on Investments <sup>3</sup>	10	20	34	8	4	18	13	19	(2)	11
Adjusted Net Operating Revenues	583	377	477	554	484	435	761	866	709	536
Senior and Subordinate Bonds Debt Service <sup>4</sup>	(279)	(272)	(333)	(340)	(306)	(309)	(280)	(343)	(298)	(297)
Subordinate Revenue Obligations	—	—	—	—	(2)	(1)	(1)	(1)	(1)	(1)
Funds Available from Operations	<u>\$ 304</u>	<u>\$ 105</u>	<u>\$ 144</u>	<u>\$ 214</u>	<u>\$ 176</u>	<u>\$ 125</u>	<u>\$ 480</u>	<u>\$ 522</u>	<u>\$ 410</u>	<u>\$ 238</u>
<b>Ratios</b>										
Debt Service Coverage on all Senior and Subordinate Bonds <sup>5</sup>	2.09	1.39	1.43	1.63	1.58	1.41	2.72	2.52	2.38	1.81
Bonds and Additional Bonds Debt Service Coverage <sup>6</sup>	—	—	—	—	1.57	1.41	2.71	2.51	2.37	1.80

<sup>1</sup> Prepared on a modified accrual basis for fiscal years 2013-2020 and on a cash basis for fiscal year 2012.

<sup>2</sup> Water Revenues include revenues from water sales, exchanges, and wheeling.

<sup>3</sup> Excludes interest applicable to Bond Construction accounts, Excess Earning account(s), Other Trust accounts.

<sup>4</sup> Previously reported as Bonds and Additional Bonds Debt Service for fiscal years 2012-2017.

<sup>5</sup> Previously reported as Bonds and Additional Bonds Debt Service Coverage for fiscal years 2012-2017.

<sup>6</sup> Previously reported as Debt Service Coverage on all Obligations for fiscal years 2012-2017. The State Revolving Fund Loan was paid off at the end of fiscal year 2017, therefore the ratio is the same.

**TABLE 7-9**  
**TEN LARGEST WATER CUSTOMERS**  
**Year Ended June 30, 2021**  
 Accrual Basis (Dollars In Millions)

Agency	Water Revenues <sup>1</sup>	*Percent of Total	Water Sales and Exchanges in Acre-Feet <sup>2</sup>	*Percent of Total
City of Los Angeles	\$ 268.2	19.1%	316,537	20.1%
San Diego County Water Authority	201.3	14.3%	335,760	21.3%
MWD of Orange County	142.7	10.2%	140,558	8.9%
West Basin MWD	118.1	8.4%	108,250	6.9%
Calleguas MWD	104.0	7.4%	95,365	6.1%
Eastern MWD	90.9	6.5%	91,462	5.8%
Western MWD of Riverside	72.4	5.2%	74,783	4.8%
Three Valleys MWD	62.5	4.4%	66,540	4.2%
Inland Empire Utility Agency	54.5	3.9%	71,347	4.5%
Upper San Gabriel Valley MWD	47.1	3.4%	60,036	3.8%
<b>Total</b>	<b>\$ 1,161.7</b>	<b>82.7%</b>	<b>1,360,638</b>	<b>86.4%</b>
<b>Total Revenue</b>	<b>\$ 1,404.7</b>	<b>Total Acre-Feet</b>	<b>1,573,965</b>	

\* Total may not foot due to rounding.

<sup>1</sup> Water Revenues includes revenues from water sales, exchanges, and wheeling.

<sup>2</sup> Excludes water transactions with non-member agencies.



*IT continued transforming with expanded use of unmanned aerial vehicles, a revamped board room audio/visual system and greater ability to upload water quality sampling results.*

# Information Technology

The Information Technology Group provides innovation and value to its customers for a wide range of technical services and enterprise business solutions. The group collaboratively works with customers to deliver information technology options, services and solutions in the areas of enterprise and business applications, Engineering Services and Water System Operations applications, data analytics, mobile/wireless computing, telecommunications, network services, cybersecurity, project management and personal computing.

## *IT Infrastructure*

The Infrastructure Unit manages Metropolitan's enterprise-wide infrastructure services related to telecommunications, networks, servers, data center operations and related client services.

### *Highlights for Fiscal Year 2020/21*

- Completed secondary data center relocation to improve network reliability and operational resiliency while enhancing Metropolitan's disaster recovery capabilities.
- Improved Metropolitan's data center footprint and increased operational efficiency by migrating to virtual servers, decommissioning end-of-life servers and leveraging cloud computing.
- Deployed new network security appliances to further strengthen Metropolitan's security and network monitoring capabilities.
- Replaced end-of-life audio/visual equipment with new and innovative technology at headquarters to support [board](#) and committee meetings.
- Leveraged innovative technology with [unmanned aerial vehicles](#).

## *Enterprise Business Systems*

The Enterprise Business Systems Unit develops and supports enterprise and business software applications and ancillary systems.

### *Highlights for Fiscal Year 2020/21*

- Implemented an energy scheduling system to meet regulatory reporting requirements for Metropolitan's energy production.
- Created a portal for member agencies to report [service connection](#) issues.
- Enhanced dashboard reporting as part of improving Metropolitan's enterprise data warehouse and analytics platform to support operational and strategic decision-making.
- Implemented new P-Card system to replace legacy technology that was no longer supported.
- Completed enhancements in PeopleSoft and WorkTech to support payroll processing related to COVID-19.

## *Enterprise Water Systems*

The Enterprise Water Systems Unit provides services, solutions and systems that support business functions in Engineering and Water System Operations.

### *Highlights for Fiscal Year 2020/21*

- Developed new GIS capabilities to support emergency response by integrating real-time incidents on a GIS Common Operating Picture Dashboard Map.
- Completed development and implementation of a mobile water quality sampling application allowing uploading of field test data to the Laboratory Information Management System.
- Migrated the Facility and Equipment Availability application to the Oracle cloud for Metropolitan's shutdown planning and scheduling.

## *Cybersecurity Services*

The Office of Enterprise Cybersecurity focuses on establishing and continuously improving cybersecurity standards, practices and policies to enhance Metropolitan's cybersecurity posture and ensure protection against evolving and increasing cyber threats.

### *Highlights for Fiscal Year 2020/21*

- Enhanced Metropolitan's cybersecurity capabilities due to increasing and evolving cybersecurity threats.
- Conducted risk mitigation through vulnerability assessments and advanced network monitoring of Metropolitan's computing environment and deployed countermeasures.
- Maintained the secure IT infrastructure required to support a hybrid work environment that allows staff to work remotely.
- Improved Metropolitan's threat management capabilities by establishing key partnerships with federal, state, and local agencies.

## *Project Management Office*

The Project Management Office is responsible for the overall governance and project management of the IT program and project portfolio.

### *Highlights for Fiscal Year 2020/21*

- Implemented IT projects that deliver innovative services and business solutions.
- Aligned IT capital investments with Metropolitan's strategic priorities.
- Modernized IT service management by deploying a self-service tool to improve operations and provide metric reporting.
- Completed the [PC Replacement Project](#) as part of replacing end-of-life laptops and workstations.





*Mule deer, spotted towhee at multi species reserve; chalk dudleya near Santiago Lateral; rescued gray fox; staff surveys kangaroo rat; Upper Salt Creek Preserve.*

## Administration

**T**he administrative and environmental planning sections report directly to the Chief Administrative Officer.

### *Administrative Services*

Administrative Services strives to achieve cost efficiencies and business process sustainability. Section activities include contracting, warehousing, procurement of goods and services, inventory, records, EForms and RideShare Program management, Enterprise Content Management, reprographics, and technical writing.

Amid the COVID-19 pandemic, procurement and warehouse staff acquired and maintained the necessary health and safety equipment required for Metropolitan staff to conduct business and operations safely. During this fiscal year, Administrative Services continued to lead and improve processes to enhance areas of efficiency, security and sustainability. These improvements and upgrades improved customer service and employee productivity.

