# Appendix R

Water Supply Assessment

Los Angeles Department of Water & Power

BOARD LETTER APPROVAL

RESOLUTION NO. _____

RICHARD F. HARASICK
Senior Assistant General Manager
Water System

MARTIN L. ADAMS
Chief Operating Officer

DAVID H. WRIGHT
General Manager

**DATE:** December 12, 2017

**SUBJECT:** Water Supply Assessment – 5420 Sunset Boulevard Project

## SUMMARY

The Water Supply Assessment (WSA) is for the 5420 Sunset Boulevard Project (Sunset Project) located within the Hollywood Community Plan area of the City of Los Angeles (City). LADWP staff determined the total net additional water demand for the Sunset Project is 87 acre-feet per year (AFY) and has concluded this additional water demand can be accommodated. The Sunset Project's base water demand was further reduced by 35 AFY through implementation of the conservation ordinance and code requirements and an additional 3 AFY through the project implementing additional voluntary conservation measures. WSA will meet the requirements of California Water Code Sections 10910-10915. The governing body of each public water system is required to make a determination on WSAs for major projects.

City Council approval is not required.

## RECOMMENDATION

It is recommended that the Board of Water and Power Commissioners (Board) adopt the attached Resolution authorizing the WSA for the Sunset Project.

## ALTERNATIVES CONSIDERED

LADWP is required by state law, as set forth in California Water Code Sections 10910-10915, to prepare this WSA for the Sunset Project. There are no other alternatives.

## FINANCIAL INFORMATION

5420 Sunset Boulevard LP, LLC (Applicant) paid $17,000 to cover LADWP's expenses for preparation of this WSA.

## BACKGROUND

WSAs are prepared in conformance with California law and the City ordinances to ensure proposed projects that utilize water resources are consistent with the City's conservation goals and long-term water supply availability, as detailed in LADWP's 2015 Urban Water Management Plan (UWMP). LADWP's 2015 UWMP is the water supply planning document for the City and is prepared by LADWP.

Each WSA performed by LADWP is carefully evaluated within the context of LADWP's most recent UWMP and current conditions, such as restrictions on State Water Project (SWP) pumping from the Sacramento-San Joaquin River Delta (Delta) imposed by a Federal Court. The Metropolitan Water District of Southern California (MWD), from whom the City purchases its SWP and Colorado River water supplies, has also been actively developing plans and making efforts to provide additional water supply reliability for the entire Southern California region. LADWP coordinates closely with MWD to ensure implementation of MWD's water resource development plans.

Part of MWD's planning effort is the update and implementation of its Integrated Water Resources Plan (IRP) and its UWMP, which are designed to address potential reductions in water supply due to the effects of variable hydrologic conditions and regulatory restrictions on exports from the Delta. The 2015 IRP update resulted in the development of the following six main findings and conclusions: action is needed to minimize unacceptable level of shortage allocation frequency in the future, maintain Colorado River supplies, stabilize SWP supplies, develop/protect local supplies and water conservation, maximize effectiveness of storage and transfers, and continue with adaptive management approach.

LADWP's 2015 UWMP contains a water shortage contingency plan for multi-year dry hydrological periods. This water shortage contingency plan was implemented on June 1, 2009, when the Board adopted Shortage Year Rates and the City Council implemented the landscape irrigation and prohibited use restrictions contained in the City's Water Conservation Ordinance. The City's Water Rate Ordinance, adopted June 1995 was last amended by the Board, effective April 15, 2016. The new water rate structure increases the number of tiers from two to four for single-family residential customers. The goal is to incentivize conservation while recovering the higher costs of

providing water to high volume users. In keeping with cost of service principles, the incremental pricing for the tiers is based on the cost of water supply and, for the third and fourth tiers, added pumping and storage costs.

Various conservation measures are also required through the following regulations: the City's Green Building Codes Revision/Use of Greywater Systems/Water Conservation Measures Ordinance No. 184248, the City's Water Efficiency Requirements Ordinance No. 180822, 2013 California Plumbing Code, 2013 California Green Building Code (CALGreen), 2014 Los Angeles Plumbing Code, and 2014 Los Angeles Green Building Code. All codes became effective January 1, 2014, except Ordinance No. 184248, effective June 2016, and Ordinance No. 180822, effective December 2009.

Projected Water Use and Conservation

On July 26, 2017, the Los Angeles Department of City Planning (Planning Department), lead agency for the Sunset Project, requested LADWP perform a WSA. Based on information obtained from Planning Department, the Sunset Project will redevelop an approximately 6.75-acre site of commercial land uses within the Hollywood Community Plan area of the City for residential and commercial land uses. The Sunset Project is generally bounded by Sunset Boulevard to the north, Serrano Avenue to the east, the former site of Deluxe Laboratories to the south, and Western Avenue to the west.

The Sunset Project's site currently contains a one-story grocery store, a vacant commercial space, and a one-story fast-food restaurant that together comprise approximately 100,796 square feet (sq ft) and associated surface parking areas. As part of the project, the existing buildings and parking lot will be demolished to support the development of the Sunset Project. The existing site had a water demand of approximately 15 AFY.

The Sunset Project will develop four new mixed-use buildings consisting of 735 multi-family residential units and approximately 95,820 sq ft of neighborhood-serving commercial uses, including market/retail uses and restaurant uses. The residential amenities will be comprised of approximately 15,700 sq ft of fitness center uses, 11,000 sq ft of lobby and leasing office space, 1,500 sq ft of outdoor kitchen uses, terraces with 2,995 sq ft of swimming pool and spa, cabanas, multiple lounge and seating areas, paseos with water and landscape elements, outdoor fireplaces, a dog park, community garden space, and private patios. As part of the Sunset Project, the buildings will be built over a subterranean and ground level covered parking structure. The project will also include approximately 38,671 sq ft landscaping and cooling towers.

LADWP staff recommended implementation of additional voluntary water conservation measures to maximize the potential water-use efficiency for the Sunset Project. Recommended voluntary conservation measures are in addition to those required by the City's current codes and ordinances. Based on LADWP staff recommendations,

Applicant has voluntarily committed to implement the following additional measures that are beyond those required by law:

- Showerheads with a flow rate of 1.6 gallons per minute (gpm), or less
- Non-residential lavatory faucets with a flow rate of 0.35 gpm, or less
- Metering faucets with a flow rate of 0.18 gallons per cycle (gpc), or less
- High Efficiency Toilets with a flush volume of 1.12 gallons per flush (gpf), or less
- Urinals with a flush volume of 0.11 gpf, or less
- Leak Detection System for swimming pools and Jacuzzi
- Proper Hydro-zoning/Zoned Irrigation groups plants with similar water requirements together
- Drought Tolerant Plants 45 percent of total landscaping

A written commitment of the Sunset Project's planned voluntary water conservation measures was submitted by Applicant and is attached with WSA in Appendix B.

With the addition of these voluntary water conservation measures, which yield additional savings of approximately 3 AFY, the total net additional water demand is approximately 87 AFY.

The Applicant has also committed to comply with the City of Los Angeles Low Impact Development Ordinances (City Ordinance Nos. 181899 and 183833) and to implement Best Management Practices that have stormwater recharge or reuse benefits for the entire Project where feasible:

- Infiltration drywells with pre-treatment systems- the required captured storm water volume from the site will be treated prior to infiltration.
- A combination of mechanical treatment devices and cisterns function as storm water capture and use system - the required captured storm water volume from the site will be treated prior to capture and use system.
- High efficiency biofiltration/bioretention systems - the required captured storm water volume from the site will be treated prior to overflow to the streets.
- Combination of any of above.

The Sunset Project is determined by Planning Department to be consistent with the demographic projections for the City from both the 2012 and 2016 Regional Transportation Plans (RTP) by the Southern California Association of Governments (SCAG). The City's water demand projection in 2015 UWMP was developed based on the 2012 RTP demographic projection using the 2010 U.S. Census for the City. LADWP used a modified-unit-use approach to develop its service area-wide water demand projections. This methodology does not rely on individual development demands to determine area-wide growth. 2015 UWMP concluded there are adequate water supplies to meet projected water demand through 2040. Therefore, projected water supply available during normal, single-dry, and multiple-dry water years as included in the 25-year projection of 2015 UWMP is sufficient to meet the projected

water demand associated with the Sunset Project, in addition to the existing and planned future demand on LADWP.

## ENVIRONMENTAL DETERMINATION

Determine item is exempt pursuant to the California Environmental Quality Act (CEQA) Guidelines 15268 (b) (4). In accordance with Section 15268 (b)(4) of the CEQA Guidelines, Ministerial projects such as approval of individual utility service connections and disconnections are exempt from the requirements of CEQA.

## CITY ATTORNEY

The Office of the City Attorney reviewed and approved the Resolution as to form and legality.

## ATTACHMENTS

- Resolution
- Water Supply Assessment

RESOLUTION NO. _____

WHEREAS, the Los Angeles Department of Water and Power (LADWP) constitutes a "public water system" pursuant to California Water Code Section 10912, subdivision (c); and

WHEREAS, the 5420 Sunset Boulevard Project (Sunset Project) qualifies as a "project" under California Water Code Section 10912, subdivision (a) (7); and

WHEREAS, the Sunset Project is located in the service area of LADWP's water supply system, and LADWP would serve the area of the Sunset Project development; and

WHEREAS, on July 26, 2017, the City of Los Angeles (City) Department of City Planning (Planning Department) requested the LADWP conduct a Water Supply Assessment (WSA) for the Sunset Project pursuant to California Water Code Sections 10910-10915; and

WHEREAS, the Sunset Project would redevelop an approximately 6.75-acre site of commercial land uses within the Hollywood Community Plan area of the City for residential and commercial land uses; and

WHEREAS, LADWP's Water Resources Division has prepared a WSA for the Sunset Project in compliance with California Water Code Sections 10910-10915; and

WHEREAS, the Sunset Project is determined by Planning Department to be consistent with the demographic projections for the City from both the 2012 and 2016 Regional Transportation Plans by the Southern California Association of Governments; and

WHEREAS, LADWP staff performed the water demand analysis and determined the net increase in total water demand for the Sunset Project is 87 acre-feet per year; and

WHEREAS, the 5420 Sunset Boulevard LP, LLC (Applicant) has agreed to implement additional conservation measures, as described in WSA, that are in addition to those required by law; and

WHEREAS, LADWP anticipates that its projected water supply available during normal, single-dry, and multiple-dry water years as included in the 25-year projection contained in its adopted 2015 Urban Water Management Plan can accommodate the projected water demand associated with the Sunset Project, in addition to the existing and planned future demands on LADWP; and

WHEREAS, the Board of Water and Power Commissioners (Board) adopted a Water Rate Ordinance for water service effective April 15, 2016. The Board believes that the price signals contained in the Water Rate Ordinance encourages conservation and will help to contribute to reductions in City-wide demands to meet demand projections; and

WHEREAS, in accordance with Water Code Section 10910 (g) (1) the Board has the responsibility for approval and certification of WSA's prepared by LADWP; and

WHEREAS, the Board has independently reviewed and considered the WSA and documentation making up the administrative record; and

WHEREAS, a publicly noticed Board hearing was held with respect to this item on January 9, 2018, and the Board considered evidence presented by LADWP's Water Resources Section staff, the staff recommendation to approve the WSA, and other comments from interested parties at the public hearing.

NOW, THEREFORE, BE IT RESOLVED that the Board finds that LADWP can provide sufficient domestic water supplies to the Sunset Project area and approves the WSA prepared for the Sunset Project, now on file with the Secretary of the Board, and directs that WSA and a certified copy of Resolution be transmitted to Planning Department.

BE IT FURTHER RESOLVED that the Board finds that LADWP's total projected water supplies available during normal, single-dry, and multiple-dry water years during a 20-year projection will meet the projected water demands associated with the Sunset Project in addition to existing and planned future uses including agricultural and industrial uses.

BE IT FURTHER RESOLVED that the Board has considered the WSA prior to making a decision to approve the WSA, and finds that the WSA is adequate and was prepared in accordance with Water Code Section 10910 (c) (2), and meets the requirements of Water Code Section 10910 (d), (e), (f), and (g).

I HEREBY CERTIFY that the foregoing is a full, true, and correct copy of a Resolution adopted by the Board of Water and Power Commissioners of the City of Los Angeles at its meeting held

_____

Secretary

APPROVED AS TO FORM AND LEGALITY
MICHAEL N. FEUER, CITY ATTORNEY

DEC 12 2017

BY _____
JULIE C. RILEY
DEPUTY CITY ATTORNEY

# WATER SUPPLY ASSESSMENT

# FOR 5420 SUNSET BOULEVARD PROJECT

Prepared by:
Water Resources Division

January 9, 2018

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California Department of Water Resources California's Groundwater Bulletin 118 Update 2003

Upper Los Angeles River Area Watermaster Report for 2013/2014, Dated December 2015

LADWP 2015 UWMP

MWD Integrated Water Resources Plan 2015 Update

MWD 2015 UWMP

California Code of Regulations Title 23. Waters, Division 2. Department of Water Resources, Chapter 2.7. Model Water Efficient Landscape Ordinance

City of Los Angeles Department of Public Works Bureau of Sanitation (LASAN) Sewer Generation Rates Table

Appendices

A. The City of Los Angeles Department of City Planning letter, Request for Water Supply Assessment, received on July 26, 2017, and Scope Confirmation e-mail received on November 30, 2017

B. Water Conservation Commitment Letter

C. Project Location Maps

D. Adjudicated Groundwater Basin Judgments

E. Water Supply Assessment Provisions – California Water Code Section 10910-10915

F. MWD of Southern California (Appendix A)

G. Water Supply Assessment Checklist

# Introduction

Proposed major projects subject to certain requirements in the California Water Code Sections 10910-10915 require that a city or county identify any public water system that may supply water to the 5420 Sunset Boulevard Project (Sunset Project) and request the public water system provide a Water Supply Assessment (WSA). The WSA is a determination by the water supplier that the demands associated with the Sunset Project were included in its most recently adopted 2015 UWMP showing that there is an adequate 20-year water supply.

The City of Los Angeles (City) Department of City Planning (Planning Department), serving as the lead agency as prescribed by the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000 et seq.), for the Sunset Project, has identified LADWP as the public water system that will supply water. In response to Planning Department's request for a WSA, LADWP has performed the assessment contained herein.

LADWP has supplied the City with a safe and reliable water supply for over a century. Over time, the City's water supplies have evolved from primarily local groundwater to predominantly imported supplies. Today, the City relies on over 85 percent of its water from imported sources. As such, LADWP has taken an active role in regional and statewide water management. The sustainability of Los Angeles' local water supplies are dependent on the City's ability to maximize water conservation, increase recycled water use, expand stormwater capture, and accomplish other local water resource goals.

WSA is prepared to meet the applicable requirements of state law as set forth in California State Water Code Sections 10910-10915. Significant references and data for WSA are from the City's 25-year water resource plan, entitled *Los Angeles Department of Water and Power Urban Water Management Plan 2015*, adopted by the Board of Water and Power Commissioners (Board) on June 7, 2016. LADWP's 2015 UWMP is incorporated by reference and is available for review through LADWP's Web site, www.ladwp.com/uwmp.

# Findings

The Sunset Project is estimated to increase the total net water demand within the site by 87 acre-feet (AF) annually based on review of information submitted by Planning Department. 5420 Sunset Boulevard LP, LLC (Applicant) has committed to implement additional water use efficiency measures that are beyond those required by current law.

LADWP's WSA finds adequate water supplies will be available to meet the total additional water demand of 87 AF annually for the Sunset Project. LADWP anticipates the projected water demand from the Sunset Project can be met during normal, single-

dry, and multiple-dry water years, in addition to the existing and planned future demands on LADWP.

WSA approval addresses the City's long-term water supply and demand forecasts to accommodate the Sunset Project, and is not an approval for water service connection. A separate request shall be made to LADWP requesting an evaluation of water service connection for the Sunset Project.

The basis for approving WSAs for developments is LADWP's most recently adopted UWMP. LADWP's water demand forecast, as contained in LADWP's 2015 UWMP, uses long-term demographic projections for population, housing, and employment. The California Urban Water Management Planning Act requires water suppliers to develop a UWMP every five years to identify short-term and long-term water resources management measures to meet growing water demands during normal, single-dry, and multiple-dry years. If the projected water demand associated with the Sunset Project was not accounted for in the most recently adopted LADWP 2015 UWMP, WSA must include a discussion with regard to whether LADWP's total projected water supplies available during normal, single-dry, and multiple-dry water years during a 20-year projection will meet the projected water demand associated with the Sunset Project, in addition to LADWP's existing and planned future uses.

The City's water demand projection in LADWP's 2015 UWMP was developed based on the 2012 Regional Transportation Plan (RTP) demographic projection by the Southern California Association of Governments (SCAG) using the 2010 United States (U.S.) Census for the City. LADWP's 2015 UWMP concluded there are adequate water supplies to meet projected water demands through 2040. Therefore, the City's water supply projections in LADWP's 2015 UWMP are sufficient to meet the City's water demand projections based on the 2012 RTP.

Planning Department has determined that the Sunset Project conforms with the use and intensity of development permitted by the City's General Plan, and that it is consistent with the demographic projection for the City from both the 2012 and 2016 RTPs. Based on the information provided by Planning, anticipated water demand for the Sunset Project falls within LADWP's 2015 UWMP's projected water supplies for normal, single-dry, and multiple-dry years through the year 2040 and is within the LADWP 2015 UWMP's 25-year water demand growth projection. This WSA can be approved based on the fact that the Sunset Project's water demand falls within the LADWP 2015 UWMP's projected increase in citywide water demands, while anticipating multi-dry year water supply conditions occurring at the same time.

Additionally, LADWP's 2015 UWMP contains a water shortage contingency plan for multi-year dry hydrological periods. This water shortage contingency plan was implemented on June 1, 2009, when the Board adopted Shortage Year Rates, and the City Council implemented the landscape irrigation and prohibited use restrictions contained in the City's Water Conservation Ordinance (Ordinance).

The City's Water Rate Ordinance, adopted in June 1995, was last amended by the Board, effective April 15, 2016. The revised rate ordinance restructured the rates to help further promote conservation. For example, single family rates switched to a four-tier system that sends a strong price signal to deter against wasteful water use. The Board finds that the price signals contained in the Water Rate Ordinance encourage conservation and support further reduction in City-wide demand. Past and current implementation of water rate price signals and higher ordinance phases have resulted in reducing the total customer water usage, on average, by approximately 20.1 percent over the time period from June 2009 to September 2017.

## Sunset Project Description

The following project information was obtained from Planning Department's WSA Request Letter and the scope confirmation e-mail (Appendix A):

| | |
|---|---|
| Project Name: | 5420 Sunset Boulevard Project |
| Lead Agency: | Planning Department |
| Planning Community: | Hollywood Community Plan |

The Sunset Project will redevelop an approximately 6.75-acre site of commercial land uses within the Hollywood Community Plan area of the City for residential and commercial land uses. The Sunset Project is generally bounded by Sunset Boulevard to the north, Serrano Avenue to the east, the former site of Deluxe Laboratories to the south, and Western Avenue to the west.

The Sunset Project's site is currently developed a one-story grocery store, a vacant commercial space, and a one-story fast-food restaurant that together comprise approximately 100,796 square feet (sq ft) and associated surface parking areas. As part of the project, the existing buildings and parking lot will be demolished to support the development of the Sunset Project. The existing site had a water demand of approximately 15 AFY.

The Sunset Project will develop four new mixed-use buildings consisting of 735 multi-family residential units and approximately 95,820 sq ft of neighborhood-serving commercial uses, including market/retail uses and restaurant uses. The residential amenities will be comprised of approximately 15,700 sq ft of fitness center uses, 11,000 sq ft of lobby and leasing office space, 1,500 sq ft of outdoor kitchen uses, terraces with 2,995 sq ft of swimming pool and spa, cabanas, multiple lounge and seating areas, paseos with water and landscape elements, outdoor fireplaces, a dog park, community garden space, and private patios. As part of the Sunset Project, the buildings will be built over a subterranean and ground level covered parking structure. The project will also include approximately 38,671 sq ft landscaping and cooling towers.

LADWP staff performed the water demand analysis and determined the net increase in water demand for the Sunset Project is 87 acre-feet per year (AFY).

A subsequent revised WSA may be required if one or more of the following occurs: (1) changes in the Sunset Project result in a substantial increase in water demand for the Sunset Project; (2) changes in the circumstances or conditions substantially affecting the ability of LADWP to provide a sufficient supply of water for the Sunset Project; or (3) significant new information becomes available which was not known and could not have been known at the time when WSA was prepared. If deemed necessary, Applicant may request a revised WSA through lead agency.

## Sunset Project Water Demand Estimate

Projected total net water demand increase for the Sunset Project is estimated to be 87 AF annually which includes annual water conservation. Savings due to water conservation ordinances are approximately 35 AFY, and savings due to additional voluntary conservation measures are approximately 3 AFY.

In evaluating the Sunset Project's water demand, the Sewer Generation Factors (SGF), published by City of Los Angeles Department of Public Works Bureau of Sanitation (LASAN) in 2012, are applied to the Sunset Project scope for calculating indoor water use. SGFs are factors of how much wastewater is generated (gallons per day) per unit (per sq ft, per dwelling unit, per seat, etc.). LASAN publishes a list of SGFs for approximately 175 different building use types in the City, and updates factors to make adjustments necessary due to water conservation efforts and increased efficiencies in new appliances and plumbing fixtures. Outdoor landscape water demand is estimated per California Code of Regulations Title 23 Division 2 Chapter 2.7 Model Water Efficient Landscape Ordinance. Historical billing records are used to establish existing baseline water demand on the property. LADWP also encouraged the Sunset Project to implement additional water conservation measures above and beyond the current water conservation ordinance requirements.

The net increase in water demand, which is the projected additional water demand of the Sunset Project, is calculated by subtracting the existing baseline water demand and water saving amount from the total proposed water demand.

Table I shows a breakdown of the existing and proposed new types of uses for the Sunset Project, and the corresponding estimated volume of water usage with the implementation of the conservation measures for the Sunset Project.

Types of use were derived from WSA request letter and the scope confirmation e-mail in Appendix A.

Table II estimates the total volume of water conservation based on conservation measures the Applicant has committed to for the Sunset Project (Appendix B).

**TABLE I**
**5420 Sunset Blvd Project**
**Calculated Total Additional Water Demand**

| Existing Use[1] | Quantity | Unit | | | Existing Water Use to be Removed (gpd) | (af/y) |
|---|---|---|---|---|---|---|
| Grocery Store | 78,328 | sf | | | | |
| Commercial Space | 18,525 | sf | | | | |
| Restaurant - Fast Food | 3,943 | sf | | | | |
| **Existing to be Removed Total[2]** | | | | | **13,827** | **15.49** |

| Proposed Use[1] | Quantity | Unit | Water Use Factor[3] (gpd/unit) | Base Demand (gpd) | Required Ordinances Water Savings[4] (gpd) | Proposed Water Demand (gpd) | (af/y) |
|---|---|---|---|---|---|---|---|
| Residential: Studio | 198 | du | 75.00 | 14,850 | | | |
| Residential: 1 bd | 353 | du | 110.00 | 38,830 | | | |
| Residential: 2 bd | 182 | du | 150.00 | 27,300 | | | |
| Residential: 3 bd | 2 | du | 190.00 | 380 | | | |
| Base Demand Adjustment (Residential Units)[5] | | | | 8,890 | | | |
| **Residential Units Total** | **735** | **du** | | **90,250** | 24,274 | **65,976** | **73.91** |
| Fitness Center | 15,700 | sf | 0.65 | 10,205 | | | |
| Leasing / Management Office | 9,000 | sf | 0.12 | 1,080 | | | |
| Lobby | 2,000 | sf | 0.05 | 100 | | | |
| Swimming Pool / Spa | 2,995 | sf | | 281 | | | |
| Outdoor Kitchen/Barbeque | 1,500 | sf | 0.13 | 193 | | | |
| Base Demand Adjustment (Residential Ammenities)[5] | | | | 45 | | | |
| **Residential Amenities Total** | | | | **11,904** | 809 | **11,095** | **12.43** |
| Retail | 25,820 | sf | 0.025 | 646 | | | |
| Restaurant: Full Service Indoor Seat | 500 | seat | 30.00 | 15,000 | | | |
| Market | 50,000 | sf | 0.05 | 2,500 | | | |
| **Commercial Total** | | | | **18,146** | 3,663 | **14,483** | **16.22** |
| **Landscaping[6]** | **38,671** | **sf** | | **3,630** | 1,645 | **1,985** | **2.22** |
| **Covered Parking[7]** | **707,697** | **sf** | 0.02 | **465** | 0 | **465** | **0.52** |
| **Cooling Tower Total** | 300 | ton | 12.96 | 3,888 | 778 | 3,110 | 3.48 |
| | | | **Proposed Subtotal** | **124,395** | **30,391** | **94,004** | **105.30** |
| | | | | | Less Existing to be Removed Total | -13,827 | -15.49 |
| | | | | | Less Additional Conservation[8] | -2,538 | -2.84 |
| | | | | | **Net Additional Water Demand** | **77,639 gpd** | **86.97 af/y** |

[1] Provided by City of Los Angeles Department of City Planning in the Request for Water Supply Assessment letter and Scope Confirmation e-mail. See Appendix A. Uses not shown here do not have additional water demand.

[2] The existing water demand is based on the LADWP billing data (average of 4 years from August 2013 to July 2017). The project site also includes surrounding parking and landscaping. All existing uses will be removed as part of this project.

[3] Proposed indoor water uses are based on 2012 City of Los Angeles Department of Public Works, Bureau of Sanitation Sewer Generation Rates table available at http://www.lacitysan.org/fmd/pdf/sfcfeerates.pdf.

[4] The proposed development land uses will conform to City of Los Angeles Ordinance No. 184248, 2013 California Plumbing Code, 2013 California Green Building Code (CALGreen), 2014 Los Angeles Plumbing Code, and 2014 Los Angeles Green Building Code.

[5] Base Demand Adjustment is the estimated savings due to Ordinance No. 180822 accounted for in the current version of Bureau of Sanitation Sewer Generation Rates.

[6] Landscaping water use is estimated per California Code of Regulations Title 23. Division 2. Chapter 2.7. Model Water Efficient Landscape Ordinance.

[7] Auto parking water uses are based on City of Los Angeles Department of Public Works, Bureau of Sanitation Sewer Generation Rates table, and 12 times/year cleaning assumption.

[8] Water conservation due to additional conservation commitments agreed by the Applicant. See Table II.

Abbreviations: bd - bedroom du - dwelling unit sf- square feet gpd - gallons per day af/y - acre feet per year

**TABLE II**
**5420 Sunset Blvd Project**
**Estimated Additional Water Conservation**

| Conservation Measures[1] | Quantity | Units | Water Saving Factor[2] (gpd/unit) | Water Saved (gpd) | Water Saved (af/y) |
|---|---|---|---|---|---|
| Toilet - Residential: Studio | 198 | du | 0.88 | 174 | 0.19 |
| Toilet - Residential: 1 bd | 353 | du | 0.88 | 311 | 0.35 |
| Toilet - Residential: 2 bd | 182 | du | 2.20 | 400 | 0.45 |
| Toilet - Residential: 3 bd | 2 | du | 3.52 | 7 | 0.01 |
| Showerhead - Residential: Studio | 198 | du | 1.06 | 210 | 0.24 |
| Showerhead - Residential: 1 bd | 353 | du | 1.06 | 374 | 0.42 |
| Showerhead - Residential: 2 bd | 182 | du | 2.65 | 482 | 0.54 |
| Showerhead - Residential: 3 bd | 3 | du | 4.24 | 8 | 0.01 |
| **Residential Unit Conservation Total** | | | | **1,966** | **2.20** |
| Toilet | 18 | ea | 3.48 | 63 | 0.07 |
| Urinal | 5 | ea | 0.41 | 2 | 0.00 |
| Faucet (Bath) | 12 | ea | 0.74 | 9 | 0.01 |
| Showerhead | 6 | ea | 5.00 | 30 | 0.03 |
| **Residential Amenities Conservation Total** | | | | **104** | **0.12** |
| Toilet | 28 | ea | 3.48 | 97 | 0.11 |
| Urinal | 11 | ea | 0.41 | 5 | 0.01 |
| Faucet (Bath) | 24 | ea | 0.74 | 18 | 0.02 |
| Showerhead | 2 | ea | 5.00 | 10 | 0.01 |
| **Commercial Conservation Total** | | | | **130** | **0.15** |
| **Landscaping Total Conservation[3]** | | | | **333** | **0.37** |
| **Total Additional Water Conserved =** | | | | **2,533** | **2.84** |

[1] Water conservation measures agreed to by the Applicant. See Appendix B.

[2] Based on LADWP estimates.

[3] Landscaping water conservation is estimated per California Code of Regulations Title 23. Division 2. Chapter 2.7. Model Water Efficient Landscape Ordinance.

Abbreviations: du - dwelling unit gpd - gallons per day af/y - acre feet per year ea – each

## Water Demand Forecast

LADWP's 2015 UWMP projects yearly water demand to reach 675,700 AF by fiscal-year-ending (FYE) 2040 with passive water conservation, or an increase of 31.6 percent from FYE 2015 actual water demand. Water demand projections in five-year increments through FYE 2040 are available in LADWP's 2015 UWMP for each of the major customer classes: single-family, multifamily, commercial/governmental, and industrial. Demographic data from the Southern California Association of Government's 2012 RTP, as well as billing data for each major customer class, weather, conservation, price of water, personal income, family size, economy, and drought conservation effect were factors used in forecasting future water demand growth.

LADWP's 2015 UWMP used a modified-unit-use approach to develop its service area-wide water demand projections. This methodology does not rely on individual development demands to determine area-wide growth, because such an inventory in LADWP service area in the next 25 years is only a subset of the total development potential. Therefore, the growth or decline in population, housing units, and employment for the entire service area was considered in developing long-term water projections for the City through FYE 2040. The historical water demand for a unit of customer class, such as gallons-per-day per single family, is modified to account for future changes, including water conservation, and applied to the 2012 RTP demographic projections by SCAG. This modified-unit-use-approach has proven to be a reliable forecast historically, when compared with actual consumption, excluding the effects of conservation.

LADWP's 2015 UWMP is updated every five years as required by California law. This process entails, among other requirements, an update of water supply and water demand projections for water agencies.

Collaboration between LADWP and MWD is critical in ensuring that the City's anticipated water demands are incorporated into the development of MWD's long-term Integrated Water Resources Plan (IRP). MWD's IRP directs a continuous regional effort to develop regional water resources involving all of MWD's member agencies including the City. Successful implementation of MWD's IRP has resulted in reliable supplemental water supplies for the City from MWD.

State law further regulates distribution of water in extreme dry weather conditions. Section 350-354 of the California Water Code states that when a governing body of a distributor of a public water supply declares a water shortage emergency within its service area, water will be allocated to meet needs for domestic use, sanitation, fire protection, and other priorities. This will be done equitably and without discrimination between customers using water for the same purpose(s).

## LADWP – 2015 UWMP

The California Urban Water Management Planning Act (first effective on January 1, 1984) requires every urban water supplier prepare and adopt a UWMP every five years. The main goals of UWMPs are to forecast future water demands and water supplies under average and dry year conditions, identify future water supply projects such as recycled water, provide a summary of water conservation Best Management Practices (BMP), and provide a single and multi-dry year management strategy.[1]

LADWP's 2015 UWMP, available for reference through www.ladwp.com/uwmp, serves two purposes: (1) achieve full compliance with requirements of California's Urban Water Management Planning Act; and (2) serve as a master plan for water supply and resources management consistent with the City's goals and policy objectives.[2]

A number of important changes have occurred since LADWP prepared its 2010 UWMP. The year 2012 marked the start of the current multi-year drought in California. In January 2014, Governor Jerry Brown proclaimed a drought state of emergency. In July 2014, the State Water Resources Control Board (SWRCB) implemented its Emergency Water Conservation Regulation (Emergency Regulation), as directed by Governor Brown, to take actions to reduce water use by 20 percent Statewide, which was later increased to 25 percent statewide, with adjustments to account for different climates, expected growth, investment made to create drought-resilient water supplies by different cities through October 2016. In October 2014, Mayor Eric Garcetti issued Executive Directive No. 5 (ED5) Emergency Drought Response which set goals to reduce per capita water use, reduce purchases of imported potable water by 50 percent, and create an integrated water strategy to increase local supplies and improve water security considering climate change and seismic vulnerability. Lastly, in April 2015, the Mayor's Sustainable City pLAn (pLAn) was released establishing targets for the City over the next 20 years to strengthen and promote sustainability. The pLAn included a number of water resources goals, including reduce average per capita potable water use by 20 percent from Fiscal Year (FY) 2013/14 by 2017, reduce average per capita potable water use by 22.5 percent from FY 2013/14 by 2025, reduce imported water purchases from MWD by 50 percent from 2013/14 by 2025, reduce per capita potable water use by 25 percent from 2013/14 by 2035, and expand all local sources of water so that they account for at least 50 percent of the total supply by 2035. The pLAn included a multi-faceted approach to developing a locally sustainable water supply to reduce reliance on imported water, reducing per capita water use through conservation, and increasing local water supply availability.

A number of new requirements have been added to the Urban Water Management Planning Act since completion of LADWP's 2010 UWMP, including: an extension of the submittal deadline from December 31, 2015 to July 1, 2016, a narrative description of water demand measures implemented over the past five years and future measures

[1] *City of Los Angeles Department of Water and Power 2015 Urban Water Management Plan*, at ES-2.
[2] *Id.* at ES-2.

planned to meet 20 percent demand reduction targets by 2020, implementation of a standard methodology for calculating system water loss, a mandatory electronic filing of UWMPs, a voluntary reporting of passive conservation savings, energy intensity, and climate change, and a requirement to analyze and define water features that are artificially supplied with water.

LADWP's 2015 UWMP projects a seven percent lower water demand trend than what was projected in the previous LADWP 2010 UWMP. It outlines plans, as described below, to provide a highly reliable water supply by FYE 2040, by implementing cost-effective conservation, recycled water, and stormwater capture programs, ultimately meeting the targets established in ED5 and pLAn, including reducing imported water purchases from MWD.

## Near-Term Conservation Strategies

***Enforcing prohibited uses of water.*** Prohibited uses of water are intended to eliminate waste and increase awareness of the need to conserve water. In effect at all times, prohibited uses have been in place since the early 1990s. Under enforcement, failure to comply would be subject to penalties, which can range from a written warning for a first violation to monetary fines and water service shutoff for continued non-compliance.

***Expanding the prohibited uses of water.*** In August 2009, and again in August 2010, the City updated the Emergency Water Conservation Plan Ordinance (No. 181288) by clarifying prohibited uses of water, modifying certain water conservation requirements, and developing new phases of conservation depending on the severity of water shortages. In June 2015, the City amended Ordinance No. 181288 with the new Ordinance No. 183608. Ordinance No. 183608 clarified prohibited uses and added an additional phase to allow for outdoor watering two days a week. In April 2016, the City once again amended Ordinance No. 183608 with the Ordinance No. 184250, which defined and added fines for unreasonable uses of water. The Ordinance is expected to improve the City's ability to comply with current regulations and respond to the ongoing drought conditions. Prohibited uses in effect at all times (Phase I) include[3]:

- Water leaks allowed to go unattended
- Outdoor irrigation between the hours of 9 a.m. to 4 p.m.
- Outdoor irrigation that results in excess water flow leaving the property
- Outdoor irrigation during and 48 hours after rain events
- Outdoor irrigation with spray head sprinklers and bubblers for more than ten minutes per watering day per station
- Outdoor irrigation with standard rotors and multi-stream rotary heads for more than 15 minutes per cycle and up to two cycles per watering day per station
- Large landscape irrigation systems without automatic shutoff rain sensors

[3] *Id.* at 3-11.

- Washing paved surfaces (sidewalks, walkways, driveways, or parking areas) unless using a LADWP-approved water conserving spray cleaning device
- Water for decorative fountains, ponds, or lakes unless the water is part of a recirculating system
- Installation of single-pass cooling systems in buildings requesting new water service
- Installation of non-recirculating systems in new commercial laundry facilities
- Installation of non-recirculating systems in new conveyor car washes
- Car washing with a hose, unless an automatic shut-off device is attached
- Water served to customers in eating establishments, unless requested
- Daily towel and linen service option must be offered to hotel and motel guests

Phase II of the Water Conservation Ordinance was enacted in August 2010 and is currently in effect. In addition to the restrictions in Phase I, Phase II also limits landscape irrigation to three days per week, Monday, Wednesday, and Friday for odd-numbered street addresses and Tuesday, Thursday, and Sunday for even-numbered street addresses. Watering times for non-conserving nozzles (spray head sprinklers and bubblers) are limited to eight minutes per watering day per station.

On January 17, 2014, with California facing water shortfalls in the driest year in recorded state history, Governor Brown proclaimed a Drought State of Emergency. Local urban water suppliers and municipalities were called upon to implement their local water shortage contingency plans. Responding to the executive order, in 2015, SWRCB imposed mandatory cutbacks ranging from four percent to 36 percent. LADWP was required to reduce its water use by 16 percent compared to the 2013 levels. LADWP met the state mandated reduction goal and saved 16.1 percent between June 2015 and May 2016. In 2016, following a relatively wet winter in Northern California, SWRCB replaced the regulations by a localized "stress test" approach, which LADWP successfully met.

On April 7, 2017, Governor Jerry Brown issued Executive Order B-40-17 formally ending the drought emergency. The Governor lifted the drought emergency in all California counties except Fresno, Kings, Tulare; and Tuolumne where emergency drinking water projects will continue to help address diminished groundwater supplies. The order also rescinds two drought-related emergency proclamations and four drought-related executive orders. Cities and water districts throughout the state are required to continue reporting their water use each month, according to the order, which also bans wasteful practices, such as hosing off sidewalks and running sprinklers when it rains.

As the Governor ended the drought emergency, five state agencies unveiled a long-range plan to rein in water use, called "Making Water Conservation a California Way of Life." This plan builds on the successes and lessons learned from California's five-year drought and establishes a framework for long-term efficient water use that reflects the state's diverse climate, landscape, and demographic conditions.

Achieving the plan's goals will help all of California better prepare for longer and more severe droughts caused by climate change. Among other things, the plan will require all urban agencies to meet new targets, based on their local climates, land-use characteristics and other factors. The urban agencies would set the targets themselves, based on parameters set by the state.

On October 14, 2014, Mayor Garcetti issued his Executive Directive No. 5 (ED5) to set accelerated short-term conservation targets to address the drought and set long-term water reliability goals. Shortly after, the Mayor published the City's Sustainability pLAn (pLAn) on April 8, 2015. The pLAn builds upon the goals in ED5 to establish the following water resources related goals to achieve long-term water reliability for the City: per capita water use reduction goals of 20 percent by 2017, 22.5 percent by 2025, and 25 percent by 2035; a reduction in LADWP purchases of imported potable water by 50 percent by 2025; and expanding local water supplies to account for 50 percent of total supplies by 2035. LADWP's 2015 UWMP incorporates the pLAn goals in its local water supply plans to reduce reliance on purchased water in the future. These plans include increased stormwater capture, groundwater clean-up, recycled water, and conservation.

Most significant among them is an increased goal for conservation. On January 1, 2017, the City was able to meet the short-term target of 20 percent reduction through drought response measures that dropped per capita water use to 104 gallons per day. While this extraordinary achievement will have lasting effects on the City's water use efficiency, LADWP will need to work together with residents and businesses to achieve additional permanent conservation savings needed to maintain these drought savings and further reduce per capita water use by 25 percent by 2035. Achieving the pLAn and LADWP 2015 UWMP per capita water use reduction goals will help reduce the City's reliance on imported water while providing drought-resilient supplies that are not subject to increasingly frequent hotter weather conditions.

Among the actions required by ED5 that have been implemented are the following:

- Increase rebates for rain barrels, including interconnection piping and control systems, to $100 per barrel.
- Increase LADWP's California Friendly Landscape Incentive rebate funding to $1.75 per sq ft.

In addition to mandatory action items including those listed above, ED5 also calls for residents to:

- Voluntarily reduce their outdoor watering from three to two days.
- Replace turf lawns with native and climate-appropriate landscaping during the optimal Fall/Winter planting season, utilizing LADWP rebates for turf removal.
- Replace any remaining high water use plumbing fixtures and appliances with low-flow fixtures and appliances using consumer rebates provided by LADWP.
- Ensure swimming pools have covers to reduce water evaporation.

ED5 goals were later enhanced/modified by the Mayor's pLAn in April 2015. Strategies under pLAn sought to execute key conservation steps outlined in ED5 as well as expand the scope and financing for conservation programs and incentives.

***Extending outreach efforts***. Over the last several years, LADWP has expanded conservation outreach and education. Some activities to promote conservation include: increased communication with ratepayers through Twitter, Facebook, newspapers, radio, television, bus benches/shelters, and movie theaters, among other types of media; outreach to Homeowner Associations and Neighborhood Councils; distribution of hotel towel door hangers and restaurant table tent cards; and ramping up marketing of expanded water conservation incentive and rebate programs.

On April 9, 2015, the new "Save the Drop" Water Conservation Outreach Campaign was launched. This campaign is a partnership between LADWP and the Mayor's Office. Outreach materials include new public service announcements, radio spots, event handouts, and signage on the sides of LASAN trucks. The campaign has partnered with celebrities such as Steve Carrell, Jaime Camil, and Moby for public service announcements airing on TV, cinema, and radio.

***Encouraging regional conservation measures***. LADWP has worked with MWD to encourage all water agencies in the region to promote water conservation and adopt water conservation ordinances which include prohibited uses and enforcement.

## Long-Term Local Supply Strategies

In April 2015, the Mayor released the City's first ever Sustainable City pLAn that focuses on sustainability, with special focus on the environment, the economy, and equity. The pLAn enhances ED5 goals, and incorporates water savings goals of reduction in per capita potable water by 20 percent by 2017, by 22.5 percent by 2025, and by 25 percent by 2035. The pLAn goals also include a reduction in imported water purchases from MWD by 50 percent from 2013/14 levels by 2025 and expansion of all local sources of water so that they account for at least 50 percent of the total supply by 2035. The pLAn includes specific strategies and desired outcomes for conservation, recycled water, and stormwater capture. Some of the strategies to meet these goals include investments in state-of-the art technology, rebates and incentives promoting water-efficient appliances, tiered water pricing, Technical Assistance Program for business and industry, and large landscape irrigation and efficiency programs.

### 1.0 Increase Water Conservation Through Reduction of Outdoor Water Use and New Technology

Goal

Increase water conservation savings to achieve ED5 and pLAn water conservation goals by cutting back on outdoor water use, expanding rebates and incentives, improving water efficiency at public facilities, and enhancing savings through review of

new developments. LADWP plans to achieve additional water conservation savings of 108,100 AFY during average years and 143,500 AFY during single/multi-dry years by year 2040[4].

Action Plan

***Conservation Rebates and Incentives.*** LADWP is continuing to expand rebates and incentives for homeowners and business owners to encourage them to purchase water-saving technology. Rebate and incentive programs include the following: Commercial Rebate Program, Residential Rebate Program, Direct Install Partnership Program, and Technical Assistance Program. In addition, as part of the City's ongoing effort to encourage customers to adopt active water conservation measures (i.e., measures that can help customers conserve water on a daily basis without thinking about it) in their homes and businesses, LADWP continues to distribute water-saving bathroom and kitchen faucet aerators and shower heads free-of-charge. In an effort to reduce outdoor water use, LADWP launched the California Friendly Landscape Incentive Program in 2009. Between November 1, 2014, and July 9, 2015, this Program provided rebates for turf removal to residential customers of $3.75 per sq ft for the first 1,500 sq ft and $2.00 per sq ft with no cap thereafter, and to commercial customers of up to $3.75 per sq ft. MWD is no longer offering turf removal incentives to new applicants, effective July 9, 2015, because available funding has been fully allocated.

LADWP has relaunched the California Friendly Landscape Incentive Program to continue a utility-sponsored rebate program for its customers. Effective July 15, 2015, residential customers are eligible to receive a rebate of $1.75 per sq ft for 1,500 sq ft maximum, while commercial customers are eligible for a rebate of $1.00 per sq ft for the first 10,000 sq ft and $0.50 per sq ft thereafter up to 43,560 sq ft maximum.

Some highlights from the list of LADWP's numerous water conservation accomplishments are:

- LADWP's Water Conservation Program has achieved a total cumulative hardware water savings of over 125,000 AFY, mainly through installation of conservation devices subsidized by rebates and incentives, since the inception of the program in FYE 1991 to FYE 2016.
- Water conservation achievements have resulted in Los Angeles using just as much as it did 45 years ago despite a population increase of over one million people.
- California Friendly Landscape Incentive Program – In total (Residential and Commercial Turf removal), LADWP has removed over 48 million sq ft of turf, saving over 1.9 billion gallons of water per year.
- LADWP's 100-percent volumetric tiered rate structure has been providing financial incentives to all customers for efficient water use since 1993.

[4] *Id.* at 11-11 to 11-13.

- Water Meter Replacement Program started in 2006 and is ongoing. The current program goal is to replace 25,000 meters per year out of approximately 700,000 existing small meters, which equates to a 28-year replacement. Over the next five years, LADWP plans to ramp up to a replacement cycle of 20 years. This program provides customers with greater accuracy in metering water use and a higher degree of accountability for water that is delivered by the City's distribution system.
- Technical Assistance Programs (TAP) for business and industry have been created to provide incentives for retrofitting water-intensive industrial equipment with high efficiency devices. A large effort is currently being expended using TAP to increase water-efficiency of commercial cooling towers and expand the program for small business participation.

***Action by Public Agencies.*** LADWP assists City Departments and other public agencies in leveraging incentive funds to retrofit their facilities with water-efficient hardware. Significant accomplishments include the following highlights:

- In an effort to reduce water waste and identify areas of potential water conservation, LADWP provided on-site water audit training for the City's Department of General Services (GSD) plumbers, Department of Recreation and Parks (RAP) landscapers and Port of Los Angeles (POLA) staff, and conducted nearly 500 facility audits.
- In January 2009, a Memorandum of Understanding (MOU) was signed between LADWP and GSD to install 875 water-efficient urinals and 325 high-efficiency toilets in City facilities.
- Ten high-use City facilities have been retrofitted with water-efficient toilets, urinals, and faucets saving approximately 23 AFY. Locations include City Hall, City Hall East, Pershing Square, and LADWP headquarters.
- Utilizing a $3 million per year grant from LADWP, RAP has retrofitted 23 parks with California Friendly landscape and water-efficient irrigation. Through this MOU, RAP completed the Los Feliz Golf Course project in July 2014. Golf course improvements include a fully automated recycled water system, and six acres of grass have been replaced with California Friendly landscaping. Annually 5.5 million gallons of water will be saved due to the changes.

***Enhancing Conservation through New Developments.*** LADWP continues to work with the City's Green Building Team to pursue desired changes in local codes and standards to promote water efficiency in new construction projects and major building renovations. One of the significant accomplishments was the approval of the Water-Efficiency Requirements Ordinance No. 180822 by the City Council, which modifies City Municipal Code to establish new requirements for water conservation in construction of new buildings, and the installation of new plumbing fixtures in existing buildings to minimize the effects of any water shortages on the customers of the City, effective December 1, 2009. Additional conservation measures are also required through the following regulations which were effective January 1, 2014: 2013 California Plumbing Code, 2013 California Green Building Code (CALGreen), 2014 Los Angeles Plumbing

Code, and 2014 Los Angeles Green Building Code. On April 8, 2015, the California Energy Commission adopted new efficiency standards for toilets, faucets and other appliances effective January 1, 2016. Also, on July 15, 2015, in response to Governor Brown's Executive Order B-29-15, the California Water Commission approved the revised Model Water Efficient Landscape Ordinance, which reduces the maximum amount of water allowed from the 2009 version of the ordinance. The California Department of Water Resources (DWR) estimates that a new home will use 20 percent less landscape water than allowed by the 2009 ordinance, and commercial landscape will cut water use by 35 percent. Also, Ordinance No. 184248, *Green Building Codes Revision, Use of Greywater Systems, Water Conservation Measures*, became effective June 6, 2016, and mandates a number of new fixture requirements and methods of construction for plumbing and irrigation systems. California Plumbing Code, Los Angeles City Plumbing Code and amending ordinances apply to all newly constructed buildings, additions and alterations whenever new fixtures are installed in existing buildings. CALGreen, the LA Green Building Code and the amending ordinances also apply to new construction projects, but are limited to additions and alterations to existing buildings that either increase the building's conditioned volume or have a valuation of $200,000 or more. For this development, all requirements above resulted in savings of approximately 35 AFY.

In addition, the City adopted Ordinance No. 181899, also known as the "Low Impact Development" Ordinance, and Ordinance No. 183833, entitled "Stormwater and Urban Runoff Pollution Control." The purpose of these Ordinances includes rainwater harvesting and stormwater runoff management, water conservation, and recycled water reuse and gray water use. Ordinance No. 181899 was effective as of November 14, 2011, and Ordinance No. 183833 was effective October 3, 2015.

***Future Programs*[5].** In December 2014, LADWP started its Home Water Use Report Pilot Study, which provides 72,000 single family customers bi-monthly home water use reports on their water usage, statistics on how they compare to similar households with average and efficient water use, and customized water saving tips and rebate recommendations. The pilot study group also has access to online on historical water use, estimated breakdown of how the customer is using their water, and additional information on how to save water in their homes. Upon completion of the pilot study by the end of 2017, LADWP will analyze results to determine the savings potential and cost-effectiveness of the program, which will assist LADWP in planning a long-term program that targets the entire single family customer sector.

Also, LADWP is currently working on pilot projects to test installation of Advanced Metering Infrastructure, which is the use of radio-based technology that would provide for two-way communication between water meters and LADWP's system. The Advanced Metering Infrastructure would provide real-time water meter data to both the end user and LADWP, which would allow LADWP to find leaks at an earlier stage and reduce non-revenue water losses. It would also allow customers to determine their water use more often than a traditional bi-monthly or monthly bill, and motivate them to

[5] *Id.* at 3-33.

proactively increase conservation sooner rather than after they receive their bill. Customers can also receive instant alerts if their usage is abnormally high.