#### *Highlights for Fiscal Year 2020/21*

- Achieved record online auction sales for end-of-life salvage and surplus vehicles and equipment, earning \$500,000-plus in revenues, the most in Metropolitan's history.
- Successfully acquired critical safety supplies, operational materials and services amid major COVID-19 related disruptions to markets and supply chains.
- Launched an online database with searchability, tracking and notification features for non-Oracle contracts.



- Migrated Eform-based requests for professional services to Oracle, resulting in uniformity and simplification.
- Received the prestigious national Warehouse Education and Research Council Gold Award in recognition of maintaining high standards and utilizing industry best practices.
- Developed and distributed a Metropolitan quarterly [newsletter](#) that promotes and provides updates on the Rideshare Program.
- Received 14<sup>th</sup> straight Achievement of Excellence in Procurement Award for industry best practices, technology/innovation, efficiency, and employee development/education.
- Deployed a new procurement credit card software platform, significantly advancing program efficiencies and reliability.
- Completed first line of defense security improvements at all warehouses, enhancing inventory safety and security.
- Deployed a new Archives Management system, improving document storage, accessibility, retrieval and security.
- Optimized network folder structure and eliminated redundant, obsolete and trivial electronic files for key Metropolitan business units, improving network efficiency and employee productivity.
- Created COVID-19 related safety signage and related materials reminding employees to socially distance, create lunch-room safety awareness and wash their hands.

## *Environmental Planning*

The Environmental Planning Section ensures Metropolitan activities comply with the [California Environmental Quality Act](#) and other applicable environmental laws and regulations. The section obtains permits or approvals from federal and state regulatory agencies for Metropolitan's activities; conducts studies, monitoring and training; reviews legislation and federal rulemaking; and participates in management of reserve planning efforts. Environmental Planning provides support to customers, member agencies and outside agencies.

### *Highlights for Fiscal Year 2020/21*

Environmental Planning participated in outreach activities to promote environmental stewardship, including participation on the reserve management committees for the Southwestern Riverside County Multi-Species Reserve, Santa Rosa Plateau Ecological Reserve, and the Lake Mathews Multiple Species Reserve. Staff also served on the Natural Communities Coalition board of directors for the Nature Reserve of Orange County. Reserve management activities included prescribed burns on grasslands, habitat restoration and enhancement, invasive vegetation removal, and sensitive species field surveys and relocations.

As part of Metropolitan's response to [climate change](#), Environmental Planning staff prepared a draft Climate Action Plan that develops a path for Metropolitan to meet the state's climate action goal of carbon neutrality by 2045. The document includes greenhouse gas reduction strategies, an implementation plan, and a reporting system to ensure Metropolitan meets its goal. The draft Climate Action Plan and Program Environmental Impact Report were expected to be released by the end of 2021.

Environmental Planning supported critical Water System Operations projects. Staff continued complying with long-term state and federal incidental take permits for Foothill Feeder dewatering, and completed an Unarmored Threespine Stickleback Plan, Upper Santa Clara River Watershed Management Plan and Long-Term Adaptive Management Plan. Staff coordinated with the California Department of Fish and Wildlife and the Mountains, Recreation and Conservation Authority to oversee restoration activities and management of mitigation lands. Monitoring continued for the state and federally threatened desert [tortoise](#) for the 2021 Colorado River Aqueduct shutdown. Staff also supported other critical

Desert operational activities, providing CEQA clearance and regulatory permitting.

To comply with the provisions on the Surface Mining and Reclamation Act of 1975, staff prepared draft reclamation plans and an associated CEQA document applicable to extraction of materials used in operating and maintaining the Colorado River Aqueduct. Staff also worked with Legislative Services staff and the office of Assembly Member Chad Mayes (I-Rancho Mirage) to draft language and advance legislation that will streamline compliance with the Surface Mining and Reclamation Act by reducing regulatory ambiguity, lowering costs to Metropolitan and ensuring public safety.

Staff partnered with San Bernardino Valley Municipal Water District, other public water agencies and resource agencies to develop the [Upper Santa Ana River Habitat Conservation Plan](#) and associated permits. This will enable permittees to provide water supplies while ensuring protections for state and federal endangered species in the watershed. It will provide coverage for incidental take for species during Metropolitan's operational activities in the plan area.

In its role as designated coordinator representing public water agencies, staff supported the proposed Delta Conveyance Project by assisting the Department of Water Resources with regulatory permitting. Tasks included obtaining U.S. Army Corps permits, developing a compensatory mitigation plan and review of the Administrative Draft Environmental Impact Report.

Staff expedited permitting through dedicated staff agreements with the U.S. Army Corps of Engineers and California Department of Fish and Wildlife. Environmental Planning staff also represented Metropolitan on the Natural Resources Task Force for the California Council for Environmental and Economic Balance to develop legislative and administrative strategies to address regulatory issues.

Staff partnered with WaterStart on launching a pilot project to create a permit management database for tracking regulatory permits and compliance measures. As part of its ongoing effort to improve customer service and streamline environmental approvals, staff continued developing standard operating procedures for environmental processes and prepared standardized templates for documents.

Working with Legal staff and outside professional associations, Environmental Planning responded to federal executive orders and federal and state rulemaking proposing regulatory changes to environmental laws, including the Clean Water Act, Endangered Species Act and the Migratory Bird Treaty Act.

Staff provided CEQA language for 135 board letters; procured regulatory permits for 12 capital and operations and maintenance projects; provided environmental clearance for 84 Water System Operations projects; responded to 46 Engineering Services project requests; conducted 46 bill reviews; and responded to 47 Real Property actions. Staff also reviewed 164 external projects for potential Metropolitan impacts.



*Imaging Services staff, seen here with one of its state-of-the-art imaging machines, kept its 100 percent on-time record despite adding COVID-19 safety materials to its responsibilities.*



*My* HR

*My* Benefits

*My* Learning

*Online* HR Services

## Human Resources

**T**he Human Resources Group is a customer-service driven organization responsible for fairly and consistently applying HR policies and procedures throughout Metropolitan. It serves a variety of roles for its customers that include staffing vacant or newly created positions; educating and integrating new employees into the workplace; ensuring compliance with laws and regulations; managing employee and retiree benefits; providing quality HR services; and maintaining an engaged and motivated workforce that is prepared to meet future challenges. It seeks to accomplish these goals in the most fiscally responsible manner possible.

### *Major Activities and Accomplishments*

#### ***HR Pandemic Actions***

The continuing pandemic impacted every aspect of HR. Staff had to research and develop entirely new procedures, practices and content to manage access to facilities for employees, vendors and visitors. Other COVID-19 related issues included: leave management, paid time off, contact tracing for employees exposed to COVID at work, and answering numerous pandemic-related questions from management and staff. This required developing entirely new protocols and procedures for safely conducting business, while also developing an understanding of the potential virus impacts, and adjusting guidelines, regulations and laws as the pandemic evolved.

HR also led efforts to align and inform the organization's pandemic response by regularly meeting with group managers, the board and bargaining units to inform and discuss pandemic issues. Staff kept the workforce informed about worker safety, teleworking, protective equipment and other issues, and listened to concerns that needed to be addressed. HR collaboratively developed a business transition plan that examined a wide

range of legal, safety, health and logistical issues associated with resuming normal business activities during different phases of the COVID-19 pandemic, and also reviewed potential plans for a future hybrid work environment. HR adapted its regular systems, processes and conditions as understanding of the virus' impacts evolved. Staff implemented the numerous changes required by federal, state, and local laws and regulations that impacted worker safety, paid and unpaid leaves as well as changes affecting financial and retirement processes.

This year, approximately 70 percent of the workforce continued working remotely, while field operations staff maintained safe social distancing by working in small micro-teams. Productivity remained high and on-site COVID-19 infections stayed relatively low, with just eight cases of infections caught from others while at work. Nevertheless, more than 140 employees reported COVID infections that were caught outside of work.

Throughout the pandemic, HR continued striving to provide excellent customer service, implementing technologies that supported greater flexibility and customer self-service. The HR Strategic Partners played an essential role during the pandemic, serving as single points of contact for managers on all matters pertaining to human resources. They heard employee and management concerns, resolved conflicts, tackled employee matters and supported managers on pandemic issues, managing relationships, workforce planning, recruitment, succession planning and staff development.