***LADWP Water Conservation Potential Study*[6].** In fall of 2014, LADWP initiated the Water Conservation Potential Study, the largest and most comprehensive conservation study in the U.S. The study will provide a better understanding of how historical water conservation investment efforts have impacted existing water use efficiency and device saturation levels and help LADWP prioritize future water conservation investments in the City by identifying remaining water conservation opportunities to increase City's water use efficiency into the future. Phase 1 of the study estimated conservation potential, and data from extensive and comprehensive residential surveys were used to determine the current saturation of conserving devices and practices. For example, preliminary study results show that 80 percent of single family homes in LADWP have high efficiency toilets, indicating that toilet rebate programs are reaching a saturation threshold. For non-residential sectors, a combination of previous studies conducted by both LADWP and MWD were used, as well as expert judgement from water conservation professionals with substantial experience in commercial and industrial water use and efficiency. Phase 2, currently ongoing, will incorporate results from a comprehensive water survey of 100 City-owned facilities. City-owned facility water surveys are still being fully analyzed and will be incorporated into a revised conservation potential that will be presented in the final report.

Initial results of LADWP Water Conservation Potential Study show that the additional, naturally occurring water conservation potential, post FYE 2015, will reach approximately 71,000 AFY by FYE 2040. Naturally occurring savings represent conservation from natural replacement, new development adhering to building/plumbing codes, and ordinances for landscape water use. With increased LADWP funding for conservation programs, possibly requiring a level double of current program levels, conservation potential may increase to a cost-effective maximum potential of approximately 120,000 AFY by FYE 2040, inclusive of the 71,000 AFY of naturally occurring conservation. The maximum achievable conservation level for FYE 2040, inclusive of and beyond cost-effective maximum potential, is projected to be 218,000 AFY.

## 2.0 Water Recycling

LADWP's 2015 UWMP identifies the goal of delivering 75,400 AFY by 2040 to off-set imported water.[7] This will increase recycled water use in the City more than six-fold as a percentage of supply, from the current two percent to 13 percent by 2040. Some of the examples of the steps the City is taking in order to achieve this goal are listed below. Other projects not listed below will also contribute to recycled water use in City's service area.

[6] *Id.* at 3-34.
[7] *Id.* at 4-27.

***Recycled Water Master Planning (RWMP).*** In 2012, LADWP completed a three-year RWMP. RWMP documents guide near-term recycled water planning through 2035, as well as long-term recycled water planning for up to 50 years beyond the 2035 horizon. RWMP documents include an evaluation of recycling alternatives that integrate two strategies to increase recycling: Groundwater Replenishment (GWR), and non-potable reuse (NPR). The GWR Project will replenish San Fernando Basin (SFB) with up to 30,000 AFY of recycled water. NPR projects will increase NPR recycled water use to 45,400 AFY by 2040 by increasing deliveries to irrigation and industrial customers throughout the City.

***pLAn.*** The Mayor's Sustainable City pLAn established goals to increase recycled water use by expanding recycled water by an additional 6 million gallons per day by 2017 at Terminal Island Water Reclamation Plant, converting 85 percent of public golf courses to recycled water, developing a strategy to convert the City's lakes to recycled water and implement a pilot project, and expanding recycled water production, treatment, and distribution to incorporate indirect potable reuse and direct potable reuse.[8]

***GWR Project.*** The Final Environmental Impact Report for the GWR Project was certified by the Los Angeles Board of Water and Power Commissioners on December 6, 2016. A pilot study to optimize the recycled water purification process by evaluating various technologies and their combinations is underway. This project would replenish SFB with up to 30,000 AFY of purified recycled water from the Donald C. Tillman Water Reclamation Plant (DCTWRP). Achieving this replenishment goal would entail operating DCTWRP at the plant's full existing capacity to treat up to 80 million gallons per day of wastewater.

***The Machado Lake Pipeline Project (MLPP).*** MLPP is a part of a joint agency project between Los Angeles Sanitation, Los Angeles Bureau of Engineering, and LADWP to serve the Los Angeles Harbor area customers up to an additional 6 million gallons per day of advanced treated recycled water from an expanded Terminal Island Treatment Plant. The MLPP will construct 8,800 linear feet (LF) of 24-inch ductile iron pipeline that connects two segments of existing pipeline infrastructure within the Los Angeles Harbor Area and creates a loop between the charged southern system and the uncharged northern system. The project is split into two construction phases. Construction on Phase I will begin early 2017 and construction on Phase II will begin late 2017. Phase I includes installation of 3,300 LF of 24-inch pipeline along Figueroa Street between Harry Bridges Boulevard and Anaheim Street. Phase II includes installation of 5,500 LF of 24-inch pipeline along Quay Avenue from East Street to Anaheim Street and on Anaheim Street to Alameda Street.

***Elysian Park Water Recycling Project.*** The Elysian Park Water Recycling Project will not only irrigate the Elysian Fields Park and parts of the Elysian Park neighborhood, but also provide reliability to the recycled water system overall. Project proposes the installation of a nearly two miles of pipeline, two pump stations, and a one or two million gallon storage tank. Its construction will ensure dependable service to meet

[8] *Id.* at 4-26.

Los Angeles' growing demand for recycled water in the Metro area. Project will include demolition of the existing 500,000 gallon tank at Elysian Park and install separate new potable water pipelines for restrooms and drinking fountains in the park. Recycled water will be supplied from the Los Angeles-Glendale Water Reclamation Plant. Anticipated project completion is 2021.

***Downtown Water Recycling Project.*** The Los Angeles-Glendale Water Reclamation Plant will supply recycled water for the Downtown Water Recycling Project. Project proposes installation of up to 82,500 LF of 16-inch purple pipe into and through Downtown Los Angeles. The project will supply up to 2,170 AFY of recycled water for non-potable demands – irrigation and industrial uses. Potential anchor customers include University of Southern California and Matchmaster. Anticipated project completion is 2022.

***Recycled Water Outreach.*** The City developed RWMP documents with input from stakeholders through ongoing outreach activities beginning in 2009, including interaction with the Recycled Water Advisory Group (RWAG) and key stakeholders. Presentations were given to elected official, Kindergarten-12 grade students, and Neighborhood Councils and community groups. RWAG, made up of approximately 70 stakeholders representing neighborhood councils, environmental groups, business organizations, civic groups, and other interests has recently been integrated into the One Water L.A. Stakeholder Group. They provide the City with input and feedback on many water related issues including the water recycling program. The One Water L.A. Stakeholder Group continues to participate in workshops, facility tours, and update sessions, and provide insightful feedback to the City as projects are implemented.

## 3.0 Enhancing Stormwater Capture

Stormwater runoff from urban areas is an underutilized resource. Within the City, the majority of stormwater runoff is directed to storm drains and ultimately channeled into the ocean. Unused stormwater reaching the ocean carries with it many pollutants that are harmful to marine life. In addition, local groundwater aquifers that should be replenished by stormwater are receiving less recharge than in the past due to increased urbanization. Urbanization has increased the City's hardscape, which has resulted in less infiltration of stormwater and a decline in groundwater elevations. The estimated current stormwater capture in the City is approximately 64,000 AFY. LADWP's 2015 UWMP projects to double the amount of stormwater capture under a conservative scenario. Centralized stormwater capture projects will increase stormwater capture by approximately 35,000 AFY by year 2035.[9] Centralized stormwater capture projects are large-scale operated projects that are designed specifically to infiltrate large amounts of runoff into underlying groundwater aquifers. Distributed stormwater capture projects, such as dry-wells and cisterns, will also provide 33,000 AFY of additional stormwater capture and infiltration/reuse in the SFB, for a total of 68,000 AFY including centralized

[9] *Id.* at 7-10.

capture by year 2035.[10] Distributed stormwater/runoff capture refers to capturing localized dry and wet weather runoff.

The Stormwater Capture Master Plan defines stormwater capture targets over the next 20 years in five-year increments to year 2035, and identifies future centralized stormwater capture projects and program types for distribution stormwater capture such as on-site infiltration, on-site direct use, green streets, sub-regional infiltration, and sub-regional direct use. LADWP began its initial research for the Stormwater Capture Master Plan in the fall of 2013 and completed a final plan in late 2015. Stormwater Capture Master Plan goals were integrated into LADWP's 2015 UWMP.

Specific strategies under the Mayor's pLAn to increase stormwater capture include identifying funding mechanisms to implement the Enhanced Watershed Management Plans necessary for MS4 permit compliance, expanding use of permeable pavement sites and green streets (e.g., bioswales, infiltration cut-outs, permeable pavement, and street trees), and expanding the Rain Barrel Program.

LADWP's 2015 UWMP projects that there will be a minimum of 15,000 AFY of increased groundwater pumping in SFB due to water supply augmentation through centralized stormwater infiltration by year 2040. Anticipating that stored groundwater will rebound in response to enhanced groundwater replenishment, LADWP will work with the Upper Los Angeles River Area Watermaster to continue observing actual water levels and re-evaluate basin safe yield to allow additional increases in groundwater production over time as SFB elevations rebound.[11]

In addition, development has encroached onto waterway floodplains requiring the channelization of these waterways that once recharged the groundwater aquifers with large volumes of stormwater runoff. When the floodplains were undergoing rapid development, LADWP and the Los Angeles County Flood Control District reserved several parcels of land for use as spreading facilities. These facilities are adjacent to some of the largest tributaries of the Los Angeles River, and the Pacoima and Tujunga Washes.

During average and below average years, these spreading facilities are very effective at capturing a large portion of the stormwater flowing down the tributaries. However, they are incapable of capturing a significant portion of the flows during wet and extremely wet years. Weather patterns in Los Angeles are highly variable, with many periods of dry years and wet years. Some climate studies predict that these patterns may become more extreme in the future.

LADWP is currently partnering with other government and non-governmental agencies in various stormwater enhancement studies and projects that include the following:

[10] *Id.* at 7-10.
[11] *Id.* at 7-29.

**Completed Centralized Projects**

Implemented centralized projects have increased the amount of stormwater captured by an average of 10,600 AFY since 2013. Below is a sample of recently implemented centralized projects:

- **Sheldon-Arleta Gas Management System**
  Completed in 2009. Scope included the installation of a methane gas abatement system mitigating methane migration during groundwater recharge operations at Tujunga Spreading Grounds. Project increases regional annual average stormwater recharge by 4,000 AFY.

- **Big Tujunga Seismic Retrofit Project**
  Completed in 2012. Scope included the retrofit of the Big Tujunga Dam to meet state seismic and spillway requirements and increase the reservoir's storage capacity. Project increases regional annual average stormwater capture by 4,500 AFY.

- **Hansen Spreading Grounds Upgrade**
  Completed in 2013. Scope included combining and deepening the spreading basins as well as upgrading the intake structure to increase recharge capacity. Project increases regional annual average stormwater recharge by 2,100 AFY.

**Completed Distributed Projects**

LADWP's already implemented distributed projects that have increased the amount of stormwater captured by an average of 333 AFY. Following is a sample of recently implemented distributed projects:

- **Sun Valley Park Stormwater Infiltration Project**
  Completed in 2010. Scope included installing a stormwater pretreatment system, infiltration gallery, and retention system for infiltration. Project increases regional annual average stormwater capture by 30 AFY.

- **Elmer Avenue Neighborhood Green Street/Elmer Paseo Green Alley Stormwater Infiltration Projects**
  Completed in 2011 - Scope for Elmer Avenue Green Street included installing stormwater underground retention infiltration system under the street, and vegetated swales and rain gardens in the parkway and private property. Completed in 2013 - Scope for Elmer Paseo Green Alley included installing underground retention infiltration system and vegetated swales to increase stormwater capture. Combined projects increase regional annual average stormwater capture by 41 AFY.

- **Garvanza Park Stormwater Capture Use and Infiltration Project**
  Completed in 2012. Scope included installing a stormwater pretreatment system, infiltration gallery, and retention system for use at the Garvanza Park. Project increases regional annual average stormwater capture by 51 AFY.

- **North Hollywood Alley Retrofit BMP Demonstration Project**
  Completed in 2013. Scope included retrofitting four alleys with pervious surfaces to facilitate stormwater infiltration. Project increases regional annual average stormwater capture by 29 AFY.

- **Glenoaks-Sunland Stormwater Infiltration Project**
  Completed in 2013. This project included construction of dry wells and parkway infiltration swales along a portion of the sidewalks of Glenoaks Boulevard which currently have no storm drains. Project increases regional annual average stormwater capture by 28 AFY.

- **Woodman Avenue Median Stormwater Infiltration Project**
  Completed in 2014. Scope included replacing an existing concrete median with vegetated swales and an underground retention system for infiltration. Project increases regional annual average stormwater capture by 55 AFY.

- **Avalon Alley South**
  Completed in September 2015. This project implements low impact development (LID) stormwater capture and infiltration BMP's in the alley to capture, infiltrate, and retain stormwater runoff from a 4.3 acre area and provides stormwater capture of 1 million gallons per year (3.1 AFY). The BMPs include permeable pavers, dry wells, cisterns, and rain gardens. The Project improves water quality, attenuates peak storm flows, and increases stormwater capture and water supply and is a joint partnership between the City of Los Angeles Sanitation, the Trust for Public Land, and the Council for Watershed Health in South Los Angeles.

- **Sun Valley Economic Development Administration Public Improvement Project**
  Completed in 2016. Scope included the installation of 46 dry wells within the public right of way in an area with limited storm drainage. Project increases regional annual average stormwater capture by 93 AFY.

- **Broadway Greenway**
  Completed in 2016. The Project is a pilot phase of a larger project being explored by the Water Replenishment District (WRD) involving strategic implementation of neighborhood BMP retrofits through the region. Four levels of BMPs are being developed. This includes stormwater capture infrastructure on: residential parcel-based scale, neighborhood-scale, green street commercial, and a sub-regional scale infiltration gallery. The sub-regional BMP will capture up to a 2 inch rain event from at 58 acre tributary area. The Project is expected to recharge

groundwater aquifers by 40 AFY. The project was implemented by the City's Bureau of Engineering.

- **Hollywood/Los Angeles Beautification Stormwater Capture Project** This is a demonstration project to encourage stormwater capture. The City of Los Angeles Department of Public Works, Bureau of Street Services and LASAN will provide in-kind design services, while the Sun Valley Beautiful Committee, Council District 6, and the Los Angeles Unified School District (LAUSD) are project sponsors and partners. Project increases regional annual average stormwater capture by 6 AFY.

**Current/Future Centralized Projects**

Within the next five years, the following centralized projects are expected to be implemented that will provide an estimated 25,279 AF of increased stormwater capture annually. Following is a short description of these future projects:

- Big Tujunga Dam Sediment Removal Project
- Branford Spreading Basin Upgrade
- Bull Creek Stormwater Capture Project
- Canterbury Power Line Easement Stormwater Capture Project
- East Valley Baseball Stromwater Capture Project
- Fernangeles Park Stormwater Capture Project
- Lopez Spreading Grounds Upgrade
- Pacoima Dam Sediment Removal Project
- Pacoima Spreading Grounds Upgrade
- Penmar Water Quality Improvement Project
- Riviera County Club Stormwater Capture Project
- Rory M. Shaw Wetlands Park Project (Strathern Pit)
- Tujunga Spreading Grounds Upgrade (in construction)
- Valley Generating Station Stormwater Capture Project
- Whitnall Highway Power Line Easement Stormwater Capture Project

**Current/Future Distributed Projects**

Within the next five years, the following distributed projects are expected to be implemented that will provide an estimated 1,659 AFY of increased stormwater capture. Below is a short description of these future projects:

- Agnes Avenue – Vanowen to Kittridge Stormwater Capture Project
- Arundo Donax Removal Project (in construction)
- Branford Street – Laurel Canyon to Pacoima Wash Stormwater Capture Project
- Burbank Boulevard Stormwater Capture Project
- Glenoaks and Filmore Stormwater Capture Project
- Glenoaks-Nettleton Stormwater Infiltration Project

- Great Street – Hollywood Avenue – La Brea to Gower Project
- Great Street – Lankershim Boulevard (Chandler to Victory) Project
- Great Street – Reseda Boulevard – Plummer to Parthenia Project
- Great Street – Van Nuys Boulevard (Laurel Canyon to San Fernando) Project
- Great Street – Western Avenue – Melrose to 3rd Project
- Laurel Canyon Boulevard Green Street Stormwater Infiltration Project (in construction)
- LAUSD Conserving for Our Kids Program (in construction)
- Maclay Middle School – LAUSD Project
- Northridge Middle School Project
- Tyrone Yard – New LADWP Valley Center Project
- Valley Center Stormwater Capture Project
- Van Nuys Boulevard Median Stormwater Capture Project
- Victory-Encino Stormwater Infiltration Project
- Victory-Goodland Median Stormwater Capture Project
- Water LA Phase 2
- Whitnall Gardens Project

## 4.0 Accelerating Clean-Up of SFB

LADWP groundwater production wells in SFB have been impacted by contamination caused by improper storage, handling and disposal of hazardous chemicals used in the aircraft manufacturing industry, as well as commercial activities associated with automobile and equipment repair, dry cleaners, paint shops, chrome plating, textile manufacturing and fuel storage and dispensing dating back to the 1940s.

Since the 1980 discovery of volatile organic compound (VOC) contamination of groundwater in SFB, LADWP has been working with state and federal agencies to contain and remediate man-made contaminants in SFB. Chlorinated solvents such as trichloroethylene (TCE), perchloroethylene (PCE) and carbon tetrachloride account for the majority of this groundwater contamination.

In 2009, LADWP began an $11.5 million, six-year study and development of a comprehensive remediation and cleanup strategy for all groundwater basin contamination in SFB. This study was completed in February 2015.[12]

***Development of State-of-the-Art Groundwater Basin Remediation Facilities***

- Based on the available groundwater quality information, a groundwater basin remediation program consisting of centralized as well as localized/well head remediation facilities will be needed for public and environmental benefits as well as to prevent further loss of groundwater.

[12] *Id.* at 6-9.

- Design and construction of the groundwater basin remediation facilities is estimated to cost approximately $600 million, and operation and maintenance is estimated to cost an additional $50 million per year.

***Groundwater and Treatment System Monitoring***

- In order to fully characterize SFB groundwater quality as required by SWRCB Board's Division of Drinking Water guidelines and policies, LADWP has drilled 25 new monitoring wells in SFB to fill in data gaps and utilized a network of over 70 existing monitoring and production wells.

- Cost to install the monitoring wells is approximately $22 million.

With completion of SFB groundwater characterization, LADWP is proceeding with the necessary environmental reviews, design, permitting, construction, and start-up of the groundwater basin remediation program to effectively clean and remove contaminants from SFB. The groundwater basin remediation program is anticipated to be operational by FYE 2022.

LADWP's groundwater remediation facilities now operating within SFB include:

***NHOU.*** Under the direction of USEPA, LADWP operates and maintains NHOU pursuant to a Cooperative Agreement between the two agencies. Since the 1980 discovery of VOC contamination in SFB, LADWP worked closely with the state and federal regulators to implement facilities that will contain and remediate the contaminant plume. NHOU began operations in the late-1980s utilizing an aeration tower for VOC removal followed by vapor-phase Granular Activated Carbon (GAC) to control air emissions. However, changing conditions in the aquifer and discovery of new contaminants including Hexavalent Chromium and 1,4 dioxane, found in concentrations greater than state health standards, have impacted a number of NHOU production wells and continues to threaten other wells. In response to the continued movement of the contaminated groundwater and the presence of new contaminants in the NHOU, EPA conducted a Focus Feasibility Study (FFS) to evaluate alternatives for improving the groundwater cleanup plan. Following completion of the FFS in 2009, EPA signed the 2009 Record of Decision (ROD) selecting the Second Interim Remedy for the NHOU. The availability of new information regarding the nature and the extent of the contamination plume within the NHOU has allowed EPA to refine its understanding of the extent of the groundwater contamination. As a result, EPA has recently proposed to expand the second remedy to increase extraction rate from 2000 gallons per minute (gpm) to 6500 gpm, add more extraction wells, and design a more efficient treatment system that will treat for emerging contaminants and ensure more reliable and effective remedy.

- ***Liquid-Phase GAC Pilot Treatment Plant at Tujunga Wellfield.*** The Liquid-Phase GAC Pilot Treatment Plant removes VOC from two of the twelve production wells in the Tujunga Wellfield, and treats the extracted groundwater for potable use. The pilot facility treats approximately 8,000 gallons-per-minute of groundwater, removes contaminants, and discharges the treated effluent into LADWP's water distribution system for beneficial use pursuant to California Water Code. This pilot facility is a joint project with MWD to demonstrate the effectiveness of utilizing certain liquid phase GAC media for removal of VOC from the groundwater.

- ***Pollock Wells Treatment Plant.*** The plant provides four liquid-phase GAC vessels to remove VOC contamination from two groundwater wellheads. LADWP has identified hexavalent chromium as an emerging contaminant that may impair the operation of the Pollock Wells Treatment Plant. In response, LADWP has initiated studies and the development of additional remediation systems to remove the hexavalent chromium and other emerging contaminants that are not addressed by the GAC treatment system.

The overall purpose of the San Fernando Groundwater Basin Remediation Project is to restore and protect the full use of the San Fernando Groundwater Basin as a source of water consistent with LADWP's long-term water rights and historic groundwater use.

## Water Supplies

The Los Angeles Aqueducts (LAA), local groundwater, purchased water from MWD, and recycled water are the primary sources of water supplies for the City. Table III shows LADWP water supplies from 2007 to 2016 from these sources. The total required water supply to meet water demand shows an overall declining trend over this time period due to reductions in total demand. However, sufficient water supplies were available in each of the years to meet the total demand. In 2009, the total water demand decreased due to conservation efforts by mandatory conservation imposed in the City following drier hydrologic conditions coinciding with an economic recession. In 2013, drought conditions returned and have triggered State and City mandatory conservation measures.

**TABLE III**
**LADWP Water Supply**

| Calendar Year | Los Angeles Aqueducts | Local Groundwater | MWD | Recycled Water | Transfer, Spread, Spills, and Storage | Total |
|---|---|---|---|---|---|---|
| 2007 | 127,392 | 88,041 | 439,353 | 3,595 | -57 | 658,438 |
| 2008 | 148,407 | 64,604 | 427,422 | 7,048 | 1,664 | 645,817 |
| 2009 | 137,261 | 66,998 | 351,959 | 7,570 | 554 | 563,234 |
| 2010 | 251,126 | 68,346 | 205,240 | 6,900 | -938 | 532,550 |
| 2011 | 357,752 | 49,915 | 119,481 | 7,708 | -153 | 535,009 |
| 2012 | 166,858 | 59,109 | 326,123 | 5,965 | 1,182 | 556,873 |
| 2013 | 64,690 | 66,272 | 438,534 | 9,253 | -2,404 | 581,153 |
| 2014 | 63,960 | 96,394 | 391,325 | 11,307 | 2,080 | 561,515 |
| 2015 | 33,236 | 80,155 | 378,439 | 9,829 | 432 | 500,432 |
| 2016 | 95,566 | 72,503 | 314,301 | 9,095 | -981 | 492,447 |

Note: Units are in AF

## Los Angeles Aqueducts

Snowmelt runoff from the Eastern Sierra Nevada Mountains is collected and conveyed to the City via LAA. LAA supplies come primarily from snowmelt and secondarily from groundwater pumping, and can fluctuate yearly due to the varying hydrologic conditions. In recent years, LAA supplies have been less than the historical average because of environmental restoration obligations in Mono and Inyo Counties.

The City holds water rights in the Eastern Sierra Nevada where LAA supplies originate. These supplies originate from both streams and from groundwater. In 1905, the City approved a bond measure for purchase of land and water rights in the Owens River Valley. By 1913, the first LAA began its deliveries of water to the City primarily from surface water diversions from the Owens River and its tributaries. Historically, these supplies were augmented from time to time by groundwater extractions from beneath the lands that the City had purchased in the Owens Valley.

In 1940, the first LAA was extended north to deliver Mono Basin water to the City pursuant to water rights permits and licenses granted by the SWRCB. In 1970, the second LAA was completed increasing total delivery capacity of the LAA system to approximately 561,000 AF per year. The second LAA was to be filled by completing the Mono Basin diversions originally authorized in 1940, by a more effective use of water for agricultural purposes on City-owned lands in the Owens Valley and Mono Basin and by increased groundwater pumping from the City's lands in the Owens Valley.

In 1972, Inyo County filed a CEQA lawsuit challenging the City's groundwater pumping program for the Owens Valley. The lawsuit was finally ended in 1997, with the County of

Inyo and the City entering into a long-term water agreement for the management of groundwater in the Owens Valley in 1991. That water agreement, entered as a judgment of the Superior Court in the County of Inyo (County of Inyo vs. City of Los Angeles, Superior Court No. 12908) outlines the management of the City's Owens Valley groundwater resources. As a result of this water agreement and subsequent MOU, LADWP has dedicated 37,000 AF of water annually for enhancement and mitigation projects throughout Owens Valley which includes the re-watering of 62 miles of the Lower Owens River. LADWP also provides approximately 80,000 AF of water annually for other uses in the Owens Valley such as irrigation, town water supplies, stockwater, wildlife and recreational purposes.

Further, in December 1989, the Superior Court entered an injunction, ordering LADWP to allow sufficient flow to pass through the Mono Basin diversion facilities to maintain water level in Mono Lake at 6,377 feet from sea level and also to restore streams and protection of fishery in these streams. As a result, the City did not export any water from Mono Basin until 1994, when SWRCB issued Decision 1631. In September 1994, citing compliance with the public trust doctrine, the SWRCB issued Decision 1631, an amendment to the license for LADWP exports from Mono Basin which placed conditions on LADWP's water gathering activities from Mono Basin. Under Decision 1631, LADWP's allowable amount of export for a given runoff year (RY), April - March is dependent on the Mono Lake elevation. For RY 2016-2017, LADWP plans to export approximately 4,500 AF of water from Mono Basin, the same amount as for RY 2015-2016, as Mono Lake's elevation measured on April 1, 2017 was below 6,380 feet but above 6,377 feet. LADWP has implemented an extensive restoration and monitoring programs in Mono Basin to increase the level of Mono Lake and to improve stream conditions, fisheries, and waterfowl habitats in Walker, Parker, Rush and Lee Vining Creeks. With reduced diversions from the Mono Basin and favorable hydrologic conditions, Mono Lake's elevation has risen overtime. Once the elevation of Mono Basin reaches 6,391-feet above mean sea level, a moderate increase in water exports from the Mono Basin may be permitted.

In July 1998, LADWP and the Great Basin Unified Air Pollution Control District (GBUAPCD) entered into a Memorandum of Agreement to mitigate dust emissions from Owens Lake. Diversion of water from Owens River, first by farmers in the Owens Valley and then by the City beginning in 1913, resulted in the exposed lakebed becoming a major source of windblown dust. LADWP has spent $1.6 billion and used substantial quantities of water since it started diverting water from LAA to mitigate dust emissions at Owens Lake. As of December 31, 2008, LADWP mitigated dust emissions from 29.8 square-miles of Owens Lake in accordance with GBUAPCD's 2003 revised State Implementation Plan. As of April 1, 2010, LADWP mitigated an additional 9.2 square - miles in accordance with GBUAPCD's 2008 State Implementation Plan. Upon completion of Phase 8 in October 2012, LADWP has mitigated dust emissions from a total of approximately 42 square-miles of Owens Lake. Phase 7a was completed by the regulatory compliance deadline of December 31, 2015, and upon its completion, LADWP has mitigated dust emissions on 45 square-miles. Phase 7a is a water neutral project.

On November 14, 2014, an historic agreement between LADWP and GBUAPCD was reached which for the first time established an upper limit of 53.4 square miles that LADWP could potentially be ordered to mitigate dust emissions from Owens Lake playa by the GBUAPCD. As part of this historic agreement, LADWP has agreed to mitigate dust emissions for an additional 3.62 square miles of Owens Lake playa. The Phase 9/10 Project is to be completed by December 31, 2017, and is anticipated to result in further water conservation at Owens Lake through increasing use of water efficient and waterless dust mitigation measures. Upon completion of Phase 9/10 Project, LADWP will mitigate approximately 48.6 square miles of dust missions in Owens Lake playa. Hence, GBUAPCD's potential future dust mitigation orders to LADWP cannot exceed an additional 4.8 square miles. The agreement allows LADWP to use water efficient and waterless dust mitigation measures, while maintaining existing wildlife habitat on the lakebed. As a result, LADWP expects to save significant amounts of water in coming years with implementation of the Owens Lake Master Project and other water conservation projects.

Average deliveries from LAA system have been approximately 111,293 AF of water annually from FY 2011/12 to 2015/16. During this period, the record low snowpack for LAA watershed in the Eastern Sierra Nevada Mountains was recorded on April 1, 2015. Supply conditions have changed drastically since 2015. Snowpack in the Eastern Sierra was at 203 percent of an average year on April 1, 2017. On March 20, 2017, Mayor Garcetti had proclaimed a state of local emergency for LAA as a response to the snowpack levels in the Eastern Sierra. The proclamation was issued to assist LADWP in taking immediate steps to protect infrastructure and manage runoff in the Owens Valley including, but not limited to, protection of facilities and diversion of conveyance flows.

The average annual long-term LAA delivery between 2015 and 2040, using the 50-year average hydrology from FY 1961/62 to 2010/11, is expected to be approximately 278,000 AFY and gradually decline to 267,000 AFY due to projected climate change impacts. However, with the anticipated completion of the Owens Lake Master Project by 2024, the projected LAA delivery may increase to 286,000 AFY due to water conserved at Owens Lake which would off-set most of the anticipated long-term losses.[13]

## Groundwater

The SFB and Sylmar Basin are subject to the judgment in the City of San Fernando vs. the City of Los Angeles, et al. Groundwater pumping by LADWP and other parties is tracked and reported to the court-appointed Upper Los Angeles River Area (ULARA) Watermaster. The Central Basin is also subject to court judgments. Pumping is reported to the Water Replenishment District of California (WRD), the administrative member of the Central Basin Water Rights Panel.

[13] *Id.* at 5-15.

SFB is the largest of four basins within ULARA. The basin consists of 112,000-acres of land and comprises 91.2 percent of ULARA valley fill. The City has accumulated 537,622 AF of stored groundwater in SFB as of October 1, 2014. This is water the City can withdraw from the basin during normal and dry years or in an emergency, in addition to the City's approximately 87,000 AF annual entitlement in the basin. With SFB remediation facilities in operation by FYE 2022, groundwater storage credit will be used to maximize pumping in the future above City's annual entitlement in SFB. The majority of the City's groundwater is extracted from SFB. Sylmar Basin is located in the northern part of ULARA, consists of 5,600 acres, and comprises 4.6 percent of ULARA valley fill. City's current annual entitlement per latest Sylmar Safe Yield is 3,570 AF. Sylmar Basin production will increase to 4,170 AFY from FYE 2016 to FYE 2039 to utilize groundwater the City has accumulated into storage and then return to the entitlement of 3,570 AFY in FYE 2040.[14]

A Court decision on pumping rights in ULARA was implemented in a judgment on January 26, 1979. Enclosed with the assessment are copies of those pages from the judgment showing the entitlements (see Appendix D). Further information about ULARA is in the ULARA Watermaster Report. ULARA Watermaster Report and some background information on the judgment are available for review at the office of the ULARA Watermaster or on-line at www.ularawatermaster.com.

City additionally has adjudicated rights to extract groundwater from the Central Basin. Annual entitlement to Central Basin is 17,236 AF. City has accumulated groundwater into storage in Central Basin, and pumping can be temporarily increased until stored water credits have been expended.[15] See Appendix D for copies of relevant portions of the third amended judgment. Judgment is available for review on the WRD Web site at http://wrdwater.org/.

For the period of July 2014 to June 2015, City extracted 80,097 AF and 6,948 AF from the San Fernando and Central Basins, respectively. City plans to continue production from its groundwater basins in the coming years to offset reductions in imported supplies. However, extraction from the basins may be limited by water quality, sustainable pumping practices, and groundwater elevation.

Groundwater produced by City from the San Fernando, Sylmar, and Central Basins for the last available five years are shown on Table IV, as well as groundwater pumping projections for average, single-dry, and multi-year dry weather conditions in five-year increments. Table IV excludes 15,000 AFY of anticipated pumping in SFB from stormwater recharge as well as 30,000 AFY of additional groundwater recharge with highly treated water from DCTWRP planned for 2024 and beyond.

[14] *Id.* at 11-4.
[15] *Id.* at 6-24.

**TABLE IV**
**Local Groundwater Basin Supply**

| Fiscal Year (July-June) | San Fernando | Sylmar | Central |
|---|---|---|---|
| 2010-2011 | 44,029 | 225 | 5,099 |
| 2011-2012 | 50,244 | 1,330 | 9,486 |
| 2012-2013 | 50,550 | 1,952 | 6,310 |
| 2013-2014 | 68,784 | 891 | 9,727 |
| 2014-2015 | 80,097 | 0 | 6,948 |
| 2019-2020* | 90,000 | 4,170 | 18,500 |
| 2024-2025* | 88,000 | 4,170 | 18,500 |
| 2029-2030* | 84,000 | 4,170 | 18,500 |
| 2034-2035* | 92,000 | 4,170 | 18,500 |
| 2039-2040* | 92,000 | 3,570 | 18,500 |

Note: Units are in AF,
*projected production: LADWP 2015 UWMP Exhibit 6l

## MWD

MWD is the largest water wholesaler for domestic and municipal uses in Southern California. As one of 26 member agencies, LADWP purchases supplemental water from MWD in addition to the supplies from local groundwater and LAA. MWD imports a portion of its water supplies from Northern California through the State Water Project's (SWP) California Aqueduct and from the Colorado River through MWD's own Colorado River Aqueduct (CRA). LADWP will continue to rely on MWD to meet its current and future water needs.

In ongoing efforts to evaluate MWD's own import reliability, an assessment was done to address changes in demand and supply conditions, and to provide additional resource reserves to mitigate against uncertainties in demand projections and risks in implementing supply programs. All these efforts went into MWD's 2015 UWMP.

All 26 member agencies have preferential rights to purchase water from MWD. Pursuant to Section 135 of MWD Act, "Each member public agency shall have a preferential right to purchase from the district for distribution by such agency, or any public utility therein empowered by such agency for the purpose, for domestic and municipal uses within the agency a portion of the water served by the district which shall, from time to time, bear the same ratio to all of the water supply of the district as the total accumulation of amounts paid by such agency to the district on tax assessments and otherwise, excepting purchase of water, toward the capital cost and operating expense of the district's works shall bear to the total payments received by the district on account of tax assessments and otherwise, excepting purchase of water, toward such capital cost and operating expense." This is known as preferential rights.

As of June 30, 2017, LADWP has a preferential right to purchase 18.51 percent of MWD's total water supply.

LADWP has worked with MWD in developing a plan for allocating water supplies during periods of shortage. On February 12, 2008, MWD Board adopted its Water Supply Allocation Plan (WSAP). LADWP supported the adoption of this plan to acquire its dry weather condition supplies from MWD.

In response to 2009 regulatory restrictions on water supplies from Northern California, MWD Board announced on April 14, 2009, that supply deliveries to the member agencies would be reduced by 10 percent. Reduced supply allocation was to be effective from July 1, 2009 through June 30, 2010, but in April 2010, MWD Board approved an extension of the reduced supply allocation through June 30, 2011, primarily to restore storage balances in MWD's groundwater and surface storage facilities.

On March 31, 2011, California Governor Jerry Brown declared an end to the statewide drought emergency that had been proclaimed earlier on February 27, 2009, by then Governor of California Arnold Schwarzenegger. MWD's Board subsequently voted on April 12, 2011, to end implementation of the 2010/11 water supply allocation. In the same decision, MWD Board also voted against implementing a water supply allocation for 2011/12. These actions restored full imported water deliveries to member agencies without risk of allocation penalties effective April 2011.

On January 17, 2014, Governor Brown proclaimed a drought State of Emergency. At the end of March 2015, state hydrologists measured a record low five percent of normal snow pack in the Sierra Nevada Mountains. As a result, on April 1, 2015, Governor Brown issued Executive Order B-29-15 to achieve a statewide 25 percent reduction compared to 2013 usage levels in urban water use through February 28, 2016. On May 18, 2016, due to improved hydrologic conditions, SWRCB adopted a revised emergency water conservation regulation, effective June 2016 through February 2017, requiring locally developed conservation standards based upon each agency's specific circumstances.

The record dry and hot conditions of 2014 significantly impacted the water resources of both the State of California and MWD. DWR limited supplies from SWP to only five percent of the contractors' SWP Table A amounts in 2014. This allocation was the lowest ever in the history of SWP. MWD was able to meet demands in 2014 by relying heavily on storage reserves to make up for the historically low allocation on SWP. MWD's dry-year storage reserves ended 2014 at approximately 1.2 million AF.

On April 14, 2015, to support Governor Brown's Executive Order B-29-15, and to reduce withdrawals from MWD's dry-year storage reserves, MWD implemented WSAP at a Level 3 Regional Shortage Level, effective July 1, 2015, though June 30, 2016. MWD's dry-year storage reserves ended 2015 at approximately 0.87 million AF.

On May 10, 2016, citing the improved water supply conditions and reduced water use due to conservation, MWD voted to end the current WSAP allocation and rescind WSAP Regional Shortage Level 3 and declared a Condition 2 Water Supply Alert for allocation year 2016/17. MWD, however, called for member agencies to continue with conservation efforts to safeguard against future dry years. On April 9, 2017, citing the improved water supply conditions, the actions taken by the Governor and the projected storage reserves, MWD voted to declare a Condition 1 Water Supply Watch.

Purchases from MWD have averaged 64 percent of the City's water supply over a five-year period from FY 2011/12 to 2015/16. The sustainable pLAn calls for a reduction in purchased imported water by 50 percent by 2025 from the FY 2013/14 level, which was approximately 441,870 AF. To meet targets established by the pLAn, LADWP plans to reduce water demand through increased conservation as well as increase local supply development. Local supply development includes enhancing the ability for groundwater pumping through increased stormwater capture projects and groundwater replenishment with highly treated recycled water as well as remediation of contaminated groundwater supplies in SFB. LADWP also plans to increase recycled water use for non-potable purposes. With these initiatives and under average hydrologic conditions, LADWP's 2015 UWMP projects MWD purchases to be approximately 65,930 AFY in 2025.

***Recent Issues Related to the State Water Project***

Federal Endangered Species Act (ESA) Litigation filed by several environmental interest groups in the United States District Court for the Eastern District of California alleged that existing biological opinions and incidental take statements inadequately analyzed impacts on listed species under the Federal ESA. On May 25, 2007, Federal District Judge Wanger issued a decision on summary judgment finding the United States Fish and Wildlife Service's (USFWS) biological opinion for Delta smelt was invalid. On December 14, 2007, Judge Wanger issued his Interim Remedial Order requiring that SWP and Central Valley Project operate according to certain specified criteria until a new biological opinion for the Delta smelt is issued. USFWS released the new biological opinion on December 15, 2008. Based on the Water Allocation Analysis released by DWR on December 19, 2008, which analyzed the biological opinion's effects on SWP operations, export restrictions under median hydrologic conditions reduce deliveries to MWD by approximately 500,000 AF.

MWD and other impacted agencies and stakeholders filed separate lawsuits in federal district court challenging the biological opinion, which the federal court consolidated under the caption "Delta Smelt Consolidated Cases." On December 14, 2010, Judge Wanger issued a decision on summary judgment finding that there were major scientific and legal flaws in the Delta smelt biological opinion and remanded the biological opinion to USFWS for reconsideration. The court's decision invalidated some of the restrictions on project operations contained in the Delta smelt biological opinion. On May 18, 2011, Judge Wanger issued a final decision, amended judgment directing USFWS to complete a new draft biological opinion by October 1, 2011, and to complete a final biological opinion with environmental documentation by December 1, 2013. Later

stipulations and orders changed the October 1, 2011, due date for a draft biological opinion to December 14, 2011, and changed the December 1, 2013, due date for the final biological opinion to December 1, 2014.

A draft biological opinion was issued on December 14, 2011. The draft biological opinion deferred specification of a reasonable and prudent alternative and an incidental take statement pending completion of environmental impact review under the National Environmental Policy Act (NEPA). The federal defendants and environmental interveners appealed the final judgment invalidating the 2008 Delta smelt biological opinion to the United States Court of Appeals for the Ninth Circuit. SWP and Central Valley Project contractor plaintiffs, including MWD, cross-appealed from the final judgment. Those appeals and cross-appeals were argued on September 10, 2012. On March 13, 2014, the Ninth Circuit reversed in part and affirmed in part the district court's decision. The Ninth Circuit reversed those portions of the district court decision which had found the 2008 Delta smelt biological opinion to be arbitrary and capricious, and held, instead, that the 2008 biological opinion was valid and lawful. MWD's deliveries from SWP were previously restricted under the 2008 biological opinion for a period prior to 2011. One practical result of the Ninth Circuit's decision was to legally approve the water supply restrictions in the 2008 biological opinion. These water supply restrictions could have a range of impacts on MWD's deliveries from SWP depending on hydrologic conditions. MWD and others subsequently filed motions for reconsideration of the Ninth Circuit's decision.

On May 25, 2010, the court granted the plaintiffs' request for a preliminary injunction in the Consolidated Salmon Cases, restraining enforcement of two requirements under the salmon biological opinion that limit exported water during the spring months based on San Joaquin River flows into the Bay-Delta and reverse flows on the Old and Middle Rivers. Hearings on motions for summary judgment in the Consolidated Salmon Cases were held on December 16, 2010. On September 20, 2011, Judge Wanger issued a decision on summary judgment, finding that the salmon biological opinion was flawed, and that some, but not all, of the project restrictions in the biological opinion were arbitrary and capricious. On December 12, 2011, Judge O'Neill (who was assigned to this case following Judge Wanger's retirement) issued a final judgment in the Consolidated Salmon Cases. The final judgment remands the 2009 salmon biological opinion to the National Marine Fisheries Service. It also directs that a new draft salmon biological opinion be issued by October 1, 2014, and that a final biological opinion be issued by February 1, 2016, after completion of environmental impact review under NEPA. The due date for the salmon biological opinion was later extended to February 1, 2017.

In January and February 2012, the federal defendants and environmental interveners filed appeals of the final judgment in the Consolidated Salmon Cases, and SWP and Central Valley Project contractors filed cross-appeals. On December 22, 2014, the Ninth Circuit reversed in part and affirmed in part the district court's decision. The Ninth Circuit reversed those portions of the district court decision which had found the 2009 salmon biological opinion to be arbitrary and capricious, and held, instead, that the 2009

biological opinion was valid and lawful. Any adverse impacts of this ruling on MWD's SWP supplies have not been determined.

These events have highlighted the challenges that water suppliers throughout the state currently face regarding supplies from the Delta.

On November 28, 2016, in consideration of several factors including existing storage in State Water Project conservation reservoirs, conservation constraints such as the conditions of the recent Biological Opinions for delta smelt and salmonids, the longfin smelt incidental take permit, and 2017 contractor demands, DWR announced an initial SWP allocation of 20 percent for 2017. On December 21, 2016, due to recent precipitation, runoff and water supply conditions, DWR increased the allocation from 20 percent to 45 percent, and on January 18, 2017, announced another increase from 45 to 60 percent for similar reasons. On April 14, 2017, DWR increased the allocation from 60 to 85 percent.

On February 7, 2017, the main flood control spillway at Oroville Dam, a primary reservoir on the SWP, experienced significant damage as DWR increased releases to manage higher inflows driven by continued precipitation in the Feather River basin. DWR halted releases on this spillway and diverted water over the emergency spillway for the first time ever. However, the emergency spillway quickly eroded, causing officials to order the temporary evacuation of downstream residents while ramping up water releases over the main spillway to control lake levels. The evacuation order was lifted on February 14, 2017. A multi-agency investigation and recovery design followed and demolition of Oroville Dam's flood-control spillways began in May, 2017. Repairs are expected to take two years, although DWR officials say the spillways will be functional by the November 1, 2017 start of the rainy season. Work to be completed prior to that time will include reinforcing of the structurally sound upper portion of the main spillway, demolition and replacement of the badly damaged lower portion of the main spillway, and construction of a cut-off wall downhill of the emergency spillway. The upper section of the main spillway will be replaced in 2018. Despite the damage to the main spillway, water supplies are not expected to be adversely affected. This would result in an allocation that is higher than average, and higher than any allocation since 2011. Future water supplies are expected to be primarily dependent on hydrology.

### *Delta Policy*

In November 2009, the State Legislature and then Governor Arnold Schwarzenegger passed the 2009 Comprehensive Water Package, which set a statewide conservation target for urban per capita water use of 20 percent reductions by 2020 and consisted of four policy bills and an $11.14 billion bond proposal designed to ensure a reliable water supply for California's future and to restore the Delta and other ecologically sensitive areas.

Senate Bill (SB) X7-1 (Simitian) of the 2009 Water Package established the coequal goals for the Delta: to provide a more reliable water supply for California, and to protect,

restore, and enhance the Delta ecosystem. SB X7-1 also established a framework to achieve the co-equal goals for the Delta by creating a new Delta governance structure - including the Delta Stewardship Council, Delta Conservancy, and Delta Protection Commission - and laying out a process for determining the consistency of the Bay Delta Conservation Plan (BDCP) with the co-equal goals.

Implementation of the four policy bills in the 2009 Water Package achieved several major milestones. For example, the Delta Plan, a comprehensive, long-term management plan for the Delta, was adopted by the Delta Stewardship Council on May 16, 2013.

The goal of BDCP was to provide the basis for the issuance of endangered species permits for the operation of SWP and Central Valley Project, and for Delta conveyance improvements.

On April 30, 2015, state and federal agencies proposed a new sub-alternative, Alternative 4A, which would replace Alternative 4 (the proposed BDCP) as the State's proposed project. Alternative 4A reflected the state's proposal to separate the conveyance facility and habitat restoration measures into two separate efforts: California WaterFix and California EcoRestore.

The California EcoRestore is a California Natural Resources Agency initiative to advance the restoration of at least 30,000 acres of Sacramento-San Joaquin Delta habitat by 2020. The restoration will be implemented on an accelerated timeline independent of the proposed water conveyance facilities included in the California WaterFix.

The environmental analysis of California WaterFix, as well as two other additional alternatives, and updated information from the 2013 BDCP Draft EIR/EIS were included in BDCP/California WaterFix Partially Recirculated Draft EIR/Supplemental Draft EIS (RDEIR/SDEIS). The RDEIR/SDEIS was released for public review on July 10, 2015. The comment period ended on October 30, 2015.

The California Department of Water Resources and the U.S. Bureau of Reclamation (BOR), the Lead Agencies, have completed the Bay Delta Conservation Plan/California WaterFix Final EIR/EIS. The Lead Agencies for the EIR/EIS analyzed in detail 18 action alternatives, as well as the No Action Alternative. Alternative 4A, or California WaterFix, is the preferred alternative. The Final EIR/EIS, released on December 22, 2016, discusses potential environmental impacts, and identifies mitigation measures that would help avoid or minimize impacts. It also provides responses to all substantive comments received on the 2013 Draft EIR/EIS and 2015 RDEIR/SDEIS. The Notice of Availability of the Final EIR/EIS was published by BOR in the Federal Register on December 30, 2016. On June 26, 2017, the U.S. Fish and Wildlife Service and the National Marine Fisheries Service issued final biological opinions on the proposed construction of California WaterFix. These biological opinions allow California WaterFix to continue moving toward construction as early as 2018 and conclude that construction

and operations of California WaterFix, as proposed, would not jeopardize the continued existence of ESA-listed species or destroy or adversely modify critical habitat for those species. The biological opnions recognize the uncertainty inherent in the dynamic ecology of the Delta and include a strong adaptive management component to guide future operation of the new intakes. Once the EIR has been certified through completion of the CEQA process, the California Department of Fish and Wildlife will be able to consider whether to issue an "incidental take" permit for the construction and operation of California WaterFix under the California Endangered Species Act.

On July 21, 2017, DWR issued its Notice of Determination (NOD) for California WaterFix, indicating the project meets requirements of CEQA. In addition to the NOD certification, DWR filed a validation action with the Sacramento County Superior Court to affirm the department's authority to, among other things, issue revenue bonds to finance the planning, design, construction, and other capital costs of California WaterFix. The validation action will provide assurances to the financial community for the sale of the revenue bonds for California WaterFix.

Responsibilities of entities created by SB X7-1 are as follows:

- Delta Stewardship Council – Independent agency of the state composed of seven members with the responsibility to oversee and coordinate state agency actions within the Delta.
  - Develop a Delta Plan that will include all state and federal Delta ecosystem, flood management, water supply, and local economic sustainability efforts and serve as a guide for state and local agencies to ensure that their actions are consistent with their policies.
  - Develop performance measures to assess the progress of achieving the goals of the Delta Plan.
  - Determine compliance with the Delta Plan and serve as the appellate body in the event of disputes over the consistency of a project with the Delta Plan.
  - Ensure consistency of BDCP with the co-equal goals of water supply reliability and Delta restoration.

- Delta Conservancy – State entity governed by an eleven-member board with the responsibility to implement ecosystem restoration in the Delta and support efforts to advance environmental protection and the economic well-being of Delta residents.
  - Develop and adopt a strategic plan that will coordinate investments in the Delta's natural and cultural resources.
  - Promote the economic vitality in the Delta through increased tourism and the promotion of Delta legacy communities.
  - Promote environmental education about, and the public use of, public lands in the Delta.

- Delta Protection Commission – State commission with fifteen members charged with recognizing, preserving, protecting, and enhancing the unique resources of the Delta as an evolving place.
  - Provide a forum for Delta residents to engage in decisions regarding actions to recognize and enhance the cultural, recreational, and agricultural resources of the Delta.
  - Adopt an economic sustainability plan for the Delta, which is to include flood protection recommendations to state and local agencies, and is to be included in the Delta Stewardship Council's Delta Plan.