## *Succession Planning*

To meet the challenges of changing workforce demographics, HR continued collaborations with other Metropolitan groups to develop group succession plans focused on three elements: (1) “tapping the best,” with an emphasis on hiring the top talent possible; (2) developing leaders who are ready for the future; and (3) preparing tomorrow’s talent today. Each of these elements emphasizes the importance of effective leadership, expanded employee development, and adaptation to a changing workplace, as well as complying with laws and regulations. Metropolitan’s approach to succession planning enabled groups to tailor their succession initiatives to the needs of their organization.

### *Tapping the Best*

Metropolitan continued its efforts to attract the best employees with an environment that provides opportunity, empowerment, trust and purpose. HR maintained its focus on finding the best talent while seeking internal talent to fill open positions whenever possible. During the pandemic, staff conducted virtual outreach events, including the Virtual Student Leadership Workshop for college students, a web series on Landing Your Next Job that attracted over 150 participants, and a Launching Your Career Path for college students and recent graduates with a separate unit for veterans. Staff even participated in a Drive Through Job Fair at March Air Force Base in the Inland Empire for veterans, military family members and the public.

The Human Resources group manager worked directly with the Organization, Personnel and Technology Committee and board on the general manager recruitment process.

There were more than 78 retirements and separations, while recruitment successfully filled 156 positions during the fiscal year, with 74 of these being external hires. In addition, there were 209 internal and management requested promotions. Metropolitan filled most management and senior-level staff positions with internal candidates, while filling entry and intermediate level positions primarily with external candidates. The MyJobs recruitment tracking system simplified ongoing communications and scheduling potential applicants for remote interviews and assessments.

HR partnered with External Affairs to create new videos and expanded social media to highlight Metropolitan's [job opportunities website](#), and updated the [Career Pathways](#) website, with a goal of encouraging interest in water careers and providing a "one-stop shop" to all water job opportunities and educational programs.

During calendar year 2020, workplace representation for people of color [grew to 56 percent](#)—an increase of 2 percent from the prior year. HR staff also provided the board and management with workforce analytics on diversity outreach efforts, emphasizing the efforts made to increase representation of females and people of color in certain jobs.

While halting most student intern recruiting efforts during COVID-19, staff continued to administer internships for Engineering Services and Water Quality offered through the Cal Poly Pomona Co-Op Program.



Metropolitan established a [Diversity, Equity and Inclusion Council](#) comprised of 20 self-nominated representatives from employee resource groups and 10 from bargaining units. The DE&I Council's purpose is to promote and enhance diversity, equity and inclusion throughout the organization. The council aims to ensure accountability in Metropolitan's commitment to an inclusive culture and work environment that values diversity and equity for all Metropolitan employees. The council began meeting bi-monthly in December 2020.

### ***Leaders Ready for the Future***

Metropolitan redesigned its multi-level leadership development programs to strengthen emphasis on effective people management and leadership skills. The programs include the Management Academies for aspiring managers, and a six-day MWD Management University development program for new and existing team managers, which completed its 10th graduating class and created a specialized training program for WSO managers. Staff, in-house experts and expert consultants addressed how to lead, engage, motivate and recognize employees in all these programs. Forty percent of current team managers have completed the Management University Program.

Managers participated in 43 sessions on modern management practices from leading experts through in-depth workshops delivered at the Institute of Management Studies. Ninety-four percent of managers completed mandatory reasonable-suspicion training.

Four external coaches, along with internal experts, provided additional coaching support to 19 managers on a range of issues such as transition management, team building, personal development, conflict resolution, and leading remote staff. HR staff assisted 35 mentor/mentee pairs participating in the 10th cohort in the Engineering Services Mentoring Program.

### ***Preparing Tomorrow's Talent Today***

Due to the large numbers of staff working remotely during the pandemic, staff and vendors transformed HR's normal classroom training curriculum into a redesigned format for virtual delivery. Many employees took advantage of working remotely and used MyLearning to complete mandatory training courses and accessed the extensive online content of LinkedIn Learning, available 24/7 from work, home or mobile devices, to

view educational videos and complete 943 LinkedIn Learning courses topics supporting job, career and personal development.

In response to organization-wide separations of employees—primarily due to retirements—Metropolitan has developed a robust and comprehensive learning and development program to retain talent and build on existing foundations of knowledge and experience.

This year, MyLearning system enabled remote course enrollment, approval and scheduling processes and captured credit for training that used video platforms like Zoom and Microsoft Teams to provide employees and managers remote, interactive training content.

HR staff continued efforts with management to ensure that talent is available to fill critical positions by assessing skill gaps and providing expanded training opportunities. A redesigned remote orientation for new hires and employees who passed probation focused on speeding employee integration into Metropolitan. Use of DocuSign for mandatory benefit forms provided new employees with a New Hire Self-Service option for completing their required forms electronically from home.

This year, 106 employees participated in Metropolitan’s tuition reimbursement program, typically in online classes due to the pandemic. Partnering agreements with six local universities provided tuition discounts, grants and other educational benefits for employees. Several online education fairs discussed degree options with representatives from two universities.

## *HR Services and People Management*

HR Benefits worked with Human Resources Information Systems and IT to ensure compliance with provisions of various pandemic-related legislation designed to assist employees during the pandemic, including Families First Coronavirus Response Act, with its provisions for emergency paid sick leave and expanded emergency family and medical leave. Other changes involved the SECURE Act, which added retirement distribution options to 401(k) and 457(b) plans; the Emergency Paid Sick Leave Act, a provision of the Families First Coronavirus Act; the Emergency Family and Medical Leave Expansion Act, and the CARES (Coronavirus Aid, Relief, and Economic Security) Act, which provided access to tax-advantaged accounts and added flexibilities for preventing older Americans from outliving their retirement assets. Benefits staff also

supported employees and their families with illnesses and end-of-life benefits issues that increased during the pandemic.

Staff conducted all open enrollment activities online using MyHR and Zoom to guide employees through the enrollment steps, as required. This online benefits enrollment process also enabled families to make their healthcare decisions together if they wished to do so. Various financial and retirement education webinars addressing different phases of an employee's work life were provided and a virtual financial goals webinar for retirees was also offered.

The HR Information Systems team collaborated with the Information Technology Group to adapt HR systems to reflect new requirements and expanded remote access needs for electronic transactions in MyHR. Working with IT and the Risk Management and Health & Safety units, staff has selected and begun implementing an improved Incident Reporting system. HRIS staff also enhanced online access to benefits enrollment information, forms, and self-service election changes, and provided a summary of salaries and benefits to comply with the state compensation reporting and Transparent California requirements. HR and IT partnered on SharePoint solutions for improved information sharing, automation and process improvements. HR's conversion of 90 percent of HR's paper records to secure digital formats reduced paperwork and added flexibilities in managing records during the pandemic.

HR facilitated the annual [Department Head Performance Evaluations](#) of executive staff who report directly to the board. In October 2020, 79 percent of the board participated by providing direct feedback about strategic and operational leadership, board relationships and business results during the previous fiscal year.

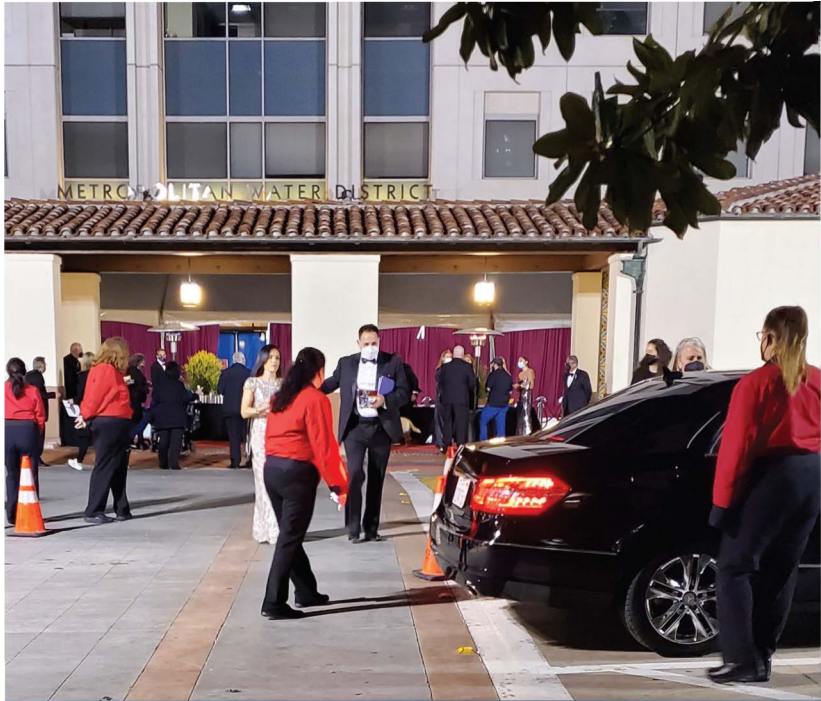
Changes to state and federal policy required adjustments to many HR policies, systems and communications with the workforce. These changes require extensive research, coordination, policy adjustments and implementation planning with other parties, such as Legal, Payroll, Information Technology, External Affairs and third-party administrators.

HR distributed the 2020 Benefits Guide to all employees and retirees, along with total compensation statements that conveyed the value of the benefits Metropolitan provide to employees. Throughout the fiscal year, Metropolitan provided virtual benefits and financial education programs such as Stepping into Retirement. This ensured Metropolitan met its

fiduciary responsibilities and provided employees with the knowledge and opportunity to be retirement ready when the time comes. Metropolitan benefits communications were recognized with seven additional industry awards for its innovative strategic communications and savings programs.

Staff provided semi-annual reports on Equal Employment Opportunity and Affirmative Action to the Organization, Personnel and Technology Committee. Also presented to the committee: an assessment of workforce diversity and outreach efforts; updates on Metropolitan's Affirmative Action Plan for Protected Veterans and Individuals with Disabilities, as well as the nondiscrimination program for women and minorities. Ninety-four percent of the workforce completed the online Preventing Workplace Harassment training.

Workers' Compensation and Medical staff continued assessing the workers' compensation process to ensure best practices. This allowed injured workers to receive the necessary care in a timely manner and accelerated their return into the workplace. Staff also arranged medical evaluations of appropriate personnel at their respective home facility, to ensure that Metropolitan employees maintain the requisite certifications and licenses. In addition to processing claims related to the pandemic, Workers' Compensation prepared to address the governor's orders for self-insured healthcare employers, such as Metropolitan, that requires new levels of financial reporting and reduced claims response timeframes.



*Real Property staff helped lease out 432 Union Station HQ parking spaces for the 2021 Academy Awards; despite COVID-19, Diamond Valley Lake activities such as hiking to the Clayton Record Jr. viewpoint proved popular.*

## Real Property

The Real Property Group applies strategic approaches to the planning, acquisition and disposition of land, protects Metropolitan's property rights and uses, seeks to effectively optimize revenues through secondary uses while controlling land ownership expenses, and manages and maintains real property assets.

### *Planning and Acquisition*

The Planning and Acquisition Unit acquires and disposes of Metropolitan real property in support of strategic water resource management, environmental mitigation requirements and in support of projects based on near- and long-term operational needs. Staff ensures that Metropolitan realizes all rights, interests and benefits inherent in property ownership. Staff members perform planning and research, including cost and feasibility studies, conduct highest-and-best-use appraisals, identify right-of-way needs, and engage in complex and detailed property negotiations.

Real Property Group held its 4th annual outreach event, aimed at educating students and new professionals on opportunities in the public agency sector. This year's virtual event featured speakers discussing public agency right-of-way work and a presentation on the [Regional Recycled Water Program](#). Attendees included more than 120 students and graduates from local community colleges and universities, and right-of-way employees in both public and private sectors. This virtual event was featured in the May/June 2021 issue of Right of Way Magazine.

### *Accomplishments for Fiscal Year 2020/21*

- Executed a cost-reimbursement agreement with the Bureau of Land Management per the 2019 Dingell Act for BLM to review and approve applications to release the federal

government's reversionary interest in 1932 Act Lands in support of the Colorado River Aqueduct Reversionary Interest Release project.

- Sold 243 acres of Chipps Island located in Solano County to the state Department of Water Resources to develop the island as a habitat restoration project, providing them with required mitigation in connection with State Water Project operations.
- Executed and recorded a fallowing easement exchange in support of the Palo Verde Irrigation District forbearance and fallowing program.
- Completed revisions to the Administrative Code to conform with state law and the Surplus Land Act.
- Executed 32 permanent and temporary easements, entry permits, construction permits, licenses, and leases in support of enhancing infrastructure safety, security and resiliency, including various pipeline repair and rehabilitation projects.
- Prepared 73 cost studies and appraisals related to real property acquisition, management and disposition.

## *Land Management*

The Land Management Unit protects Metropolitan's real property rights, land holdings and permanent easements while managing secondary-use agreements. The unit works with Metropolitan stakeholders, through the district's Property Review Council, to facilitate the processing of property use requests. These involve granting permits, licenses, leases and easements to public and private entities for authorized, compatible uses within Metropolitan's land holdings, in a way that generates revenue, controls maintenance costs, and maintains a positive presence with local communities.

During fiscal year 2020/21, the unit managed 245 active secondary use agreements that generated over \$6.2 million in revenue.

Metropolitan owns approximately 20,000 acres of land on four islands in the Sacramento-San Joaquin Delta. With five agricultural tenants occupying the four islands, the focus remains to reduce water supply risks and to protect and improve Delta ecosystem health in

concert with the California EcoRestore program. Metropolitan also engages with tenant-farmers and collaborates with other agencies to achieve financial sustainability, protect the levees and reverse subsidence.

Metropolitan also owns about 29,300 acres of land in the Palo Verde Valley. Key goals: reducing crop consumptive water use, maintaining a vibrant agricultural economy, generating positive lease revenues, promoting community participation and advancing state-of-the-art farming practices. Over the past year, Metropolitan had nine leases in place totaling approximately 22,600 acres, with the remaining acreage either not suitable for farming or encumbered by easements.

### ***Fiscal Year 2020/21 Highlights***

- Executed 24 new secondary use transactions involving access permits, licenses, leases, easements, and amendments to existing agreements.
- Managed over 20 agreements at a cost of approximately \$1 million where Metropolitan was the tenant for office space and telecom towers.
- Extensive research identified potential encroachments that are currently being addressed.
- Executed the transition with two new tenants commencing occupancy to replace an existing tenant on Webb and Holland tracts.
- Issued permits and licenses to California academia and state and federal agencies for scientific research purposes in the Bay-Delta.
- Initiated a regenerative agriculture pilot project in the Palo Verde Valley in collaboration with Chico State University.



## *Annexations*

Staff completed a Metropolitan member agency annexation in Riverside County within Eastern Municipal Water District's 111th fringe area. The annexation totaled 5.82 acres, with minimal potential use of new water demands annually. Newly annexed areas must pay past fees and charges and comply with current water-use efficiency requirements, and Metropolitan's Administrative Code.

### *Diamond Valley Lake Recreation Area*

The Diamond Valley Lake Recreation Area contains public recreation and education facilities, including the DVL Marina, the Lakeview and North Hills trails, the Western Science Center, Valley-Wide Recreation and Park District's DVL Community Park and DVL Aquatic Center, and the Southwestern Riverside County Multi-Species Reserve.

The DVL Marina proved a popular destination for fishermen, hikers and people looking to recreate outdoors during the pandemic. Since the marina reopened in May 2020, [visitation](#) rates exceeded prior years, tapering off as the weather cooled.

Staff completed the rehabilitation of DVL's floating [wave attenuator](#), a series of interconnected floating concrete decks that protect the marina from the incoming waves. The work repaired damage to the cables that tied the sections together, making the launching area once again available for use when lake levels allow.

## *Facility Asset Management*

The Facility Asset Management Unit maintains and operates Metropolitan's Headquarters building, the DVL Visitor Center, employee housing and leased office spaces in Sacramento and Washington D.C. in an energy-efficient and sustainable manner, while ensuring safety, optimizing space and meeting customer needs.