- Delta Watermaster
  - Exercise authority of the SWRCB and monitor and enforce orders, as well as license and permit terms and conditions, relating to water diversions in the Delta.

- Delta Independent Science Board – Standing board of no more than ten members made up of nationally or internationally prominent scientists with appropriate expertise to evaluate a broad range of scientific programs that support adaptive management of the Delta.
  - Provide oversight of the scientific research, monitoring, and assessment programs that support adaptive management of the Delta.

- Delta Science Program – Led by a Delta Stewardship Council-appointed lead scientist.
  - Provide unbiased scientific information to inform decision-making in the Delta.

The $11.14 billion "Water Bond" was originally scheduled to be on the 2010 statewide ballot for voter consideration, but was postponed twice – initially to 2012 and then to 2014. In 2014 the legislature replaced the 2010 Water Bond with a new bond measure to provide $7.545 billion to fund investments in water projects and programs as part of a statewide, comprehensive water plan for California. This new measure, Proposition 1 – the Water Quality, Supply, and Infrastructure Improvement Act of 2014, was approved by the voters on November 4, 2014.

***Colorado River***

MWD owns and operates the CRA, which since 1942 has delivered water from the Colorado River to Southern California. The Colorado River currently supplies approximately 17 percent of Southern California's water needs, and on average makes up about 15 percent of LADWP's purchases from MWD. This source of supply has been secured to MWD through long-standing legal entitlements. However, extended drought conditions and increased demands by other users have recently impacted its reliability.

The Colorado River supplies come from watersheds of the Upper Colorado River Basin in the states of Colorado, Utah, and Wyoming. Due to the way that Colorado River supplies are apportioned, snowpack and runoff levels do not impact MWD water

supplies in the current year. Instead, snowpack and runoff would impact storage levels at Lake Powell and Lake Mead, which would then affect the likelihood of surplus or shortage conditions in the future.

By MWD having two principal sources of supply that draw from two different watersheds, MWD is able to utilize supplies from the Colorado River to offset reductions in SWP supplies and buffer impacts of the California drought. MWD plans to use CRA deliveries, storage reserves and supplemental water transfers and purchases to meet regional demands.

Under a permanent service contract with the U.S. Secretary of the Interior (Secretary), MWD is entitled to receive water from the Colorado River and its tributaries. This water is also available to other users in California, as well as users in the states of Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming (Basin States). Under a 1944 treaty, Mexico is allotted 1.5 million AF annually, except in extraordinary circumstances. There is long history of competition among users, but current conditions necessitate increased cooperation.

California is apportioned 4.4 million AF, annually, plus one-half of any surplus that may be available for use, collectively, in Arizona, California, and Nevada. In addition, California has historically been allowed to use Colorado River water apportioned to, but not used by, Arizona or Nevada. Since 2003, due to increased consumption, there has been no such unused, apportioned water available to California. Of the California apportionment, MWD holds the fourth priority right to 550,000 AFY under a 1931 priority system governing allotments to California. This is the last priority within California's basic apportionment of 4.4 million AF. Beyond the basic apportionment, MWD holds the fifth priority right to 662,000 AF of water. See Appendix F for more details.

Historically, MWD has been able to claim most of its legal entitlement of Colorado River water and could divert over 1.2 million AF in any year, but persistent drought conditions since 1999 have contributed to a decrease in these claims. The recent 16-year drought has been so severe that it has resulted in major reductions in water deliveries from the Colorado River. MWD's total CRA supply for calendar year 2016 was 985,000 AF and included a base supply 935,000 AF and water management actions of 50,000 AF.

Under the Colorado River Basin Project Act of 1968, the Secretary is required to issue an Annual Operating Plan describing CRA operations and projected releases. Considering drought conditions and declining storages, the 2014 release for Lake Powell was 7.48 million AF, which was the lowest since the filling of the reservoir in the 1960s. Moreover, reservoir storages along the CRA have declined dramatically.

The shortage predicament has increased management efforts by the Federal Government and states holding water rights. In May 2005, the Secretary directed the U. S. Bureau of Reclamation (BOR) to initiate the "Development of Lower Colorado River Basin Shortage Guidelines and Coordinated Management Strategies for Lakes Powell and Mead Under Low Reservoir Conditions." These were the first such

guidelines to address shortage conditions, as opposed to normal and surplus conditions. Since May of 2005, and in response to the Secretary's directive, the seven Basin States have reached agreement to transform management of the Colorado River system water through conjunctive management of Lakes Mead and Powell, and the adoption of shortage guidelines.

In November 2007, BOR issued a Final EIS including new federal guidelines concerning the operation of the Colorado River system reservoirs. The Secretary issued the final guidelines through a Record of Decision signed in December 2007. The Record of Decision and accompanying agreement among the Colorado River Basin States protect reservoir levels by reducing deliveries during drought periods, encouraging agencies to develop conservation programs, and allowing the states to develop and store new water supplies. The Colorado River Basin Project Act of 1968 insulates California from shortages in all but the most extreme hydrologic conditions.

In October 2017, the 24-month look-ahead-study by BOR reported that Lake Powell's operations in water year 2018 will be governed by the Upper Elevation Balancing Tier, with an initial water year release volume of 8.23 million AF and the potential for an April adjustment to equalization or balancing releases in April 2018. The October 2017 24-Month Study indicated that an April adjustment to balancing releases is projected to occur and Lake Powell is projected to release 9.0 million AF in water year 2018.

***Reliability Efforts for Southern California***

MWD has been developing plans and making efforts to provide additional water supply reliability for the entire Southern California region. LADWP coordinates closely with MWD to ensure implementation of these water resource development plans. MWD's long-term plans to meet its member agencies' growing reliability needs are through: improvements to SWP as outlined in the California WaterFix and EcoRestore plans, conjunctive management efforts on the Colorado River, water transfer programs, outdoor conservation measures, and development of additional local resources, such as recycling, brackish water desalination, and seawater desalination. These plans are contained in MWD's 2015 IRP and 2015 UWMP, which can be found at the following links:

- MWD 2015 IRP: http://mwdh2o.com/PDF_About_Your_Water/2015%20IRP%20Update%20Report%20(web).pdf
- MWD 2015 UWMP: http://www.mwdh2o.com/PDF_About_Your_Water/2.4.2_Regional_Urban_Water_Management_Plan.pdf

Additionally, MWD has more than 5.0 million AF of storage capacity available in reservoirs and banking/transfer programs, with approximately 1.25 million AF, inclusive of Intentionally Created Surplus, in that storage, and 626,000 AF in emergency storage as of January 1, 2017. MWD plans to add to storage in 2017. Storage was previously estimated to range from 2.0 to 2.2 million AF by the end of 2017 assuming 60 percent and 70 percent SWP allocations, respectively. The allocation was subsequently increased to 85 percent. MWD will exercise flexibility and opportunities within the storage program to increase storage depending on the final SWP allocation and supply/demand balance.

MWD's 2015 IRP builds upon the strong foundation of diversification and adaptation developed in previous IRPs. 2015 IRP reinforces MWD commitment to meeting the region's water supply needs through an evolving long-term strategy that calls for maintaining and stabilizing existing resources along with developing more conservation and new local supplies.

MWD's 2015 UWMP reports on water reliability and identifies projected supplies to meet the long-term demand within MWD's service area. Table V summarizes MWD's reliability in five-year increments extending to 2040 and is based on information contained in MWD's 2015 UWMP. As reported, MWD has supply capabilities that would be sufficient to meet expected demands from 2020 through 2040 under average year, single dry-year and multiple dry-year hydrologic conditions. An in depth discussion on MWD is attached in Appendix F.

**Table V**
**MWD System Forecast Supplies and Demands**
**Average Year (1922 - 2012 Hydrology)**

| Forecast year | Supply (Thousands of AF per Year) | | | | |
|---|---|---|---|---|---|
| | 2020 | 2025 | 2030 | 2035 | 2040 |
| *Current Programs* | | | | | |
| In-Region Supplies and Programs | 693 | 774 | 852 | 956 | 992 |
| State Water Project[1] | 1,555 | 1,576 | 1,606 | 1,632 | 1,632 |
| Colorado River Aqueduct | | | | | |
| Colorado River Aqueduct Supply[2] | 1,468 | 1,488 | 1,484 | 1,471 | 1,460 |
| Aqueduct Capacity Limit[3] | 1,200 | 1,200 | 1,200 | 1,200 | 1,200 |
| Colorado Aqueduct Capability | 1,200 | 1,200 | 1,200 | 1,200 | 1,200 |
| **Capability of Current Programs** | **3,448** | **3,550** | **3,658** | **3,788** | **3,824** |
| *Demands* | | | | | |
| Total Demands on MWD | 1,586 | 1,636 | 1,677 | 1,726 | 1,765 |
| Imperial Irrigation District - San Diego County Water Authority Transfers and Canal Linings[4] | 274 | 282 | 282 | 282 | 282 |
| **Total Demands on MWD** | **1,860** | **1,918** | **1,959** | **2,008** | **2,047** |
| **Surplus** | **1,588** | **1,632** | **1,699** | **1,780** | **1,777** |
| *Programs Under Development* | | | | | |
| In-Region Supplies and Programs | 43 | 80 | 118 | 160 | 200 |
| State Water Project | 20 | 20 | 268 | 268 | 268 |
| Colorado River Aqueduct | | | | | |
| Colorado River Aqueduct Supply | 5 | 25 | 25 | 25 | 25 |
| Aqueduct Capacity Limit[2] | 0 | 0 | 0 | 0 | 0 |
| Colorado River Aqueduct Capability | 0 | 0 | 0 | 0 | 0 |
| **Capability of Programs Under Development** | **63** | **100** | **386** | **428** | **468** |
| **Maximum MWD Supply Capability** | **3,511** | **3,650** | **4,044** | **4,216** | **4,292** |
| **Potential Surplus** | **1,651** | **1,732** | **2,085** | **2,208** | **2,245** |

1. Includes water transfers and groundwater banking associated with SWP.
2. Includes 296 TAF of non-MWD supplies conveyed in CRA for Imperial Irrigation District - San Diego County Water Authority Transfers and Canal Linings.
3. CRA has a capacity constraint of 1.20 MAF per year.
4. Does not include 16 TAF subject to satisfaction of conditions specified in agreement among MWD, the US, and the San Luis Rey Settlement.

# Secondary Sources and Other Considerations

Stormwater capture, water conservation, and recycling will play an increasing role in meeting future water demands. LADWP has implemented stormwater capture, conservation, and recycling programs with efforts under way to further promote and increase the level of these programs. LADWP is committed to supply a higher percentage of the City's water demand through local water supply development.

LADWP works closely with MWD, LASAN (wastewater agency), other regional water providers, and various stakeholders to develop and implement programs that reduce overall water use. One example of such collaboration is an integrated resources planning process.

City's IRP is a unique approach of technical integration and community involvement to guide policy decisions and water resources facilities planning. IRP recognizes the inter-relationship of water, wastewater, and runoff management. Initiation of IRP began in 1999 and culminated in its adoption in 2006. Through the stakeholder driven IRP process, detailed facilities plans were developed for the City's wastewater and stormwater systems through the planning horizon of 2020.

One Water LA 2040 (One Water LA) plan is an initiative building upon the success of the IRP. One Water LA extends IRP planning period to year 2040 and takes into consideration an additional emphasis on environmental, social, and sustainability factors. The overarching goal of One Water LA is to maximize resources through the integration of multi-beneficial collaborative programs and projects to make the City greener and more sustainable. One Water LA will follow in the footsteps of IRP and will be a stakeholder driven process with a goal of increased public involvement to represent Los Angeles' diversity in geography, interests, and demographics.

## Summary of Water Demand and Supply Projections for 20 Years

Table VI tabulates the service reliability assessment for average weather year. Existing water conservation has been subtracted already from projected demands, but new water conservation is included as a supply source.

## Table VI
## Service Area Reliability Assessment for Average Weather Year

| Demand and Supply Projections (in acre-feet) | Average Weather Conditions (FY 1961/62 to 2010/11) Fiscal Year Ending on June 30 | | | | |
|---|---|---|---|---|---|
| | 2020 | 2025 | 2030 | 2035 | 2040 |
| **Total Water Demand**[1] | **611,800** | **644,700** | **652,900** | **661,800** | **675,700** |
| **pLAn Water Demand Target** | **485,600** | **533,000** | **540,100** | **551,100** | **565,600** |
| **Existing / Planned Supplies** | | | | | |
| Conservation (Additional Active[2] and Passive[3] after FY14/15) | 125,800 | 110,900 | 111,600 | 109,100 | 108,100 |
| Los Angeles Aqueduct[4] | 275,700 | 293,400 | 291,000 | 288,600 | 286,200 |
| Groundwater[5] (Net) | 112,670 | 110,670 | 106,670 | 114,670 | 114,070 |
| Recycled Water | | | | | |
| - Irrigation and Industrial Use | 19,800 | 29,000 | 39,000 | 42,200 | 45,400 |
| - Groundwater Replenishment | 0 | 30,000 | 30,000 | 30,000 | 30,000 |
| Stormwater Capture | | | | | |
| - Stormwater Reuse (Harvesting) | 400 | 800 | 1,200 | 1,600 | 2,000 |
| - Stormwater Recharge (Increased Pumping) | 2,000 | 4,000 | 8,000 | 15,000 | 15,000 |
| Subtotal | 536,370 | 578,770 | 587,470 | 601,170 | 600,770 |
| **MWD Water Purchases** | | | | | |
| With Existing/Planned Supplies | 75,430 | 65,930 | 65,430 | 60,630 | 74,930 |
| **Total Supplies** | **611,800** | **644,700** | **652,900** | **661,800** | **675,700** |
| **Potential Supplies** | | | | | |
| Water Transfers[6] | 40,000 | 40,000 | 40,000 | 40,000 | 40,000 |
| Subtotal | 40,000 | 40,000 | 40,000 | 40,000 | 40,000 |
| **MWD Water Purchases** | | | | | |
| With Existing/Planned/Potential Supplies | 35,430 | 25,930 | 25,430 | 20,630 | 34,930 |
| **Total Supplies** | **611,800** | **644,700** | **652,900** | **661,800** | **675,700** |

[1] Total Demand with existing passive conservation

[2] Cumulative hardware savings since late 1980s reached 118,034 AFY by 2014-15.

[3] Additional non-hardware conservation required to meet water use reduction goals set in the Sustainable City pLAn.

[4] LADWP anticipates conserving 20,000 AFY of water usage for dust mitigation on Owens Lake after the Master Project is implemented in FY 2023-24. Los Angeles Aqueduct supply is estimated to decrease 0.1652% per year due to climate change impact.

[5] Net GW excludes Stormwater Recharge and Groundwater Replenishment supplies that contribute to increased pumping. The LADWP Groundwater Remediation project in the San Fernando Basin is expected in operation in 2021-22. Storage credit of 5,000 AFY will be used to maximize pumping in 2019-20 and thereafter. Sylmar Basin production will increase to 4,170 AFY from 2015-16 to 2038-39 to avoid the expiration of stored water credits, then go back to its entitlement of 3,570 AFY in 2039-40.

[6] Potential water transfer occurs in dry years with stored water acquired in average and wet years.

Service area reliability assessments for single-dry year and multiple-dry year conditions are shown in LADWP 2015 UWMP Exhibits 11F through 11H. Demands are met by the available supplies under all scenarios.

## Rates

Capital costs to finance facilities for the delivery of water supply to LADWP's service area are supported through customer-billed water rates. The Board sets rates subject to approval of City Council by ordinance. The Board is obligated by City Charter to establish water rates and collect charges in an amount sufficient to service the water system indebtedness and to meet its expenses for operation and maintenance.

On March 15, 2016, City Council approved the new water rates and rate structure. New water rates, which became effective April 15, 2016, through Ordinance 184130 provide for modest rate increases each year over a five-year period for infrastructure improvements, meeting regulatory water quality requirements, Owens Valley mitigation measures, and expanding the local water supply, which includes recycled water, stormwater capture, conservation, and groundwater remediation. New water rate structure increases the number of tiers from two to four for single-family residential customers. Goal is to incentivize conservation while recovering the higher costs of providing water to high volume users. In keeping with cost of service principles, the incremental pricing for the tiers is based on the cost of water supply.

## Findings

The Sunset Project is estimated to increase the total water demand within the site by 87 AF annually. This additional water demand has been accounted for in the City's overall total demand projections in the LADWP 2015 UWMP using a service area-wide approach that does not rely on individual development demand. The LADWP 2015 UWMP utilized SCAG's RTP data that provide for more reliable water demand forecasts, taking into account changes in population, housing units, and employment.

Based on Planning Department's determination that the Sunset Project is consistent with the demographic forecasts for the City from the 2012 SCAG RTP, LADWP finds that the Sunset Project water demand is included in the City's LADWP 2015 UWMP water demand projection. Furthermore, the LADWP 2015 UWMP forecasts adequate water supplies to meet all projected water demands in the City through the year 2040.

LADWP therefore concludes that the 87 AFY increase in the total water demand for the Sunset Project within the available and projected water supplies for normal, single-dry, and multiple-dry years through the year 2040, as described in LADWP's 2015 UWMP. LADWP finds it will be able to meet the proposed water demand of the Sunset Project, as well as existing and planned future water demands of its service area.

# Appendix A

City of Los Angeles Department of City Planning
Request for Water Supply Assessment,
and Scope Confirmation e-mail

DEPARTMENT OF
CITY PLANNING

CITY PLANNING COMMISSION

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July 20, 2017

Mr. Richard F. Harasick
Senior Assistant General Manager for Water System
Los Angeles Department of Water& Power
111 North Hope Street, Room 1455
Los Angeles, CA 90012-5701

RE: Request For Water Supply Assessment for Project Located at 5420–5450 West Sunset Boulevard, 1418–1440 North Western Avenue, 1441 North Serrano Avenue, Los Angeles, CA 90027, ENV-2017-1084-EIR, SCH # 2017061075

Dear Mr. Harasick:

The Department of City Planning is preparing an Environmental Impact Report in accordance with the California Environmental Quality Act (CEQA) for a proposed project located at 5420–5450 West Sunset Boulevard, 1418–1440 North Western Avenue, 1441 North Serrano Avenue, Los Angeles, CA 90027 (Proposed Project). Pursuant to CEQA Guidelines Section 15206(b)(2)(B), this project meets the criteria for being of "regional significance" because it includes the development of more than 500 dwelling units, a shopping center or business establishment encompassing more than 500,000 square feet of floor space or employing more than 1,000 persons, and a commercial office building encompassing more than 250,000 square feet of floor space or employing more than 1,000 persons.

For this reason, the Proposed Project must comply with the water supply assessment requirements of State Water Code (Sections 10910–10915). As such, we are requesting that the Los Angeles Department of Water & Power prepare a water supply assessment to determine its ability to meet the water demands of this project. Provided below is a description of the Proposed Project.

**Project Location**

The Project Site is located in the Hollywood Community Plan of the City, approximately 4.9 miles northwest of downtown Los Angeles. The Project Site is specifically bounded by Sunset Boulevard to the north; Serrano Avenue to the east; the former site of Deluxe

Laboratories, a motion picture film processing laboratory, to the south; and Western Avenue to the west. A list of the property addresses and assessor parcel numbers associated with the Project Site are identified in Table 1, Project Site Addresses and Assessor Parcel Numbers, below. A Project Location Map is shown in Figure 1, Project Location Map (attached).

**Table 1**
**Project Site Addresses and Assessor Parcel Numbers**

| Assessor Parcel Number | Addresses |
|---|---|
| 5544-032-018 | 5420 West Sunset Boulevard |
| | 5422 West Sunset Boulevard |
| | 5450 West Sunset Boulevard |
| | 1418 North Western Avenue |
| | 1434 North Western Avenue |
| | 1436 North Western Avenue |
| | 1440 North Western Avenue |
| | 1441 North Serrano Avenue |

## Existing Uses

The Project Site is currently occupied by a one-story grocery store, a vacant commercial space, and a one-story fast-food restaurant that together comprise approximately 100,796 sf and associated surface parking areas. Landscaping within the Project Site includes trees and bushes located throughout the surface parking areas. Several street trees are also located adjacent to the Project Site along Sunset Boulevard, Serrano Avenue, and Western Avenue. The existing uses within the Project Site are summarized in Table 2 below, and shown in Figure 2, Existing Site Plan (attached). All of these existing uses will be removed as part of the Project. The table below represents the existing conditions on the Project Site at the time the NOP was prepared in June 2017.

**Table 2**
**Existing Land Uses on the Project Site**

| Location | Land Use Type | Developed Floor Area (square feet) | Occupied Floor Area (Square Feet) |
|---|---|---|---|
| 5420 W. Sunset Blvd | Grocery Store | 78,328 | 78,328 |
| 5422 W. Sunset Blvd | Commercial—Vacant | 18,525 | 0 |
| 5450 W. Sunset Blvd | Restaurant—Fast Food | 3,943 | 3,943 |
| **TOTAL** | | **100,796 sf** | **82,271 sf** |

The water demand from the existing uses was estimated based on the above information pertaining to the existing land uses and 100% of the estimated sewer generation rates provided by the Bureau of Sanitation. As shown in Table 3, below, the Project Site currently generates a demand of approximately 3,141 gpd of water.

**Table 3**
**Existing Conditions Water Demands**

| Land Use | Size | Water Demand Rates (gpd/unit)[a] | Total Water Demand (gpd) |
|---|---|---|---|
| Grocery Store | 78,328 sf | 25 gpd/1,000 sf | 1,958 |
| Commercial—Vacant | 18,525 sf | 25 gpd/1,000 sf | 463 |
| Restaurant—Fast Food | 3,943 sf | 300 gpd/1,000 sf | 1,183 |
| *Subtotal Water Demand Based on Developed Area* | | | *3,604* |
| *Existing Water Demands Based on Active Leased Space*[b] | | | *3,141* |

*Notes:*
[a] *Water demand rates are based on 100 percent of the City of Los Angeles sewerage generation factors.*
[b] *As noted above, at the time the NOP was released in June 2017, the 18,525 sf commercial space was vacant.*
*Source: Eyestone Environmental, 2017.*

## Project Characteristics

The Project would replace the existing grocery store, vacant commercial space, a fast-food restaurant, and associated surface parking areas within the 6.75-acre Project Site, that together comprise approximately 100,796 sf and associated surface parking areas with a new mixed-use development consisting of 735 multi-family residential units and approximately 95,820 sf of neighborhood-serving commercial uses, including market/retail uses. The proposed uses would be provided within four buildings that would be up to six stories[1] with a maximum height of 75 feet.

Project construction is anticipated to take approximately 30 months and be completed in 2021. The estimated depth of excavation expected for the subterranean parking would be approximately 25 feet below grade. It is estimated that approximately 330,000 cubic yards of export would be hauled from the Project Site during the demolition and excavation phase.

A summary of the land uses and amount of gross square feet of development and building floor area as defined by the LAMC is presented in Table 4 below. The proposed ground and first subterranean parking level floor plan is provided in Figure 3 (attached). Conceptual building sections are provided in Figure 4 (attached).

[1] The project plans dated February 21, 2017, show a total of six stories. The Applicant seeks the flexibility to potentially include a mezzanine level in the commercial space, which could technically count as a story. However, this would not increase the overall height of the building of 75 feet. In addition, any floor area within a mezzanine level would be taken from the existing proposed commercial floor area of 95,820 square feet.

**Table 4**
**Proposed Development Program Metrics**

| Use | SF | DU |
|---|---|---|
| Commercial—Market | 50,000 sf | — |
| Commercial—Retail | 25,820 sf | — |
| Commercial—Restaurant | 10,000 sf | — |
| *Total Commercial* | *95,820 sf* | — |
| Residential—Studio | — | 198 du |
| Residential—1 bedroom | — | 353 du |
| Residential—2 bedroom | — | 182 du |
| Residential—3 bedroom | — | 3 du |
| *Total Residential* | *750,048 sf* | *735 du* |
| **PROJECT TOTAL** | **845,868 sf** | **735 du** |

## Existing Zoning and General Plan

The Project Site is zoned by the Los Angeles Municipal Code (LAMC) as C2-1 (Commercial, Height District 1). The C2 zone permits a wide array of land uses, including retail stores, restaurants, amusement enterprises, auditoriums, studios, schools, and hospitals, as well as any land use permitted in the C1.5 (Limited Commercial) zone. The C1.5 zone allows for single-family, two-family, or apartment house uses permitted in the R4 (Multiple Dwelling) zone, and any land use permitted in the C1 zone. The C1 zone allows for any residential use permitted in the R3 (Multiple Residential) zone. Under the C2 zone, there are no front, side, or rear yard requirements, except for residential buildings, which shall conform to the requirements of the R4 zone. Height District 1 within the C2 zone normally imposes no height limitation and a maximum FAR of 1.5:1.

The Project Site is also within the boundaries of the Hollywood Redevelopment Project Area and the Vermont/Western Station Neighborhood Area Specific Plan (Specific Plan), a 2.2-square-mile, transit-oriented district within the Hollywood and Wilshire Communities of Los Angeles. The Project Site is specifically located in Subarea C, Community Center, of the Specific Plan area, which allows maximum building heights of 75 feet and a maximum FAR of 3:1 for mixed-use projects. As set forth in the Specific Plan, when the Specific Plan differs from the LAMC, as is the case with the Project Site, the provisions of the Specific Plan shall prevail and supersede the applicable provisions of the LAMC, including permitted uses, floor area, height and other regulations.