Facility Management supported Union Station's hosting of the 93rd Annual Academy Awards. Building parking and the valet area

were leased out for use on the day of the event to accommodate the over 800 guests of the award ceremony.

In conjunction with the board room/committee room audio/video upgrade project, staff refurbished all fixed seating, replaced conference tables and board member chairs, and installed new heat-resistant countertops.

***Fiscal Year 2020/21 Highlights***

- Completed a Headquarters building retrofit of all urinal and water closet manual flush valves to touchless auto-flush technology, helping eliminate a high touch point and reducing the spread of germs.
- Prepared 18 houses requiring different levels of maintenance and repairs for occupancy by Desert personnel whose position requires them to have a district residence.
- Completed fencing projects at employee village residences to provide a barrier around the outdoor space to protect children and pets from wildlife and vehicular traffic.
- Replaced heating and air conditioning systems that were at the end of their useful life throughout the four employee villages.



## External Affairs

The External Affairs Group is responsible for Metropolitan’s communication, outreach, education, legislative, business outreach and innovation activities. With a focus on engaging the general public, news media, legislators, regulators, educators, community groups, labor, business, Metropolitan member agencies and other stakeholders on water management and sustainability initiatives, External Affairs communicated the district’s interests and its board-adopted policies, using an evolving set of tools to reach a diverse audience.

### *Major Activities and Accomplishments*

#### ***Digital Marketing and Social Media Outreach Campaign***

Metropolitan continued in-house water conservation outreach efforts to promote the district’s water-use efficiency programs and rebates. Staff took a grassroots approach mid-pandemic and designed an award-winning [“We’re California Friendly Plants”](#) social media campaign to engage new online audiences. The campaign celebrated water-saving plants and encouraged their use in the district’s popular Turf Replacement Program. From November 2020 to February 2021, the campaign received some of the highest engagement on social media with a total of 1.5 million impressions and 73,000 visits to [bewaterwise.com](#), the district’s online water conservation portal.

Staff continued to develop conservation outreach materials in the winter and spring of 2021, including online campaigns to support [virtual landscape training classes for residential customers](#). This broad conservation campaign reached more than 5 million on Facebook and Instagram. From April to June, conservation related social media posts received nearly 10 million impressions with more than 100,000 click-

throughs and generated over 85,000 visitors to [bewaterwise.com](http://bewaterwise.com). Nearly 60 percent of the traffic going to the website came from social media efforts.

### ***Media Activities***

Metropolitan officials conducted more than 70 interviews with a global array of news reporters from major TV, radio, print and digital media outlets, ethnic media and community publications to discuss a wide range of water-related issues. Topics included the effect of climate change and drought on Colorado River resources, Lake Mead's falling reservoir levels, water supply reliability and storage, recycled water, and Metropolitan's conservation initiatives, including its updated Turf Replacement Program. Metropolitan has specifically cited its partnership with Southern Nevada Water Authority on Metropolitan's Regional Recycled Water Program. Many of those topics were covered in 27 news releases, along with Delta conveyance, naming of the new general manager and the seating of several board members.

Metropolitan's general manager, chairwoman and other subject matter experts also authored blogs and op-eds encouraging conservation and the need to think differently to adapt to the challenges ahead. In June 2021, staff placed a series of multilingual print advertisements in community newspapers throughout the Southland to increase drought awareness while encouraging Southern Californians to maintain a conservation ethic. These advertisements reached an estimated total of 2 million residents across the district's six-county service area.

### ***Web and Social Media Activities***

As statewide drought conditions worsened, staff developed a public-facing drought page on the district's main website, [mwdh2o.com](http://mwdh2o.com). The microsite launched May 2021 to host the latest drought-related news coverage, media releases, presentations and outreach materials available to member water agencies, media outlets and the general public. Staff also developed internal webpages for the Intramet dealing with diversity and COVID-19. Metropolitan readied the launch of its newly redesigned website, [mwdh2o.com](http://mwdh2o.com), which features interactive maps and visuals of Metropolitan's Colorado River Aqueduct facilities, as well as an enhanced Colorado River page

that explains the importance of Colorado River resources to Southern California's water reliability.

Metropolitan posted on several social media platforms on many topics, including water conservation, COVID-19 and the Regional Recycled Water Advanced Purification Center, and celebrated the [diversity](#) and strength of Metropolitan's workforce. Staff also designed and promoted a "[Your/Our Water](#)" campaign to illustrate the connection of our everyday activities to the importance of water. The social media campaign ran on Facebook and Instagram through June 2021.

### ***Legislative and Policy Activities***

As the pandemic became a new normal, Metropolitan continued its essential policy and legislative activity. Attention focused on public health, pandemic relief, drought, as well as pandemic response and relief for Californians.

In Washington, D.C., Metropolitan, in collaboration with trade associations, worked to secure federal funding for COVID-19 arrearages relief, water and wastewater infrastructure, drought response, and local supply development. Metropolitan also successfully secured the introduction of H.R. 4099, the Large-Scale Water Recycling Project Investment Act. The bill authorizes funding for large recycled water projects, like the Regional Recycled Water Program, and was cosponsored by members of Metropolitan's congressional delegation, along with representatives from Arizona and Nevada and other key members of Congress. Chief Operating Officer Deven Upadhyay testified in support of the bill as did the general manager of the Southern Nevada Water Authority.

In Sacramento, Metropolitan worked with a diverse coalition to secure \$4.65 billion in water and drought relief funding aimed at funding conservation measures, conveyance repairs, recycled water and groundwater remediation projects, and PFAS treatment, and nearly \$1 billion for water customer arrearages in the 2021-22 state budget. Metropolitan was also successful in getting [Assembly Bill 442](#) (Mayes, I-Rancho Mirage) enacted. This bill ensures consistent compliance with the Surface Mining and Reclamation Act by allowing Metropolitan to develop a single master reclamation plan for each

surface mining site that is used for repairs and maintenance to existing water delivery infrastructure. Working with the State Water Contractors, Metropolitan also helped enact [Senate Bill 626](#) (Dodd, D-Napa), authorizing the Department of Water Resources to save time and money by using design-build and other streamlined project delivery methods on habitat restoration, and for repairs and SWP maintenance.

### ***Water Stewardship Education***

Metropolitan worked with partner agencies, school districts, non-profit organizations and parents, as well as formal and informal educators to provide water-focused STEAM (Science, Technology, Engineering, Art and Mathematics) curriculum, grants, and outreach programs. Despite the challenges of COVID-19, staff met with Metropolitan member agencies to hold more than 100 events and engaged with nearly 78,000 students, teachers, parents and participants through virtual activities, social media and curriculum materials. Solar Cup, the nation's largest high school solar boat race, completed its 19<sup>th</sup> year virtually and hosted 16 teams totaling more than 300 high school students. Teams completed [challenges](#) in various fields, including robotics, solar power, computer-aided design software, digital marketing, visual arts and job skills. The program culminated in a virtual competition with vehicles built by participating teams.

Staff also worked with DWR to promote a virtual reality tour of the State Water Project that won top nationwide honors for K-12 educational programs. The "Water is Life" Student Art Exhibit and Calendar showcased over 5,000 pieces of art created by K-12 students to help promote the value of using water wisely.

Amid widespread COVID-19-related school closures, staff proactively engaged education partners through online classes, webinars and virtual reality tours of the Colorado River Aqueduct. A new education webpage provided a suite of conservation resources for students, teachers and parents.

An outreach effort for the Regional Recycled Water Program reached 6,000 people with 56 live-hosted virtual tours of the Regional Recycled Water Advanced Purification Center, the demonstration facility for the program. The virtual tours were provided in English



and Spanish to community groups and the public, with over 2,000 people participating.

### ***Videos, Publications, Newsletters***

External Affairs produced numerous videos on topics like the Regional Recycled Water Program, [water safety protocols](#), Diamond Valley Lake, innovation, Solar Cup, [native gardens](#), historical anniversaries and a tribute to General Manager Kightlinger.

Staff produced the annual Water Quality Report in [English](#) and [Spanish](#), the 2020 Annual Report, and the [Regional Progress Report](#) to the state legislature on conservation, recycling and reuse, as well as promotional materials for events.