The Project can be accommodated within the constraints of the existing zoning regulations. No General Plan Amendment or Zoning Amendment is necessary. Approvals required for development of the Project may include, but would not be limited to, the following:

- Site Plan Review pursuant to LAMC Section 16.05;
- Project Permit Compliance Review under the Specific Plan;
- Master Conditional Use Permit (CUB) pursuant to LAMC Section 12.24 W.1 for the sales and/or dispensing of alcoholic beverages within the commercial uses of the Project;
- Haul route approval, as may be required;
- Construction permits, including building, grading, excavation, foundation, temporary street closures, and associated permits; and

- Other discretionary and ministerial permits and approvals that may be deemed necessary.

**Landscaping/Open Space**

The Project would provide a variety of open space and recreational amenities. Specifically, at the ground level, the Project would provide pedestrian paseos and a plaza that would include paving materials, raised planters, outdoor dining areas, and landscape elements that would enhance the Sunset Boulevard streetscape adjacent to the Project Site. The paseos and the plaza would be publicly accessible from adjacent sidewalks which would maintain standard widths, as required by the City. Each building at the podium level is oriented around an open space courtyard with shared amenities for the residents that would include multiple terraces with swimming pools, spas, cabanas, multiple lounge and seating areas, paseos with water and landscape elements, a fitness courtyard, outdoor fireplaces, outdoor kitchens, a dog park, community garden space, and private patios. Indoor recreation areas would be located on the third and fourth levels. An outdoor terrace is proposed atop the indoor recreation areas with multiple lounge areas and landscaping. In total, the Project would provide approximately 80,365 sf of open space and would exceed the requirements set forth in the Specific Plan of 78,200 sf.

As part of the Project, approximately 65 trees, including on-site trees and street trees, would be removed. The Project would comply with applicable LAMC requirements for the replacement of on-site and street trees removed. The Project includes 17 new street trees along Western Avenue, 9 new street trees along Sunset Boulevard plus retention of 11 existing Palms, and 10 new street trees along Serrano Avenue.

**Parking**

Parking for the Project's proposed uses would be provided in accordance with LAMC requirements, subject to the parking requirements set forth in the Specific Plan. The Project would provide a total of 1,463 vehicle parking spaces. A maximum of 192 spaces is permitted for the Project's proposed commercial uses (95,850 sf divided by 500). The residential parking would be located within all parking levels and the parking for the commercial uses would be located in the ground parking level and in a portion of the first subterranean parking level. Parking areas total approximately 707,697 gross sf.

**Environmental Design Features**

The Project would incorporate features to support and promote environmental sustainability. "Green" principles are incorporated throughout the Project to comply with the City of Los Angeles Green Building Code. These include, but are not limited to, energy-efficient buildings, a pedestrian- and bicycle-friendly site design, and water conservation and waste reduction features. The Project would also utilize sustainable planning and building strategies and incorporate the use of environmentally-friendly materials, such as non-toxic paints and recycled finish materials, whenever feasible. In addition, the Project Site's proximity to the Metro Red Line Hollywood and Western Station, as well as the bus lines on Sunset Boulevard and Western Avenue would encourage and support the use of public transportation and a reduction in vehicle miles traveled by Project residents, employees, and visitors. The following specific features intended to reduce water demand would be incorporated in the Project:

- Inclusion of water conservation measures in accordance with Los Angeles Department of Water and Power requirements for new development in the City of Los Angeles (e.g., high-efficiency fixtures and appliances, weather-based irrigation systems, drought-tolerant landscaping).
- Use of drought-tolerant plants and indigenous species, storm water collection through a first flush filtration system of rain gardens where possible, permeable pavement wherever possible, and storm water filtration planters to collect roof water to be reused on-site.
- Incorporation of a leak detection system for any swimming pool, Jacuzzi, or other comparable spa equipment introduced on-site.
- Use of high-efficiency Energy Star–rated dishwashers where appropriate.
- Prohibition of the use of single-pass cooling equipment (i.e., equipment in which water is circulated once through the system, then drains for disposal with no recirculation).
- Consideration of individual metering and billing for water use of all residential uses and exploration of metering for commercial spaces.
- Installation of cooling tower automatic water treatment to minimize cooling tower blowdown and water waste.
- Use of weather-based irrigation controller with rain shutoff, matched precipitation (flow) rates for sprinkler heads, and rotating sprinkler nozzles or comparable technology such as drip/microspray/subsurface irrigation where appropriate.
- Installation of a separate water meter (or submeter), flow sensor, and master valve shutoff for irrigated landscape areas totaling 5,000 sf and greater.
- Use of proper hydro-zoning and turf minimization, as feasible.
- Install waste piping to allow for the future installation of a greywater system to supply landscape irrigation.

Thank you for your assistance with this request. Your expert evaluation will help to ensure that our analysis of the proposed project's impacts on water demand is accurate and complete. If you have any questions or comments, please contact Jon Chang at (213) 978-1914.

Sincerely,

Jon Chang
City of Los Angeles
Department of City Planning

Attachments:

Figure 1—Project Location Map
Figure 2—Existing Site Plan
Figure 3—Ground and P1 Level Site Plan
Figure 4—Conceptual Building Sections

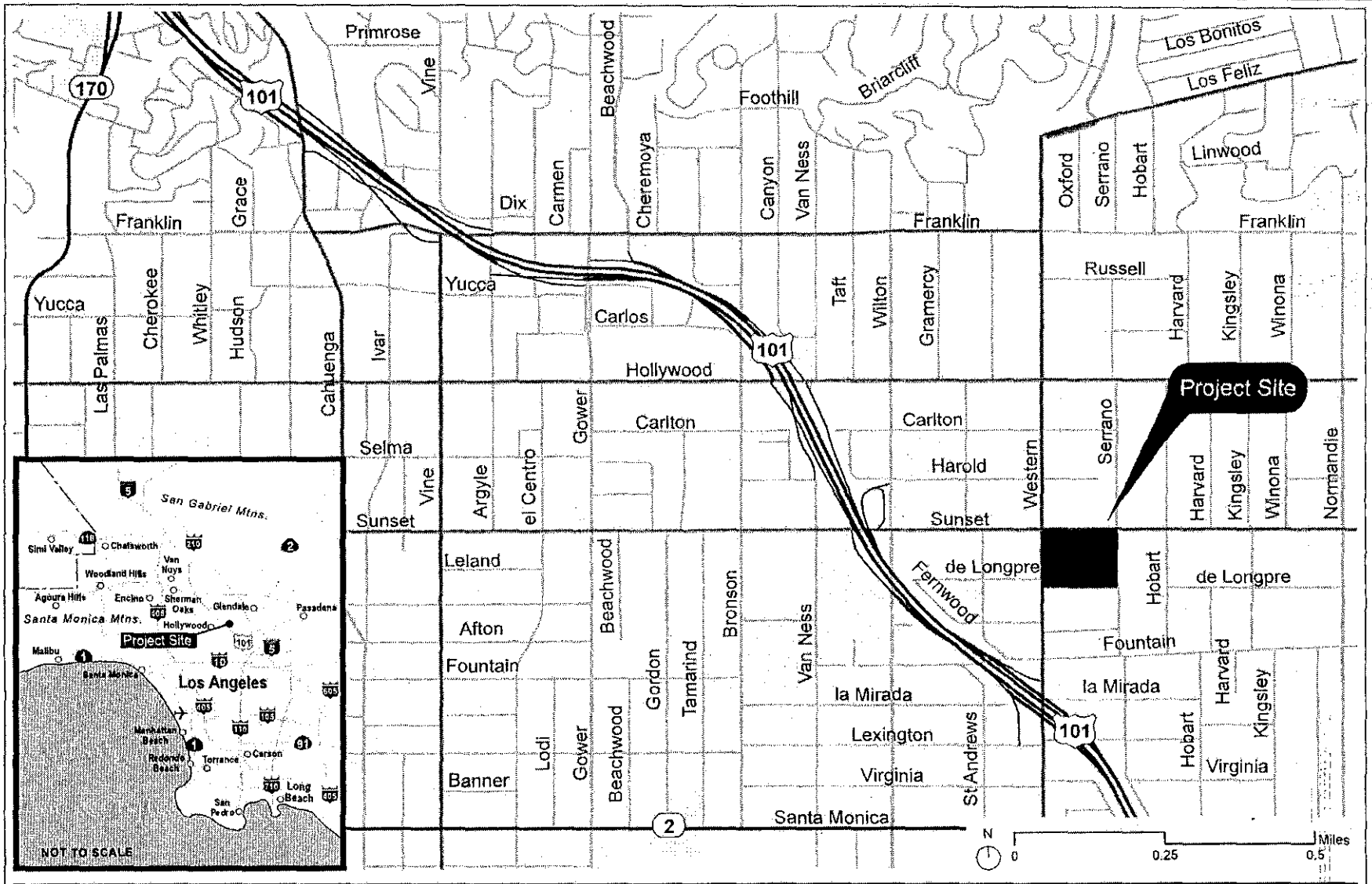
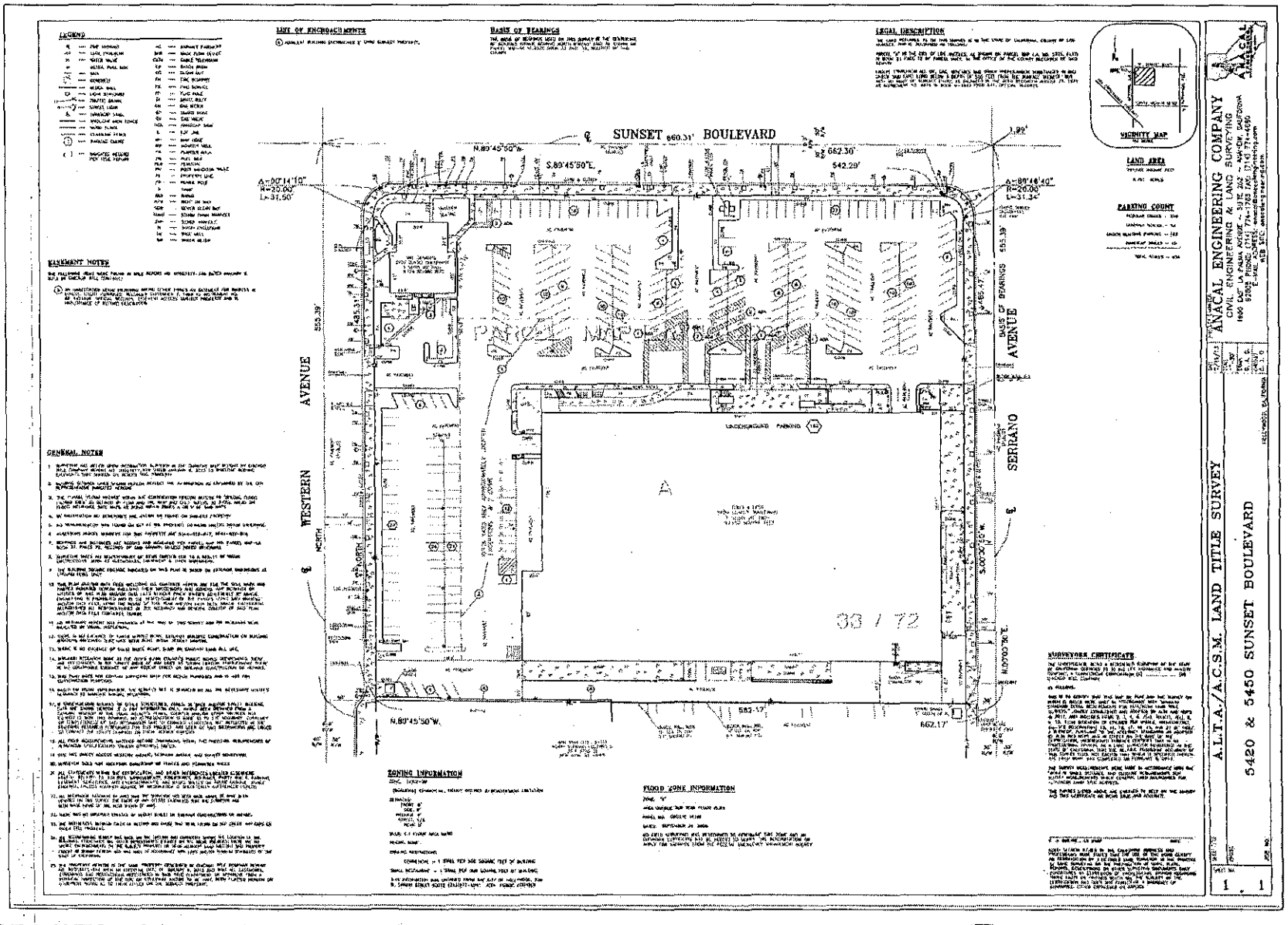



**Figure 1**
Project Location Map

Source: Los Angeles County GIS, 2015; Eyestone Environmental, 2016.




A01
SURVEY
NOT TO SCALE

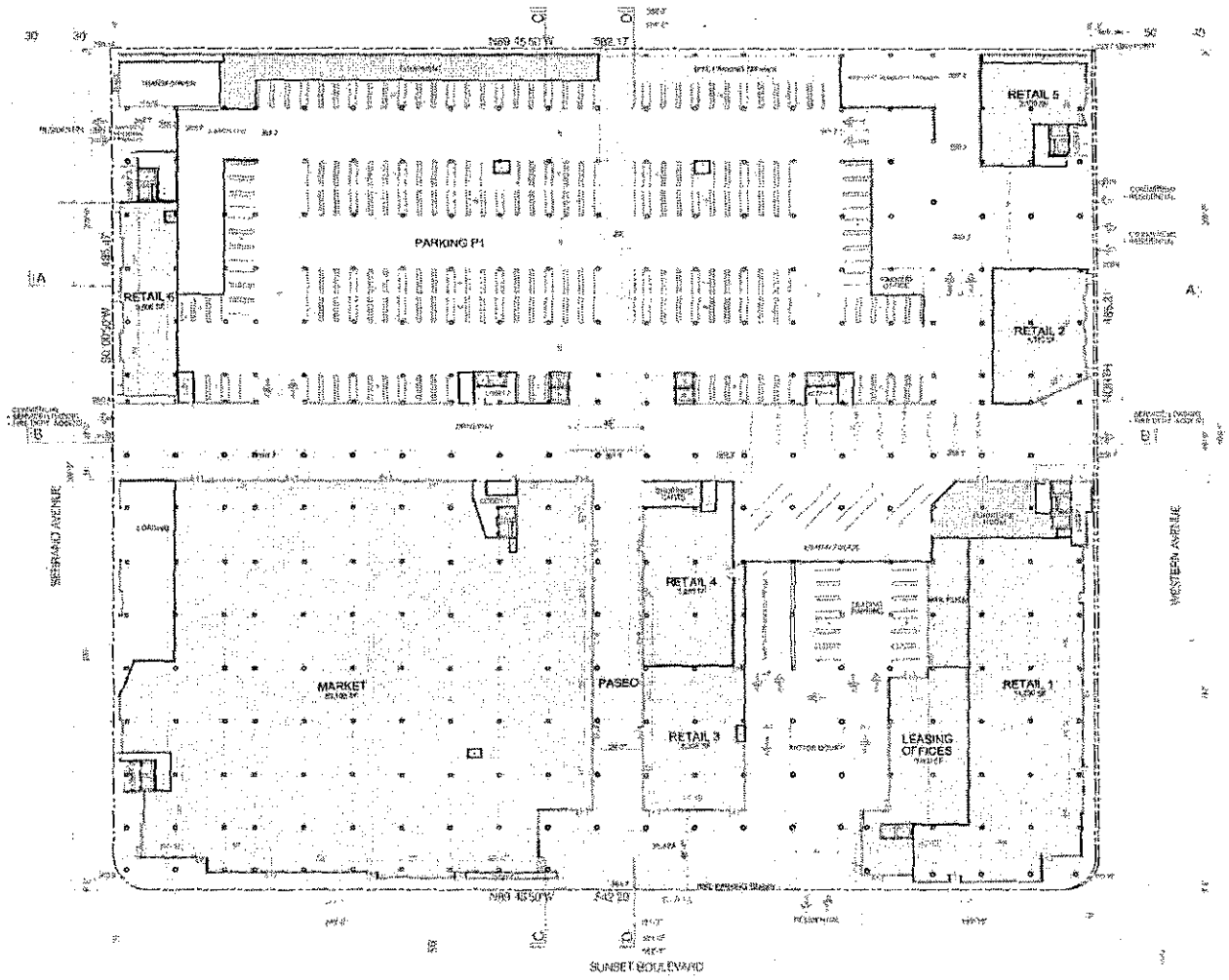



**Figure 3**
Conceptual Site Plan–Ground Level and P1 Level

Source: Van Tilburg, Banvard & Soderbergh, AIA, 2017.

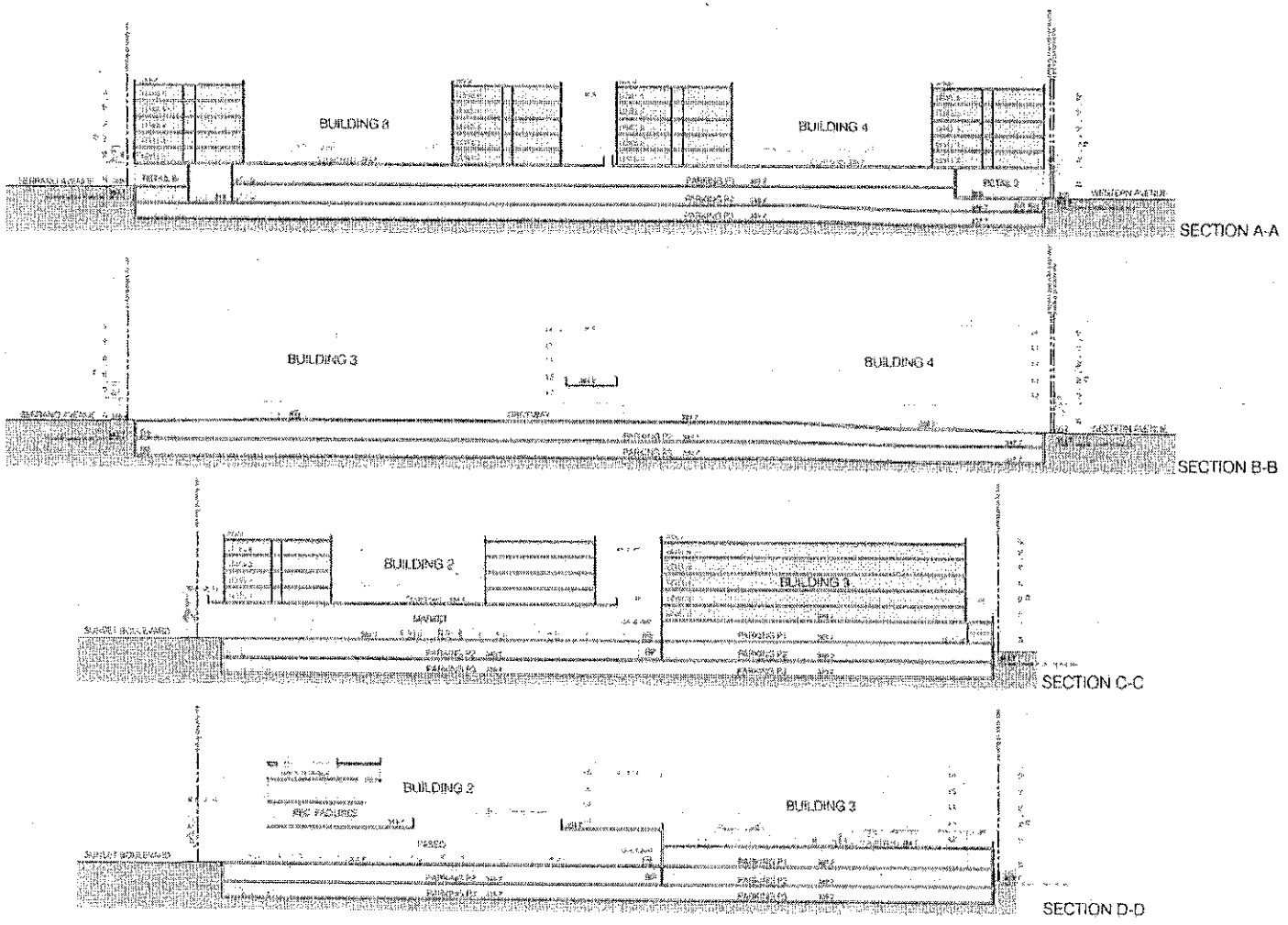



**Figure 4**
Conceptual Building Sections

Source: Van Tilburg, Banvard & Soderbergh, AIA, 2017.

**Aghakhani, Ryan**

**From:** Jonathan Chang <jonathan.chang@lacity.org>
**Sent:** Thursday, November 30, 2017 10:40 AM
**To:** Aghakhani, Ryan
**Cc:** Brad Napientek; Laura Rodriguez; Kwan, Delon; Kim, Theresa
**Subject:** Re: 5420 Sunset Blvd Project WSA - Scope Confirmation Email

Yes, I am confirming the Scope for the 5420 Sunset Project.

Thanks very much.

On Thu, Nov 30, 2017 at 8:50 AM, Aghakhani, Ryan <Ryan.Aghakhani@ladwp.com> wrote:

Hello Jonathan,

We are in the process of completing the Water Supply Assessment (WSA) Board Package for the 5420 Sunset Project (Proposed Project). The Los Angeles Department of Water and Power (LADWP) requests that the Department of City Planning (Planning Department) confirm, by e-mail, the correct detailed scope (shown below) for the Proposed Project. Your scope confirming e-mail will be included as part of the WSA, and the confirmed scope will be used for calculating the water demand in the WSA.

LADWP has received the WSA Request Letter for the Proposed Project, dated July 26, 2017. The scope considered in LADWP's water demand calculations, as received in the WSA Request Letter and from the EIR consultant, is as follows:

**Existing use to be removed*:**

| Existing Use | Quantity |
|---|---|
| Grocery Store | 78,328 sf |
| Commercial Space | 18,525 sf |
| Restaurant - Fast Food | 3,943 sf |
| **Total** | **100,796 sf** |

* The existing uses to be removed also includes surrounding surface parking and landscape

**Proposed:**

| Proposed Use** | Quantity |
|---|---|
| **Residential:** | |
| Residential – Studio | 198 du |
| Residential – 1 Bedroom | 353 du |
| Residential – 2 Bedroom | 182 du |
| Residential – 3 Bedroom | 2 du |

| | |
|---|---|
| **Residential Units Total** | **735 du** |
| **Residential Amenities:** | |
| Gym/Fitness Center | 15,700 sf |
| Lobby | 2,000 sf |
| Leasing/Management Office | 9,000 sf |
| Outdoor Kitchen/Barbeque/Dining Area | 1,500 sf |
| Pool/Spa | 2,995 sf |
| **Commercial:** | |
| Market | 50,000 sf |
| Restaurant: Full Service | 10,000 sf (500 seats) |
| Retail | 25,820 sf |
| **Landscaping:** | |
| Non-Residential: | |
| Trees, Shrubs and Groundcovers (PF=0.3) | 1,975 sf |
| Trees, Shrubs and Groundcovers (PF=0.3) | 2,701 sf |
| Residential: | |
| Trees, Shrubs and Groundcovers (PF=0.1) | 896 sf |
| Trees, Shrubs and Groundcovers (PF=0.3) | 11,518 sf |
| Trees, Shrubs and Groundcovers (PF=0.5) | 21,581 sf |
| Total Landscaping: | **38,671 sf** |
| (Proposed landscape IE is 0.81) | |
| **Covered Parking** | **707,697 sf** |
| **Cooling Towers** | |
| Chiller Capacity | 300 tons |
| Operating Hours | 8 hrs/day, 7days/week, 365 days/yr |

** Areas that do not have additional water demand are not shown

du = dwelling unit sf = square feet PF = Plant Factor IE = Irrigation Efficiency hrs = hours yr = year

Proposed Project does not require a General Plan amendment.

Proposed Project is consistent with the 2012 and 2016 Regional Transportation Plan demographic projections by Southern California Association of Governments for the City of Los Angeles.