Fact sheets and publications covered Bay-Delta science, Delta conveyance modernization, Metropolitan facts, regional recycled water, the Annual Operating Plan and state and federal legislative priorities. Staff also disseminated the Metropolitan in the News and Water Talk newsletters.

### ***Business Outreach, Innovation***

Metropolitan successfully launched an employee innovation council tasked with driving innovation forward. Contributing their time, expertise, and resources to promote new ideas, council members assist in the development of innovation policy and processes, evaluate new technologies; determine rewards and recognition for innovators; and serve as ambassadors for innovation within Metropolitan and with outside groups.

Business Outreach also participated in numerous outreach meetings and events with small business groups, ethnic and veteran organizations to promote business opportunities with the district.



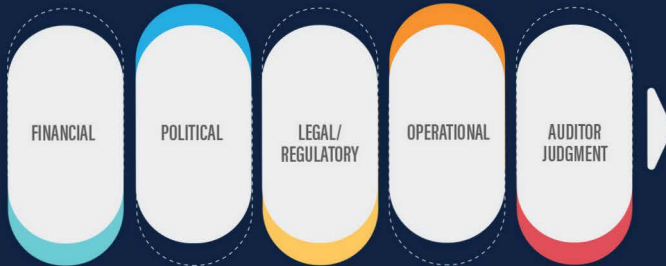
## DETERMINE AUDIT UNIVERSE



GATHER INPUT



## ASSESS LIKELIHOOD AND IMPACT OF INHERENT RISK



MEASURE AND  
SELECT



AUDIT PLAN  
EXECUTION



*Comprehensive risk planning enables Internal Audit to align and focus its resources to execute effective, insightful, proactive audits assisting Metropolitan in meeting its objectives.*

## Internal Audit

Internal Audit provides independent, objective assurance and consulting services designed to advance and improve operations. A team of audit professionals evaluate the extent to which internal controls mitigate risks. They determine whether activities comply with policies, procedures, regulatory requirements, and contracts, focusing on risk management, controls, and governance processes. In this way, the audit staff assists management and the Board of Directors in assessing and understanding risks that could impact the achievement of their objectives. These tasks took on additional urgency amid the coronavirus pandemic.

Audits follow [The Institute of Internal Auditors' International Standards for the Professional Practice of Internal Auditing](#). These standards define Internal Audit's responsibilities and establish expectations for auditor professionalism and independence. The [Internal Audit Department Charter](#) assures this independence by establishing the General Auditor's reporting line to the Board of Directors and the Audit and Ethics Committee.

The Audit and Ethics Committee focuses Internal Audit resources through review and approval of the General Auditor's Annual Audit Plan. Key stakeholders, including board members, management and staff, provided an internal assessment of risks and input that went into the fiscal year 2020/21 Audit Plan

### *Major Activities and Accomplishments*

During FY 2020/21, Internal Audit took the following significant actions:

- Remotely executed all audit activity in response to the continuing coronavirus pandemic.

- Focused heavily on planning for reoccurring audits driving uniformity, efficiency and effectiveness.
- Successfully carried out the FY 2020/21 Audit Plan, including significant audits of the Dam Rehabilitation and Safety Program, Manual Check Issuance Process, and Travel Expense Reporting Process.
- Completed and issued the reports for six audits and six special projects, as well as provided assistance on the annual year-end financial audit conducted by KPMG of Metropolitan, the Delta Conveyance Design and Construction Authority, and Colorado River Joint Powers Authority.
- Communicated monthly to the board on projects completed, assistance provided, and initiatives undertaken, which can be viewed via the Audit Reports tab at the General Auditor [webpage](http://mwd2o.com) (mwd2o.com).

	<b>Number of Reports</b>
<b>Audits:</b>	<b>6</b>
Audit Quality Assurance–Self Assessment	
Check with Order	
Consulting Agreements: Project Partners, LLC, Carollo Engineers, and HDR Engineering	
Dam Rehabilitation and Safety Audit Report	
Stores Inventory	
Travel Expense Reports and IExpense Module of the Oracle Business Suite	
<b>Monitoring:</b>	<b>6</b>
Colorado River Water Users Association	
Quarterly Consulting Contract Reporting (5)	
<b>Assistance:</b>	<b>1</b>
KPMG Annual Financial Audit	
<b>Department Initiatives:</b>	<b>2</b>
Talent Development	
Recurring Audit Planning Development	

- Collaborated with management in understanding new and evolving risks posed by the ongoing coronavirus pandemic; assisted in identifying mitigation strategies.
- Reassessed the Audit Plan quarterly, evaluating whether it met the needs and requests of the Board of Directors and

management; focusing on the highest risks and areas of most significant concern and monitoring progress.

- Evaluated management's response to all significant control issues noted in audit reports; tracked management responses on the recommendations included in the audit reports, including timeliness of response.
- Implemented additional technology tools and augmented the audit processes to enhance audit execution.

### *Quality Assurance Activities*

Professional auditing standards require internal audit organizations to maintain a quality enhancement and continuous improvement program. Internal Audit conducts a comprehensive Quality Assurance and Improvement Program annually that includes auditor training and ongoing, periodic internal quality reviews. The review evaluates conformance with auditing standards, assesses governance practices and evaluates audit work papers with regards to planning, fieldwork, and reporting practices while appraising staff development and resource management activities. Internal Audit also undergoes an external independent quality assessment every five years. FY 2020/21 activities included the following:

- Conducted the annual internal quality self-assessment that evaluates conformance with auditing standards.
- Worked to implement recommended enhancements to bolster compliance efforts.
- Identified training opportunities for Internal Audit staff, who earned continuing education hours in courses including fraud assessment, ethics, accounting standard updates, and government auditing.



## Ethics

**T**he Ethics Office is responsible for promoting a robust and enduring ethical culture at Metropolitan. The office ensures that Metropolitan operates with transparency and integrity. To advance its mission, the office develops policies and monitors compliance in individual decision-making and institutional processes.

Preventing violations remains the cornerstone of Metropolitan's ethics program. To further this effort, the office provides training and advises officials on how to comply with ethics policies and related state ethics laws. A fair and objective investigation process addresses potential violations of the district's ethics policies to strengthen accountability and safeguard public trust.

### *Legislative Mandate*

Enacted in 1999, Senate Bill 60 requires that Metropolitan: (1) establish and operate an Office of Ethics; and (2) adopt rules relating to internal disclosure, lobbying, conflicts of interest, contracts, campaign contributions, and ethics for application to its board members, officers and employees.

In addition, the law requires that the Ethics Office: (1) operate as an independent entity that is not subject to political influence and staffed with professional, qualified persons; (2) educate the board, staff, contractors, and subcontractors concerning ethics rules; (3) investigate alleged violations of ethics rules; (4) adopt procedures for protecting the confidentiality of sources, the job security of whistle blowers, and the due process rights of the accused; and (5) make available to the public the results of investigations

### *Advice and Education*

Advice and education are central to helping officials avoid ethics missteps and to ensuring integrity within district processes.

This year, staff advised Metropolitan officials on a variety of government ethics issues related to their work. Requests for advice covered topics including financial conflicts of interest, gifts from contractors, outside employment, political activities, and disclosure of personal finances.

For example, the Ethics Office frequently advised district officials if their planned course of action would create a conflict of interest requiring their recusal.

The office's training programs reinforce awareness and understanding of Metropolitan's ethics policies and related state ethics laws. Ongoing programs include live training sessions; sessions for officials who report personal financial interests pursuant to state law; and an ethics primer for new employees. In addition, this fiscal year the office completed a three-part webinar series titled "Meet Your Ethics Office" to address employee requests to learn more about the functions, authorities, and services that the office provides.

### ***Policies and Procedures***

The office regularly evaluates Metropolitan's ethics policies and procedures to ensure that they meet Metropolitan's ethics standards and support institutional growth. This year, the Audit and Ethics Committee considered a detailed overhaul of Metropolitan's ethics policies and procedures that resulted from months of staff work and assistance from outside counsel. Although it tentatively approved the proposal earlier, the committee opted to defer final approval until after completion of an outside independent assessment of workplace conditions overseen by the Ethics Officer.

### ***Compliance***

Among the Ethics Office's core functions is ensuring compliance with state ethics requirements that apply to government agencies and their officials. To that end, the office continued its state-mandated review of Metropolitan's conflict of interest code. The code identifies Metropolitan positions that require disclosure of personal financial interests and assigns an appropriate level of disclosure for each position. The review identified additional positions required to report personal financial interests and modified the contents of some disclosure categories. The proposed amendments are expected to go

into effect early in fiscal year 2021/22 after formal public notice and approval by the state's Fair Political Practices Commission.

The office also fulfilled its duties as Metropolitan's filing officer for Statements of Economic Interests by helping officials submit timely and accurate financial disclosure forms to the state. During fiscal year 2020/21, the office administered over 800 disclosure forms.

### ***Investigations***

As one of its essential mandates, the Ethics Office independently investigates alleged violations of Metropolitan's ethics rules and publicly discloses the investigative findings. Investigations promote individual accountability by Metropolitan officials, identify opportunities for expanded ethics training, and lead to new or improved ethics rules.

In addition to evaluating 29 complaints this year, the Ethics Office undertook four full-scale ethics investigations.

### ***Independent Review of Harassment and Related Concerns***

In November 2020, the Board of Directors authorized and directed the Ethics Officer to engage an outside counsel to perform a district-wide independent review of allegations of systemic Equal Employment Opportunity-related concerns.

Entrusted with a highly sensitive and complex task that needed to be performed with integrity and without political influence, the Ethics Officer provided oversight of the independent review by the Shaw Law Group from December to June. As the fiscal year ended, the firm planned to complete its review and issue a report of observations and recommendations in July.

The Board of Directors agreed to receive the final report without any prior review or editing by management officials—an unprecedented degree of independence and objectivity for a document designed to move Metropolitan into the future, enhancing equal employment opportunities for future generations of employees.



## INDEX

Agriculture/agricultural	xiii-xiv, 6, 21, 24-27, 45, 94, 162-63
Allocation	xiv, 1, 6, 8-9, 27, 31-32, 79, 85, 118-19
Ammonia	93
Arizona	xiv, 27, 74, 101, 119, 169
Arizona Electric Power Cooperative	AEPCO, 82, 86, 88, 121
Arvin-Edison	35
Association of California Water Agencies	ACWA, 78
Basins (miscellaneous)	24, 35, 41, 52, 78-79, 93, 98, 100-01, 113, 119-20, 163
Bay-Delta	21, 25, 112, 117, 171
Board of Directors	xi-xiv, 1-3, 27-28, 41, 44, 99-100, 103, 114, 117, 123, 125, 128, 130-31, 135-36, 142-43, 151, 153, 155, 158, 165, 167-68, 173-74, 179
Bromate	60, 101
Bureau of Reclamation	24, 27-28, 73, 77, 119
California Air Resources Board	CARB, 82, 86
California Aqueduct	xiv, 35
California Department of Water Resources	DWR, xiv, 6, 21, 23-26, 31-32, 71, 73, 80-81, 85, 117-18, 133, 150, 162, 170
California EcoRestore/WaterFix	23, 117, 163
Capital Investment Plan	CIP, 99-100, 127
Carbon	60, 149
Carryover	8
Central Valley Project	CVP, 24
Charges	118, 122, 125-26, 129-131, 133, 135, 164

## INDEX

Chlorine/Chlorination	55, 73, 79, 85, 93, 101
Chromium 6	74, 120
Climate change/Climate Action Plan	2-3, 44, 117, 122, 149, 168
Coachella Valley	6, 26, 37, 119
Coliform/E. coli	53, 69
Collaboration	3, 21, 25-26, 44, 54, 71, 112, 114, 117, 121, 123, 130, 143, 153-54, 158, 163, 169, 174
Colorado River Aqueduct	CRA, xiii-xiv, 5-6, 8-9, 19, 27, 36, 50, 56, 60, 73, 79, 82, 85-86, 88, 102, 121, 149-50, 162, 168, 170
Colorado River Basin	3, 26, 28-29, 73
Colorado River water	6, 8-9, 28, 41, 52, 71, 86, 119, 134
Conjunctive use	41, 120
Conservation	xiii-xiv, 1-2, 6-8, 24, 31, 36-37, 41, 43, 118-19, 130, 133, 150, 167-71
Conveyance	5, 51-52, 78, 80-81, 85, 96, 100, 114, 169
COVID-19/pandemic	xii, 1, 6, 9, 31, 43, 52, 55, 78, 83-84, 94-96, 99, 113, 123, 125, 129, 135, 144, 147-48, 151, 153-55, 160, 164, 167-70
Cryptosporidium	69, 76
Cyanobacteria/cyanotoxins	55, 71, 73, 77-78
Dams	81, 88, 99, 103, 112-13, 174
Delta	21, 23-26, 35, 71, 117-18, 130, 162
Delta conveyance	2, 21, 112, 117, 135, 150, 168, 171, 174

## INDEX

Delta islands	25, 120
Delta smelt	25
Desalination	2, 41, 45
Desert	4, 35, 55, 79, 94, 149-50, 165
Desert Water Agency	6, 37, 119
Diamond Valley Lake	DVL, 8, 32, 52, 72, 80, 85-86, 103, 160, 164, 171
Diemer	Robert B. Diemer Water Treatment Plant, 51-52, 56, 60, 76, 93, 98, 101, 113
Disadvantaged communities	23
Discharge	79, 92-93, 120
Disinfection byproducts	DBPs, 60
Diversity/equity/inclusion	3, 155-56, 159, 168-69
Division of Drinking Water	DDW, 54-55, 70
Drought	xl, 1-3, 6-8, 20-21, 24, 27, 31, 41, 43-45, 52, 79-81, 102, 118-19, 168-69
Drought Contingency Plan	2, 27, 118-19
Education	3, 41, 113, 148, 153, 155, 157-58, 161, 164, 167, 170, 175, 177
Energy	73, 84-86, 88, 92, 121-22, 134, 144, 164
Exchanges	xiv, 3, 8, 32, 36-37, 45, 118, 130
Fallowing	27, 37, 162
Feeders	8, 80-82, 92-93, 101-02, 112, 120, 149
Filters	52, 76, 93, 98, 101, 113

## INDEX

General Manager	1, 41, 118, 120, 135, 155, 168-69, 171
Groundwater	xiv, 2, 8, 28, 32, 35, 37, 40-41, 45, 54, 74, 93, 100, 118-20, 169
Habitat	23-25, 118-19, 149-50, 162, 170
Hoover Dam	88, 119, 121
Hydroelectric/hydropower	xiii, 5, 81-83, 85, 122
Hydrology/hydrologic	27, 31, 45
Imperial Irrigation District	IID, 26, 37, 119
Incentives/rebates	xiv, 26-27, 37, 40-41, 43, 92, 123, 167
Iron Mountain	19, 103
IRP	Integrated Water Resources Plan, 3, 31, 44
Intentionally Created Surplus	ICS, 6, 9, 27, 36, 119
Jensen	Joseph Jensen Water Treatment Plant, 51-52, 60, 76, 85-86, 92, 94, 101
Kern	32, 35
Lake Havasu	xiv, 37, 74
Lake Mathews	IFC, xiv, 56, 80-81, 94, 103, 128, 149
Lake Mead	2, 6, 9, 20, 27, 36-37, 168
Lake Powell	36-37
Legislation/bills	25, 43-44, 78, 119, 123, 149-51, 157, 169-70, 177
Local resources/supplies	xiii-xiv, xl-3, 7, 31, 37, 41, 44-45, 51-52, 130, 133, 169
Los Angeles	xiii, 45, 51-52, 76, 82, 93, 99-101, 103, 119