**If the above listed scope is accurate and consistent with the Proposed Project, please e-mail reply. If not, please edit the scope accordingly and send back to me by e-mail.**


**Ryan Aghakhani**

Resources Development and Supply Assessment Group

Water System Executive Office / Water Resources Section

Los Angeles Department of Water and Power

111 N. Hope Street, Room 1450

Los Angeles, CA 90012

(213) 367-2022



--

Kind Regards,

**Jon Chang**
Planning Assistant

**Department of City Planning**
**Major Projects**
**T:** (213) 978-1914
200 N. Spring St., Room 750
Los Angeles, CA 90012

# Appendix B

Water Conservation Commitment Letter

American Commercial Equities

November 16, 2017

Richard F. Harasick
Senior Assistant General Manager for Water Systems
Los Angeles Department of Water & Power
111 North Hope Street, Room 1455
Los Angeles, CA 90012-5701

Re: WATER CONSERVATION COMMITMENTS FOR THE 5420 SUNSET PROJECT

Dear Mr. Harasick:

5420 Sunset Boulevard LP, LLC (the Applicant) proposes to develop the 5420 Sunset Boulevard Project (the Project) located at 5420 Sunset Boulevard (the Project Site) within the Hollywood Community Plan area of the City of Los Angeles (the City). The Project Site, which encompasses approximately 6.75 acres (294,082 square feet), is generally bounded by Sunset Boulevard to the north, Serrano Avenue to the east, the former site of Deluxe Laboratories to the south, and Western Avenue to the west. The Project would develop a new mixed-use development consisting of 735 multi-family residential units and approximately 95,820 square feet of neighborhood-serving commercial uses, including market/retail uses. The Project would also include approximately 707,697 square feet of covered parking. As part of the Project, the existing grocery store, fast-food restaurant, and associated surface parking areas that collectively comprise approximately 100,796 square feet of floor area on-site would be removed.

The Applicant understands the City of Los Angeles' policy that future water needs shall be met by expanding water recycling and conservation. The Applicant has committed to implement the following water conservation measures that are in addition to those required by codes and ordinances for the Project:

- Showerheads with a flow rate of 1.6 gallons per minute (gpm), or less.
- Non-residential lavatory faucets with a flow rate of 0.35 gpm, or less.
- Metering faucets with a flow rate of 0.18 gallons per cycle (gpc), or less.
- High Efficiency Toilets with a flush volume of 1.12 gallons per flush (gpf), or less.
- Urinals with a flush volume of 0.11 gpf, or less.
- Leak Detection System for swimming pools and Jacuzzi
- Proper Hydro-zoning/Zoned Irrigation-(groups plants with similar water requirements together)
- Drought Tolerant Plants – 45 percent of total landscaping

The Applicant has also committed to comply with the City of Los Angeles Low Impact Development Ordinances (City Ordinance No. 181899 and No. 183833) and to prioritize the selection of Best Management Practices to remove storm water pollutants, reduce storm water runoff volume, and beneficially use storm water to support an integrated approach to protecting water quality and managing water resources. All the BMPs are required to design capturing at least the volume of water produced by the storm water quality design storm event that results from either the 0.75-inch, 24-hour rain event or the 85th percentile 24-hour run off event determined from the Los Angeles County 85th percentile precipitation isohyetal map, whichever is greater.

- Infiltration drywells with pre-treatment systems – the required captured storm water volume from the site will be treated prior to infiltration.
- A combination of mechanical treatment devices and cisterns function as storm water capture and use system - the required captured storm water volume from the site will be treated prior to capture and use system.
- High efficiency biofiltration/bioretention systems - the required captured storm water volume from the site will be treated prior to overflow to the streets.
- Combination of any of above.

The following is the information on plumbing fixture/appliance counts/estimates for the Project:

| | Residential Dwelling Unit | Residential Common / Pool Area | Restaurant/ Bar | Retail / Market Commercial | Leasing Office |
|---|---|---|---|---|---|
| Water Closets | 927 | 15 | 9 | 19 | 3 |
| Urinals | N/A | 4 | 3 | 8 | 1 |
| Lavatory Faucets | 927 | 10 | 6 | 18 | 2 |
| Kitchen Faucets | 735 | 2 | 10 | 2 | 1 |
| Commercial Kitchen Pre-Rinse Spray Faucets | N/A | 0 | 10 | 2 | 0 |
| Showerheads * | 921 | 6 | N/A | 2 | 0 |
| Clothes washer (Residential) | 735 | N/A | N/A | N/A | N/A |
| Clothes washer (Commercial) | N/A | 0 | 0 | 15 | 0 |
| Dishwasher (Residential) | 735 | N/A | N/A | N/A | N/A |
| Dishwasher (Commercial) | N/A | 2 | 10 | 1 | 0 |
| Tub Faucets** | 184 | N/A | N/A | N/A | N/A |

*Of the 921 listed for residential use, 184 are in a tub-shower. ** Tub faucets occur in the tub-shower.

Should you have any questions, please do not hesitate to call at (310) 774-5300.

Sincerely,

Marvin Lotz

5420 Sunset Blvd. LP, LLC

# Appendix C

Project Location Maps

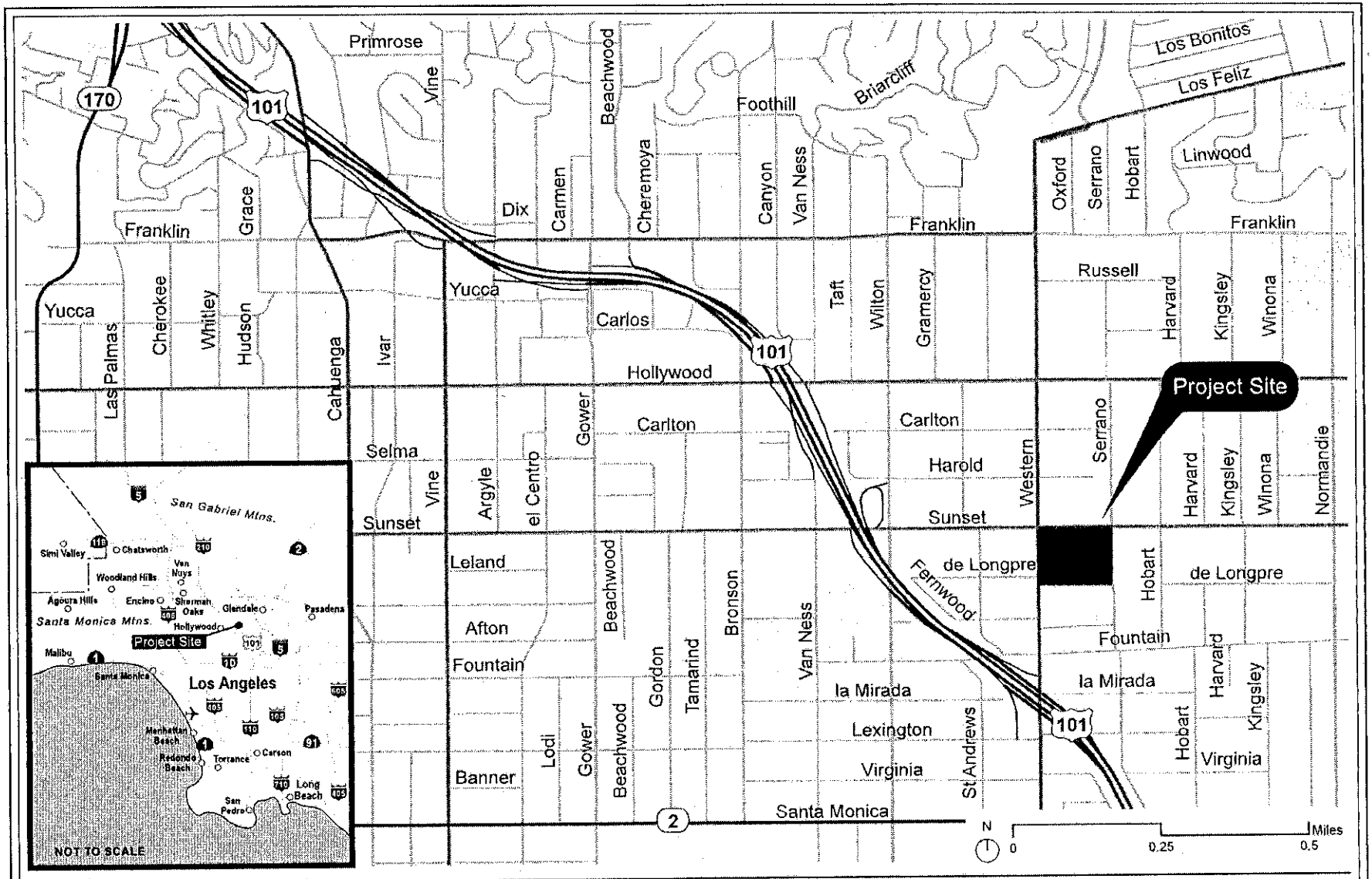



**Figure 1**
Project Location Map

Source: Los Angeles County GIS, 2015; Eyestone Environmental, 2016.

# Appendix D

Adjudicated Groundwater Basin Judgments

- San Fernando Basin – Judgment No. 650079
- Sylmar Basin – Judgment No. 650079
- Central Basin – Judgment No, 786656

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES

| | |
|---|---|
| THE CITY OF LOS ANGELES,<br>Plaintiff,<br>vs.<br>CITY OF SAN FERNANDO, ET AL.<br>Defendants. | No. 650079<br>JUDGMENT |

There follows by consecutive paging Recitals (page 1), Definitions and List of Attachments (pages 1 to 6), Designation of Parties (page 6), Declaration re Geology and Hydrology (pages 6 to 12), Declaration of Rights (pages 12 to 21), Injunctions (pages 21 to 22), Continuing Jurisdiction (page 23), Watermaster (pages 23 to 29), Physical Solution (pages 29 to 34), and Miscellaneous Provisions (pages 34 to 35), and Attachments (pages 36 to 46). Each and all of said several parts constitute a single integrated Judgment herein.

4.2.3 Separate Ground Water Basins. The physical and geologic characteristics of each of the ground water basins, Eagle rock, Sylmar, Verdugo and San Fernando, cause impediments to inter-basin ground water flow whereby there is created separate underground reservoirs. Each of said basins contains a common source of water supply to parties extracting ground water from each of said basins. The amount of underflow from Sylmar Basin, Verdugo Basin and Eagle Rock Basin to San Fernando Basin is relatively small, and on the average has been approximately 540 acre feet per year from the Sylmar Basin; 80 acre feet per year from Verdugo Basin; and 50 acre feet per year from Eagle Rock Basin. Each has physiographic, geologic and hydrologic differences; one from the other, and each meets the hydrologic definition of "basin". The extractions of water in the respective basins affect the other water users within that basin but do not significantly or materially affect the ground water levels in any of the other basins. The underground reservoirs of Eagle Rock, Verdugo and Sylmar Basins are independent of one another and of the San Fernando Basin.

4.2.4 Safe Yield and Native Safe Yield. The safe yield and native safe yield, stated in acre feet, of the three largest basins for the year 1964-65 was as follows:

| Basin | Safe Yield | Native Safe Yield |
|---|---|---|
| San Fernando | 90,680 | 43,660 |
| Sylmar | 6,210 | 3,850 |
| Verdugo | 7,150 | 3,590 |

The safe yield of Eagle Rock Basin is derived from imported water delivered by Los Angeles. There is no measurable native safe yield.

4.2.5 Separate Basins -- Separate Rights. The rights of the parties to extract ground water within ULARA are separate and distinct as within each of the several ground water basins within said watershed.

4.2.6 Hydrologic Condition of Basins. The several basins within ULARA are in varying hydrologic conditions, which result in different legal consequences.

4.2.6.1 San Fernando Basin. The first full year of overdraft in San Fernando Basin was 1954-55. It remained in overdraft continuously until 1968, when an injunction

LAGERLOF, SENICAL, DRESCHER & SWIFT
301 North Lake Avenue, 10th Floor
Pasadena, California 91101
(818) 793-9400 or (213) 385-4345

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES

| | |
|---|---|
| CENTRAL AND WEST BASIN WATER REPLENISHMENT DISTRICT, etc., Plaintiff, v. CHARLES E. ADAMS, et al., Defendants. CITY OF LAKEWOOD, a municipal corporation, Cross-Complaint, v. CHARLES E. ADAMS, et al., Cross-Defendants. | No. 786,656<br>SECOND AMENDED JUDGMENT<br>(Declaring and establishing water rights in Central Basin and enjoining extractions therefrom in excess of specified quantities.) |

The above-entitled matter duly and regularly came on for trial in Department 73 of the above-entitled Court (having been transferred thereto from Department 75 by order of the presiding Judge), before the Honorable Edmund M. Moor, specially assigned Judge, on May 17, 1965, at 10:00 a.m. Plaintiff was represented by its attorneys BEWLEY, KNOOP,

of the close of the water year ending September 30, 1978 in accordance with the Watermaster Reports on file with this Court and the records of the Plaintiff. This tabulation does not take into account additions or subtractions from any Allowed Pumping Allocation of a producer for the 1978-79 water year, nor other adjustments not representing change in fee title to water rights, such as leases of water rights, nor does it include the names of lessees of landowners where the lessees are exercising the water rights. The exercise of all water rights is subject, however, to the provisions of this Judgment is hereinafter contained. All of said rights are of the same legal force and effect and are without priority with reference to each other. Each party whose name is hereinafter set forth in the tabulation set forth in Appendix "2" of this judgment, and after whose name there appears under the column "Total Water Right" the figure "0" owns no rights to extract any ground water from Central Basin, and has no right to extract any ground water from Central Basin.

(b) Defendant The City of Los Angeles is the owner of the right to extract fifteen thousand (15,000) acre feet per annum of ground water from Central Basin. Defendant Department of Water and Power of the City of Los Angeles has no right to extract ground water from Central Basin except insofar as it has the right, power, duty or obligation on behalf of defendant The City of Los Angeles to exercise the water rights in Central Basin of defendant The City of Los Angeles. The exercise of said rights are subject, however, to the provisions of this judgment hereafter contained, including but not limited to, sharing with other parties in any subsequent decreases or increases in the quantity of extractions permitted from Central Basin, pursuant to continuing jurisdiction of the Court, on the basis that fifteen thousand (15,000) acre feet bears to the Allowed Pumping Allocations of the other parties.

(c) No party to this action is the owner of or has any right to extract ground water from Central Basin except as herein affirmatively determined.

2. Parties Enjoined as Regards Quantities of Extractions.

# Appendix E

Water Supply Assessment Provisions
California Water Code Section 10910-10915

# WATER CODE
# SECTION 10910-10915

10910. (a) Any city or county that determines that a project, as defined in Section 10912, is subject to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) under Section 21080 of the Public Resources Code shall comply with this part.

(b) The city or county, at the time that it determines whether an environmental impact report, a negative declaration, or a mitigated negative declaration is required for any project subject to the California Environmental Quality Act pursuant to Section 21080.1 of the Public Resources Code, shall identify any water system that is, or may become as a result of supplying water to the project identified pursuant to this subdivision, a public water system, as defined in Section 10912, that may supply water for the project. If the city or county is not able to identify any public water system that may supply water for the project, the city or county shall prepare the water assessment required by this part after consulting with any entity serving domestic water supplies whose service area includes the project site, the local agency formation commission, and any public water system adjacent to the project site.

(c) (1) The city or county, at the time it makes the determination required under Section 21080.1 of the Public Resources Code, shall request each public water system identified pursuant to subdivision (b) to determine whether the projected water demand associated with a proposed project was included as part of the most recently adopted urban water management plan adopted pursuant to Part 2.6 (commencing with Section 10610).

(2) If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f), and (g).

(3) If the projected water demand associated with the proposed project was not accounted for in the most recently adopted urban water management plan, or the public water system has no urban water management plan, the water supply assessment for the project shall include a discussion with regard to whether the public water system's

total projected water supplies available during normal, single dry, and multiple dry water years during a 20-year projection will meet the projected water demand associated with the proposed project, in addition to the public water system's existing and planned future uses, including agricultural and manufacturing uses.

(4) If the city or county is required to comply with this part pursuant to subdivision (b), the water supply assessment for the project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the project during normal, single dry, and multiple dry water years during a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses, including agricultural and manufacturing uses.

(d) (1) The assessment required by this section shall include an identification of any existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and a description of the quantities of water received in prior years by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts.

(2) An identification of existing water supply entitlements, water rights, or water service contracts held by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), shall be demonstrated by providing information related to all of the following:

(A) Written contracts or other proof of entitlement to an identified water supply.

(B) Copies of a capital outlay program for financing the delivery of a water supply that has been adopted by the public water system.

(C) Federal, state, and local permits for construction of necessary infrastructure associated with delivering the water supply.

(D) Any necessary regulatory approvals that are required in order to be able to convey or deliver the water supply.

(e) If no water has been received in prior years by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts, the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), shall also include in its water supply assessment pursuant to subdivision (c), an

identification of the other public water systems or water service contractholders that receive a water supply or have existing water supply entitlements, water rights, or water service contracts, to the same source of water as the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has identified as a source of water supply within its water supply assessments.

(f) If a water supply for a proposed project includes groundwater, the following additional information shall be included in the water supply assessment:

(1) A review of any information contained in the urban water management plan relevant to the identified water supply for the proposed project.

(2) A description of any groundwater basin or basins from which the proposed project will be supplied. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current bulletin of the department that characterizes the condition of the groundwater basin, and a detailed description by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), of the efforts being undertaken in the basin or basins to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the amount and location of groundwater pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), for the past five years from any groundwater basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), from any basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available,

including, but not limited to, historic use records.

(5) An analysis of the sufficiency of the groundwater from the basin or basins from which the proposed project will be supplied to meet the projected water demand associated with the proposed project.

A water supply assessment shall not be required to include the information required by this paragraph if the public water system determines, as part of the review required by paragraph (1), that the sufficiency of groundwater necessary to meet the initial and projected water demand associated with the project was addressed in the description and analysis required by paragraph (4) of subdivision (b) of Section 10631.

(g) (1) Subject to paragraph (2), the governing body of each public water system shall submit the assessment to the city or county not later than 90 days from the date on which the request was received. The governing body of each public water system, or the city or county if either is required to comply with this act pursuant to subdivision (b), shall approve the assessment prepared pursuant to this section at a regular or special meeting.

(2) Prior to the expiration of the 90-day period, if the public water system intends to request an extension of time to prepare and adopt the assessment, the public water system shall meet with the city or county to request an extension of time, which shall not exceed 30 days, to prepare and adopt the assessment.

(3) If the public water system fails to request an extension of time, or fails to submit the assessment notwithstanding the extension of time granted pursuant to paragraph (2), the city or county may seek a writ of mandamus to compel the governing body of the public water system to comply with the requirements of this part relating to the submission of the water supply assessment.

(h) Notwithstanding any other provision of this part, if a project has been the subject of a water supply assessment that complies with the requirements of this part, no additional water supply assessment shall be required for subsequent projects that were part of a larger project for which a water supply assessment was completed and that has complied with the requirements of this part and for which the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has concluded that its water supplies are sufficient to meet the projected water demand associated with the proposed project, in addition to the existing and planned future uses, including, but not limited to, agricultural and industrial uses, unless one or more of the following changes occurs:

(1) Changes in the project that result in a substantial increase

in water demand for the project.

(2) Changes in the circumstances or conditions substantially affecting the ability of the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), to provide a sufficient supply of water for the project.

(3) Significant new information becomes available which was not known and could not have been known at the time when the assessment was prepared.

10911. (a) If, as a result of its assessment, the public water system concludes that its water supplies are, or will be, insufficient, the public water system shall provide to the city or county its plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop those water supplies. If the city or county, if either is required to comply with this part pursuant to subdivision (b), concludes as a result of its assessment, that water supplies are, or will be, insufficient, the city or county shall include in its water supply assessment its plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop those water supplies. Those plans may include, but are not limited to, information concerning all of the following:

(1) The estimated total costs, and the proposed method of financing the costs, associated with acquiring the additional water supplies.

(2) All federal, state, and local permits, approvals, or entitlements that are anticipated to be required in order to acquire and develop the additional water supplies.

(3) Based on the considerations set forth in paragraphs (1) and (2), the estimated timeframes within which the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), expects to be able to acquire additional water supplies.

(b) The city or county shall include the water supply assessment provided pursuant to Section 10910, and any information provided pursuant to subdivision (a), in any environmental document prepared for the project pursuant to Division 13 (commencing with Section 21000) of the Public Resources Code.

(c) The city or county may include in any environmental document an evaluation of any information included in that environmental

document provided pursuant to subdivision (b). The city or county shall determine, based on the entire record, whether projected water supplies will be sufficient to satisfy the demands of the project, in addition to existing and planned future uses. If the city or county determines that water supplies will not be sufficient, the city or county shall include that determination in its findings for the project.

10912. For the purposes of this part, the following terms have the following meanings:

(a) "Project" means any of the following:

(1) A proposed residential development of more than 500 dwelling units.

(2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.

(3) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.

(4) A proposed hotel or motel, or both, having more than 500 rooms.

(5) A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.

(6) A mixed-use project that includes one or more of the projects specified in this subdivision.

(7) A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.

(b) If a public water system has fewer than 5,000 service connections, then "project" means any proposed residential, business, commercial, hotel or motel, or industrial development that would account for an increase of 10 percent or more in the number of the public water system's existing service connections, or a mixed-use project that would demand an amount of water equivalent to, or greater than, the amount of water required by residential development that would represent an increase of 10 percent or more in the number of the public water system's existing service connections.

(c) "Public water system" means a system for the provision of piped water to the public for human consumption that has 3000 or more service connections. A public water system includes all of the

following:

(1) Any collection, treatment, storage, and distribution facility under control of the operator of the system which is used primarily in connection with the system.

(2) Any collection or pretreatment storage facility not under the control of the operator that is used primarily in connection with the system.

(3) Any person who treats water on behalf of one or more public water systems for the purpose of rendering it safe for human consumption.

10914. (a) Nothing in this part is intended to create a right or entitlement to water service or any specific level of water service.

(b) Nothing in this part is intended to either impose, expand, or limit any duty concerning the obligation of a public water system to provide certain service to its existing customers or to any future potential customers.

(c) Nothing in this part is intended to modify or otherwise change existing law with respect to projects which are not subject to this part.

(d) This part applies only to a project for which a notice of preparation is submitted on or after January 1, 1996.

10915. The County of San Diego is deemed to comply with this part if the Office of Planning and Research determines that all of the following conditions have been met:

(a) Proposition C, as approved by the voters of the County of San Diego in November 1988, requires the development of a regional growth management plan and directs the establishment of a regional planning and growth management review board.

(b) The County of San Diego and the cities in the county, by agreement, designate the San Diego Association of Governments as that review board.

(c) A regional growth management strategy that provides for a comprehensive regional strategy and a coordinated economic development and growth management program has been developed pursuant to Proposition C.

(d) The regional growth management strategy includes a water element to coordinate planning for water that is consistent with the

requirements of this part.

(e) The San Diego County Water Authority, by agreement with the San Diego Association of Governments in its capacity as the review board, uses the association's most recent regional growth forecasts for planning purposes and to implement the water element of the strategy.

(f) The procedures established by the review board for the development and approval of the regional growth management strategy, including the water element and any certification process established to ensure that a project is consistent with that element, comply with the requirements of this part.

(g) The environmental documents for a project located in the County of San Diego include information that accomplishes the same purposes as a water supply assessment that is prepared pursuant to Section 10910.

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# Appendix F

Metropolitan Water District of Southern California

(APPENDIX A)

# APPENDIX A

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## The Metropolitan Water District of Southern California

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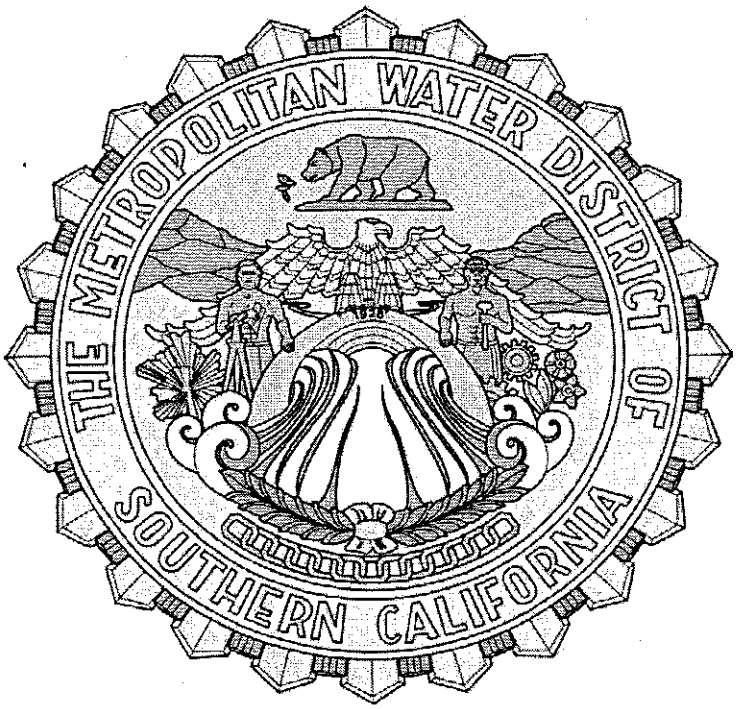

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# INTRODUCTION

*This Appendix A provides general information regarding The Metropolitan Water District of Southern California ("Metropolitan"), including information regarding Metropolitan's operations and finances. Statements included or incorporated by reference in this Appendix A constitute "forward-looking statements." Such statements are generally identifiable by the terminology used such as "plan," "project," "expect," "estimate," "budget" or other similar words. Such statements are based on facts and assumptions set forth in Metropolitan's current planning documents including, without limitation, its most recent biennial budget. The achievement of results or other expectations contained in such forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements. Actual results may differ from Metropolitan's forecasts. Metropolitan is not obligated to issue any updates or revisions to the forward-looking statements in any event.*

*Metropolitan maintains a website that may include information on programs or projects described in this Appendix A; however, none of the information on Metropolitan's website is incorporated by reference or intended to assist investors in making an investment decision or to provide any additional information with respect to the information included in this Appendix A. The information presented on Metropolitan's website is not part of the Official Statement and should not be relied upon in making investment decisions.*

## Formation and Purpose

Metropolitan is a metropolitan water district created in 1928 under authority of the Metropolitan Water District Act (California Statutes 1927, Chapter 429, as reenacted in 1969 as Chapter 209, as amended (herein referred to as the "Act")). The Act authorizes Metropolitan to: levy property taxes within its service area; establish water rates; impose charges for water standby and service availability; incur general obligation bonded indebtedness and issue revenue bonds, notes and short-term revenue certificates; execute contracts; and exercise the power of eminent domain for the purpose of acquiring property. In addition, Metropolitan's Board of Directors (the "Board") is authorized to establish terms and conditions under which additional areas may be annexed to Metropolitan's service area.