## INDEX

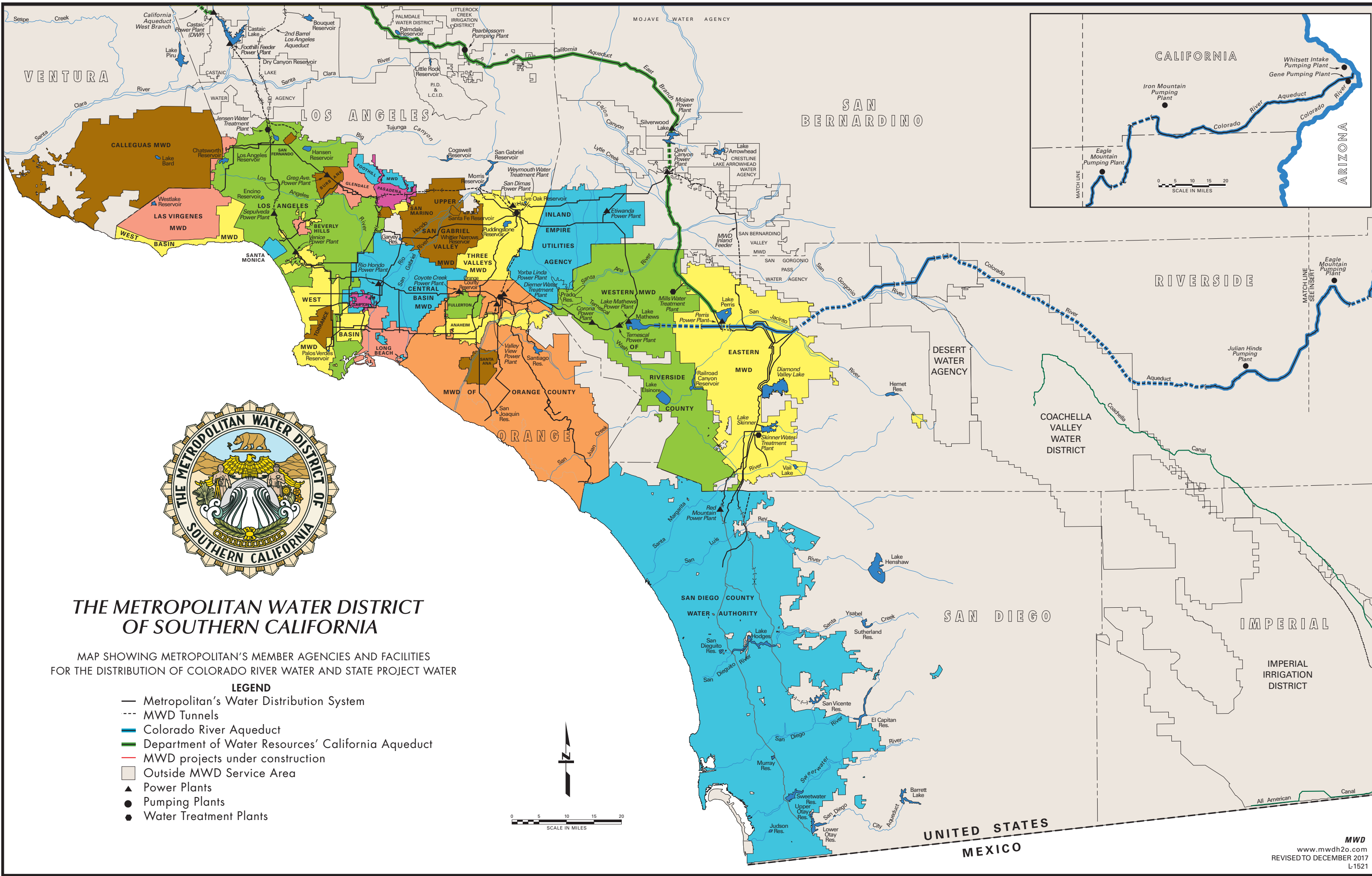
LA County Sanitation Districts	76, 93, 100-101, 120
Maximum contaminant level	MCL, 54, 56, 60
Member agencies	xiii-xiv, 2, 7-8, 21, 31, 37, 41, 44, 51, 55, 78-83, 99, 101, 114, 128-30, 135, 144, 149, 164, 167-68, 170
Mills	Henry J. Mills Water Treatment Plant, 8, 32, 51-52, 60, 80
Moab	73
Mojave	36
Nevada	27, 74, 169
Newsom, Gov. Gavin	1, 21
Orange County	xiii, 51-52, 81, 101-02, 120, 149
Oroville	20, 118
Ozone/Ozonation	52, 60, 85, 94
Palo Verde	26-27, 37, 93-94, 120, 162-63
Perchlorate	54, 74, 119
PFAS/PFHxA/PFOA/PFOS	54-55, 70, 78, 93, 169
Pipe/pipelines	xiii, 5, 8, 40, 52, 78-82, 93, 101- 102, 112-13, 115, 162
Pumping/pumps/pumping plants	4-5, 8-9, 19, 27, 35, 52, 79-81, 85- 86, 88, 92, 99, 102-103, 121, 134
Quagga mussels	73, 93, 120
Quantification Settlement Agreement	QSA, 36, 119
Rain/precipitation	45, 60
Rates	95, 121, 125-27, 129, 130-31, 134-35, 164
Reclamation districts	25-26

## INDEX

Recycling, water	xiii-xiv, xl-3, 28, 37, 40, 45, 76-77, 99-100, 119, 135, 161, 168-71
Reservoirs	xiii-xiv, 1, 5, 19, 21, 23-24, 27, 52, 71, 80, 93, 103, 112-13, 121, 168
Riverside County	xi, xiii-xiv, 51, 149, 164
Sacramento River	6, 23, 118
Sacramento-San Joaquin Delta	2, 24, 60, 162
Salinity	28, 60, 73
Salmon	23-25
San Bernardino	xiii, 102, 118, 150
San Diego	xiii, 45, 51, 93
San Diego County Water Authority	SDCWA, 37, 121, 135
San Joaquin	24, 32
Seismic	xii, 26, 28, 103, 113-14, 117
Semitropic	Water Storage District, 32
Shutdowns	4, 9, 50, 78-80, 92, 94-95, 135, 144, 149
Sierra Nevada	1, 60
Skinner/Lake Skinner	Robert A. Skinner Water Treatment Plant, 51-52, 56, 60, 73, 85-86, 92-93, 103
Snow/snowpack	2, 32, 36, 60
Solar	25, 85-86, 170-71
State Water Contract/Contractors	xiv, 31-32, 71, 117-18, 131, 133, 170
State Water Project	SWP, xiv, 1, 5-6, 8-9, 21, 24, 27, 31-32, 36-37, 41, 51-52, 56, 60, 71, 73, 79, 81, 85, 102, 117-20, 122, 133, 162, 170

## INDEX

State Water Resources Control Board	SWRCB, 23-24, 53-55, 70, 78
Storage	xiii, 1-2, 6, 8-9, 23, 27, 31-32, 35-36, 41, 43, 45, 103, 118-20, 168
Stormwater	2, 40-41, 45, 92
TCP	(1,2,3-trichloropropane) 35, 56
TDS	Total dissolved solids, 60
Training	25, 31, 51, 76, 84, 93, 95-96, 123, 149, 156-57, 159, 167, 175, 177-79
Union Station/headquarters	xii, 99, 103, 143, 160, 164-65
Voluntary Agreements	118
Water bonds (finance)	118, 120-21, 126-28, 131, 134-36
Water transactions	6-7, 45, 121, 130-31, 135
Water transfers	xiv, 27, 36, 118, 130
Water-use efficiency	3, 31, 41, 43, 164, 167
Web/website/webpage	xiv, 23, 70, 77, 123, 126, 130, 155, 168, 170, 174
Weymouth	F.E. Weymouth Water Treatment Plant, 51-52, 56, 60, 76, 85-86, 92-94, 101
Yuma	26, 119



# THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

MAP SHOWING METROPOLITAN'S MEMBER AGENCIES AND FACILITIES FOR THE DISTRIBUTION OF COLORADO RIVER WATER AND STATE PROJECT WATER

### LEGEND

- Metropolitan's Water Distribution System
- MWD Tunnels
- Colorado River Aqueduct
- Department of Water Resources' California Aqueduct
- MWD projects under construction
- Outside MWD Service Area
- ▲ Power Plants
- Pumping Plants
- Water Treatment Plants