Metropolitan's primary purpose is to provide a supplemental supply of water for domestic and municipal uses at wholesale rates to its member public agencies. If additional water is available, such water may be sold for other beneficial uses. Metropolitan serves its member agencies as a water wholesaler and has no retail customers.

The mission of Metropolitan, as promulgated by the Board, is to provide its service area with adequate and reliable supplies of high quality water to meet present and future needs in an environmentally and economically responsible way.

Metropolitan's charges for water sales and availability are fixed by its Board, and are not subject to regulation or approval by the California Public Utilities Commission or any other state or federal agency. Metropolitan imports water from two principal sources: northern California via the Edmund G. Brown California Aqueduct (the "California Aqueduct") of the State Water Project owned by the State of California (the "State" or "California") and the Colorado River via the Colorado River Aqueduct ("CRA") owned by Metropolitan.

## Member Agencies

Metropolitan is comprised of 26 member public agencies, including 14 cities, 11 municipal water districts, and one county water authority, which collectively serve the residents and businesses of more than 300 cities and numerous unincorporated communities. Member agencies request water from Metropolitan at

various delivery points within Metropolitan's system and pay for such water at uniform rates established by the Board for each class of water service. Metropolitan's water is a supplemental supply for its member agencies, most of whom have other sources of water. See "METROPOLITAN REVENUES–Principal Customers" in this Appendix A for a listing of the ten member agencies with the highest water purchases from Metropolitan during the fiscal year ended June 30, 2016. Metropolitan's member agencies may, from time to time, develop additional sources of water. No member is required to purchase water from Metropolitan, but all member agencies are required to pay readiness-to-serve charges whether or not they purchase water from Metropolitan. See "METROPOLITAN REVENUES–Rate Structure", "–Member Agency Purchase Orders" and "–Other Charges" in this Appendix A.

The following table lists the 26 member agencies of Metropolitan.

| Municipal Water Districts | | Cities | | County Water Authority |
|---|---|---|---|---|
| Calleguas | Las Virgenes | Anaheim | Los Angeles | San Diego[1] |
| Central Basin | Orange County | Beverly Hills | Pasadena | |
| Eastern | Three Valleys | Burbank | San Fernando | |
| Foothill | West Basin | Compton | San Marino | |
| Inland Empire Utilities Agency | | Fullerton | Santa Ana | |
| Upper San Gabriel Valley | | Glendale | Santa Monica | |
| Western of Riverside County | | Long Beach | Torrance | |

(1) The San Diego County Water Authority, currently Metropolitan's largest customer, is a plaintiff in litigation challenging the allocation of costs to certain rates adopted by the Board and asserting other claims. See "METROPOLITAN REVENUES–Litigation Challenging Rate Structure" in this Appendix A.

**Service Area**

Metropolitan's service area comprises approximately 5,200 square miles and includes portions of the six counties of Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura. When Metropolitan began delivering water in 1941, its service area consisted of approximately 625 square miles. Its service area has increased by 4,500 square miles since that time. The expansion was primarily the result of annexation of the service areas of additional member agencies.

Metropolitan estimates that approximately 18.8 million people lived in Metropolitan's service area in 2016, based on official estimates from the California Department of Finance and on population distribution estimates from the Southern California Association of Governments ("SCAG") and the San Diego Association of Governments ("SANDAG"). Population projections prepared by SCAG in 2012 and SANDAG in 2013, as part of their planning process to update regional transportation and land use plans, show expected population growth of about 18 percent in Metropolitan's service area between 2010 and 2035. The economy of Metropolitan's service area is exceptionally diverse. In 2015, the economy of the six counties which contain Metropolitan's service area had a gross domestic product larger than all but eleven nations of the world. Metropolitan has historically provided between 40 and 60 percent of the water used annually within its service area. For additional economic and demographic information concerning the six county area containing Metropolitan's service area, see Appendix E–"SELECTED DEMOGRAPHIC AND ECONOMIC INFORMATION FOR METROPOLITAN'S SERVICE AREA."

The climate in Metropolitan's service area ranges from moderate temperatures throughout the year in the coastal areas to hot and dry summers in the inland areas. Annual rainfall in an average year has historically been approximately 13 to 15 inches along the coastal area, up to 20 inches in foothill areas and less than 10 inches inland.

## GOVERNANCE AND MANAGEMENT

### Board of Directors

Metropolitan is governed by a 38-member Board of Directors, made up of representatives from all of Metropolitan's member agencies. Each member public agency is entitled to have at least one representative on the Board, plus an additional representative for each full five percent of the total assessed valuation of property in Metropolitan's service area that is within the member public agency. Changes in relative assessed valuation do not terminate any director's term. Accordingly, the Board may, from time to time, have more or fewer than 38 directors.

The Board includes business, professional and civic leaders. Directors are appointed by member agencies in accordance with those agencies' processes. They serve on the Board without compensation from Metropolitan. Voting is based on assessed valuation, with each member agency being entitled to cast one vote for each $10 million or major fractional part of $10 million of assessed valuation of property within the member agency, as shown by the assessment records of the county in which the member agency is located. The Board administers its policies through the Metropolitan Water District Administrative Code (the "Administrative Code"), which was adopted by the Board in 1977. The Administrative Code is periodically amended to reflect new policies or changes in existing policies that occur from time to time.

### Management

Metropolitan's day-to-day management is under the direction of its General Manager, who serves at the pleasure of the Board, as do Metropolitan's General Counsel, General Auditor and Ethics Officer. Following is a biographical summary of Metropolitan's principal executive officers.

*Jeffrey Kightlinger, General Manager* – Mr. Kightlinger was appointed as General Manager in February 2006, leaving the position of General Counsel, which he had held since February 2002. Before becoming General Counsel, Mr. Kightlinger was a Deputy General Counsel and then Assistant General Counsel, representing Metropolitan primarily on Colorado River matters, environmental issues, water rights and a number of Metropolitan's water transfer and storage programs. Prior to joining Metropolitan in 1995, Mr. Kightlinger worked in private practice representing numerous public agencies including municipalities, redevelopment agencies and special districts. Mr. Kightlinger earned his bachelor's degree in history from the University of California, Berkeley, and his law degree from Santa Clara University.

*Marcia Scully, General Counsel* – Ms. Scully assumed the position of General Counsel in March 2012. She previously served as Metropolitan's Interim General Counsel from March 2011 to March 2012. Ms. Scully joined Metropolitan in 1995, after a decade of private law practice, providing legal representation to Metropolitan on construction, employment, Colorado River and significant litigation matters. From 1981 to 1985 she was assistant city attorney for the City of Inglewood. Ms. Scully served as president of University of Michigan's Alumnae Club of Los Angeles and is a recipient of the 1996 State Bar of California, District 7 President's Pro Bono Service Award and the Southern California Association of Non-Profit Housing Advocate of the Year Award. She is also a member of the League of Women Voters for Whittier and was appointed for two terms on the City of Whittier's Planning Commission, three years of which were served as chair. Ms. Scully earned a bachelor's degree in liberal arts from the University of Michigan, a master's degree in urban planning from Wayne State University and law degree from Loyola Law School.

*Gerald C. Riss, General Auditor* – Mr. Riss was appointed as Metropolitan's General Auditor in July 2002 and is responsible for the independent evaluation of the policies, procedures and systems of control throughout Metropolitan. Mr. Riss is a certified fraud examiner, certified financial services auditor and certified risk professional with more than 25 years of experience in accounting, audit and risk management. Prior to joining Metropolitan, Mr. Riss was Vice President and Assistant Division Head of Risk Management

Administration at United California Bank/Bank of the West. He also served as Senior Vice President, director of Risk Management and General Auditor of Tokai Bank of California from 1988 until its reorganization as United California Bank in 2001. He earned a bachelor's degree in accounting and master's degree in business administration from Wayne State University in Detroit, Michigan.

*Deena Ghaly, Ethics Officer* – Ms. Ghaly was appointed Ethics Officer in November 2012. Ms. Ghaly joined Metropolitan with over 20 years of legal and ethics-related experience. Prior to joining Metropolitan, she served as an administrative law judge for the California Office of Administrative Hearings. She previously was head of enforcement and general counsel for the Los Angeles City Ethics Commission, which administers and enforces the laws regarding campaign contributions, lobbying, and government ethics for the City of Los Angeles. Before moving to Southern California in 2001, Ms. Ghaly worked in New York City, where she headed the labor department in the general counsel's office of a large city agency. Licensed to practice law in California, New York and New Jersey, Ms. Ghaly is knowledgeable in workplace investigations, government ethics, regulatory affairs, and labor and employment matters. She has lectured throughout the nation on various topics, including parallel criminal and administrative prosecution, due process in administrative procedures, and effective internal investigations. Ms. Ghaly earned a bachelor's degree in philosophy from Wellesley College in Massachusetts and a law degree from Cornell Law School.

*Gary Breaux, Assistant General Manager/Chief Financial Officer* – Mr. Breaux has had extensive experience working for local governments since 1983. From 1994 until joining Metropolitan in October 2011, he served as Director of Finance for East Bay Municipal Utility District ("EBMUD"). At EBMUD, he was responsible for all financial areas, including treasury operations, debt management, rates, internal audit, accounting and reporting, risk management and customer and community services. Prior to joining EBMUD, he was Director of Finance for the City of Oakland, California. A native of Colorado, Mr. Breaux received a Bachelor of Science degree in Business from the University of Colorado in 1977 and a master's degree in Public Administration in 1987 from Virginia Commonwealth University.

*Debra Man, Assistant General Manager/Chief Operating Officer* – Ms. Man was appointed to her current position in December 2003. Ms. Man has worked at Metropolitan since 1986, beginning as an engineer and advancing to Chief of the Planning and Resources Division. As Chief of Planning and Resources she was responsible for major initiatives adopted by Metropolitan's Board, such as the Integrated Water Resources Plan, rate structure, and facility plans for expansion of Metropolitan's distribution system. In 1999, she was appointed as Vice President of Water Transfers and Exchanges, responsible for securing water supplies through agreements and partnerships with other water and agricultural interests in San Joaquin Valley and Southern California and demonstrating Metropolitan's water supply reliability in compliance with current laws. Ms. Man is a registered professional civil engineer in California and Hawaii. She has a bachelor's degree in civil engineering from the University of Hawaii and a master's degree in civil/environmental engineering from Stanford University.

*Roger Patterson, Assistant General Manager/Strategic Initiatives* – Mr. Patterson was appointed Assistant General Manager in March 2006. He is responsible for overseeing water supply and planning issues, including the Colorado River and State Water Project. He previously served as a consultant to Metropolitan on Colorado River issues. Mr. Patterson was the director of the Nebraska Department of Natural Resources from 1999 to 2005, where he was responsible for water administration, water planning, flood-plain delineation, dam safety and the state databank. Prior to his work in Nebraska, Mr. Patterson spent 25 years with the U.S. Bureau of Reclamation ("Bureau of Reclamation"), retiring from the Bureau of Reclamation as the Regional Director for the Mid-Pacific Region. He is a registered professional engineer in Nebraska and Colorado, and earned bachelor's and master's degrees in engineering from the University of Nebraska.

*Fidencio M. Mares, Interim Assistant General Manager/Chief Administrative Officer* – Mr. Mares was appointed the Interim Assistant General Manager/Chief Administrative Officer in July 2015 and is

responsible for the strategic direction and management of Metropolitan's administrative functions. His primary responsibilities include managing human resources, information technology, real property and administrative services. Prior to joining Metropolitan, Mr. Mares was the owner of the Mares Company, where he served as a consultant to companies in the overall assessment of their management programs and processes. Prior to becoming a consultant, Mares worked both in the private and public sectors, serving as vice president of human resources and corporate communications for Beckham Coulter and as chief administrative officer of BHP/Pacific Resources and President & CEO of Gas Operations. He worked for more than 15 years for The Gas Company in Hawaii and Southern California Edison Company. A graduate of the California State University, Fresno, he also serves on the National Board of Visitors (Distinguished Graduates) for the University.

*Dee Zinke, Assistant General Manager/Chief External Affairs Officer*– Ms. Zinke was appointed Assistant General Manager in January 2016. She is responsible for Metropolitan's communications, business outreach, education and legislative matters. She joined Metropolitan in 2009 as Manager of the Legislative Services Section. Before coming to Metropolitan, Ms. Zinke was the Manager of Governmental and Legislative Affairs at the Calleguas Municipal Water District for nearly 10 years, where she received recognition for her significant contributions to the Association of California Water Agencies, the Ventura County Special Districts Association and the Association of Water Agencies of Ventura County. During her tenure at Calleguas, she was named Chair of the Ventura County Watersheds Coalition and appointed by then-Secretary of Resources Mike Chrisman to the State Watershed Advisory Committee. Prior to her public service, she worked in the private sector as the Executive Officer and Senior Legislative Advocate for Building Industry Association of Greater Los Angeles and Ventura Counties and as Director of Communications for E-Systems, a defense contractor specializing in communication, surveillance and navigation systems in Washington, D.C. Ms. Zinke holds a Bachelor of Arts degree in Communication and Psychology from Virginia Polytechnic Institute and State University.

**Employee Relations**

The total number of regular full-time Metropolitan employees on January 1, 2017 was 1,765, of whom 1,223 were represented by AFSCME Local 1902, 95 by the Supervisors Association, 294 by the Management and Professional Employees Association and 129 by the Association of Confidential Employees. The remaining 24 employees are unrepresented. The four bargaining units represent 99 percent of Metropolitan's employees. The Memorandum of Understanding ("MOU") with each of the Association of Confidential Employees, the Management and Professional Employees Association and AFSCME Local 1902 covered the period January 1, 2011 through December 31, 2016. The MOU with the Supervisors Association covered the period September 13, 2011 to December 31, 2016. Although the contracts with the bargaining units are expired, the provisions of such contracts will govern until a successor contract is negotiated. The Board authorized the General Manager to exercise discretion under Administrative Code Section 6101(k) to enter into a successor MOU with the Management and Professional Employees Association on February 14, 2017. Negotiations with the remaining bargaining units are underway and are currently expected to be completed in early 2017.

**Risk Management**

Metropolitan is exposed to various risks of loss related to the design and construction of facilities, and the treatment and delivery of water. With the assistance of third party claims administrators, Metropolitan is self-insured for liability, property and workers' compensation. Metropolitan self-insures the first $25 million per liability occurrence, with commercial liability coverage of $75 million in excess of the self-insured retention. The $25 million self-insured retention is maintained as a separate restricted reserve. Metropolitan is also self-insured for loss or damage to its property, with the $25 million self-insured retention also being accessible for emergency repairs and Metropolitan property losses. In addition, Metropolitan obtains other excess and specialty insurance coverages such as directors' and officers' liability, fiduciary liability and aircraft hull and liability coverage.

Metropolitan self-insures the first $5 million for workers' compensation with statutory excess coverage. The self-insurance retentions and reserve levels currently maintained by Metropolitan may be modified by the Board at its sole discretion.

**Information Security**

Metropolitan has adopted and maintains an active Information Security program ("ISP") that includes comprehensive policies and procedures reviewed annually by its internal Information Security Team, Audit and independent third party auditors and consultants. Metropolitan has appointed an Information Security Manager who is responsible for overseeing the annual review of the ISP and its alignment with the strategic plan and direction of Metropolitan. Metropolitan's policies and procedures are consistent with public agency standards as well as staying aligned with governance, risk, and compliance. All Metropolitan users are required to participate in Metropolitan's Information Security education and awareness training. Metropolitan's Information Security Team is responsible for providing guidance and education on the implementation of new technologies based on Metropolitan's ISP as well as overseeing the monitoring of potential threats and vulnerabilities, utilizing and executing security controls to validate policy enforcement, protecting against virus and malware attacks, and investigating any potential unauthorized activity on Metropolitan's network.

## METROPOLITAN'S WATER SUPPLY

**General**

Metropolitan's principal sources of water supplies are the State Water Project and the Colorado River. Metropolitan receives water delivered from the State Water Project under State Water Contract provisions, including contracted supplies, use of carryover storage in San Luis Reservoir, and surplus supplies. Metropolitan holds rights to a basic apportionment of Colorado River water and has priority rights to an additional amount depending on availability of surplus supplies. Water management programs supplement these Colorado River supplies. To secure additional supplies, Metropolitan also has groundwater banking partnerships and water transfer and storage arrangements within and outside its service area. Metropolitan's principal water supply sources, and other supply arrangements and water management are more fully described herein.

Metropolitan faces a number of challenges in providing adequate, reliable and high quality supplemental water supplies for southern California. These include, among others: (1) population growth within the service area; (2) increased competition for low-cost water supplies; (3) variable weather conditions; (4) increased environmental regulations; and (5) climate change. Metropolitan's resources and strategies for meeting these long-term challenges are set forth in its Integrated Water Resources Plan, as updated from time to time. See "–Integrated Water Resources Plan." In addition, Metropolitan manages water supplies in response to the prevailing hydrologic conditions by implementing its Water Surplus and Drought Management ("WSDM") Plan, and in times of prolonged or severe shortages, the Water Supply Allocation Plan (the "Water Supply Allocation Plan"). See "CONSERVATION AND WATER SHORTAGE MEASURES–Water Surplus and Drought Management Plan" and "–Water Supply Allocation Plan."

Hydrologic conditions can have a significant impact on Metropolitan's imported water supply sources. For Metropolitan's State Water Project supplies, precipitation in California's northern Sierra Nevada during the fall and winter helps replenish storage levels in Lake Oroville, a key State Water Project facility. The subsequent runoff from the spring snowmelt helps satisfy regulatory requirements in the San Francisco Bay/Sacramento-San Joaquin River Delta ("Bay-Delta") bolstering water supply reliability in the same year. See "–State Water Project – Bay-Delta Proceedings Affecting State Water Project." The source of Metropolitan's Colorado River supplies is primarily the watersheds of the Upper Colorado River basin in

the states of Colorado, Utah, and Wyoming. Although precipitation is primarily observed in the winter and spring, summer storms are common and can affect water supply conditions.

Uncertainties from potential future temperature and precipitation changes in a climate driven by increased concentrations of atmospheric carbon dioxide also present challenges. Areas of concern to California water planners identified by researchers include: reduction in Sierra Nevada and Colorado Basin snowpack; increased intensity and frequency of extreme weather events; and rising sea levels resulting in increased risk of damage from storms, high-tide events, and the erosion of levees and potential cutbacks of deliveries of imported water. While potential impacts from climate change remain subject to study and debate, climate change is among the uncertainties that Metropolitan seeks to address through its planning processes.

**Current Water Conditions**

Following the drought period from 2012-2015, current hydrologic conditions have improved. As of February 1, 2017, the northern Sierra precipitation was 197 percent of normal with a snowpack accumulation that was 140 percent of normal. Lake Oroville, the principal State Water Project reservoir, began flood control releases in early January. See "–Recent Events at Oroville Dam" below. On January 18, 2017, the California Department of Water Resources ("DWR") notified State Water Contractors that its calendar year 2017 allocation estimate to State Water Contractors was 60 percent of contracted amounts, or 1,146,900 acre-feet for Metropolitan. (An acre-foot is the amount of water that will cover one acre to a depth of one foot and equals approximately 326,000 gallons, which represents the needs of two average families in and around the home for one year.) See "–State Water Project."

As of February 1, 2017, the Upper Colorado River Basin snowpack measured 156 percent of normal and total system storage in the Colorado River Basin was 49 percent of capacity. As of such date, the projected base supply of Colorado River water in calendar year 2017 was estimated to be 960,000 acre-feet. See "–Colorado River Aqueduct."

See also "–Storage Capacity and Water in Storage."

**Recent Events at Oroville Dam**

Oroville Dam, the earthfill embankment dam on the Feather River which impounds Lake Oroville, is operated by DWR as a facility of the State Water Project. On February 7, 2017, the main flood control spillway at Oroville Dam, a gated and concrete lined facility, experienced significant damage as DWR increased releases to 55,000 cubic feet per second to manage higher inflows driven by continued precipitation in the Feather River basin. Subsequently, DWR halted releases at the main spillway to inspect the damage and conduct flow tests. After testing, the main spillway was returned to service on February 8 at a reduced flow rate to offset inflows into Lake Oroville. On February 11, the water elevation in Lake Oroville reached 901 feet, leading water to flow over the emergency spillway structure, an ungated, 1,730 foot long concrete barrier located adjacent to and north of the main flood control spillway structure. Releases from the emergency spillway flow uncontrolled down an earthen hillside to the Feather River. On February 12, erosion began to progress up the right side of the emergency spillway. Concerns about the erosion at the emergency spillway prompted DWR to increase releases through the damaged main spillway and led the Butte County Sheriff to evacuate downstream communities for two days to ensure the safety of the residents. As of February 14, water levels in Lake Oroville were 13 feet below the crest of the emergency spillway and the mandatory evacuation order was lifted. DWR has begun repairs to the erosion areas below the emergency spillway. As of February 15, 2017, the cause of the damage to the main spillway was unknown.

The State has requested federal emergency funding to help offset costs related to the response efforts. The Federal Emergency Management Agency has approved the State's request for federal assistance.

Following the rainy season, the spillways will be repaired on a more permanent basis in preparation for the following winter. DWR's initial assessments indicate costs may range from $100-200 million. These estimates are subject to revision as more detailed information becomes known. Metropolitan is unable to assess at this time what costs, if any, it will incur as a State Water Contractor, associated with the spillway repairs.

State Water Project water allocations to State Water Contractors for calendar year 2017 are currently estimated to be 60 percent of contracted amounts. In spite of the damage to the main spillway and the unknowns associated with DWR's corresponding repair plan, the State Water Project allocation is expected to increase from the current estimate of 60 percent. If realized, this would result in an allocation that is higher than average, and likely higher than any allocation since 2011. Nonetheless, future water supplies will be primarily dependent on hydrology.

**Integrated Water Resources Plan**

***Overview.*** The Integrated Water Resources Plan ("IRP") is Metropolitan's principal water resources planning document. Metropolitan, its member agencies, subagencies and groundwater basin managers developed their first IRP as a long-term planning guideline for resources and capital investments. The purpose of the IRP was the development of a portfolio of preferred resources to meet the water supply reliability and water quality needs for the region in a cost-effective and environmentally sound manner. The first IRP was adopted by the Board in January 1996 and has been subsequently updated in 2004, 2010 and 2015.

On January 12, 2016, Metropolitan's Board adopted the most recent IRP update (the "2015 IRP Update") as a strategy to set goals and a framework for water resources development. This strategy enables Metropolitan and its member agencies to manage future challenges and changes in California's water conditions and to balance investments with water reliability benefits. The 2015 IRP Update provides an adaptive management approach to address future uncertainty, including uncertainty from climate change. It was formulated with input from member agencies, retail water agencies, and other stakeholders including water and wastewater managers, environmental and business interests and the community.

The 2015 IRP Update seeks to provide regional reliability through 2040 by stabilizing Metropolitan's traditional imported water supplies and continuing to develop additional conservation programs and local resources, with an increased emphasis on regional collaboration. It also advances long-term planning for potential future contingency resources, such as storm water capture and seawater desalination.

Specific projects that may be developed by Metropolitan in connection with the implementation of the 2015 IRP Update will be subject to future Board consideration and approval, as well as environmental and regulatory documentation and compliance. The 2015 IRP Update and associated materials are available on Metropolitan's website at: http://www.mwdh2o.com/AboutYourWater/Planning/Planning-Documents/Pages/default.aspx. The information set forth on Metropolitan's website is not incorporated by reference.

***An Adaptive Management Strategy.*** Adaptive water management, as opposed to a rigid set of planned actions over the coming decades, is the most nimble and cost-effective manner for Metropolitan and local water districts throughout Southern California to effectively prepare for the future. An adaptive management approach began to evolve with Metropolitan's first IRP in 1996, after drought-related shortages in 1991 prompted a rethinking of Southern California's long-term water strategy. Reliance on imported supplies to meet future water needs has decreased steadily over time, replaced by plans for local actions to

meet new demands. The 2015 IRP Update continues to build a robust portfolio approach to water management.

The following paragraphs describe the goals, approaches and targets for each of the resource areas that are needed to ensure reliability under planned conditions.

State Water Project. The State Water Project is one of Metropolitan's two major sources of water. The goal for State Water Project supplies is to adaptively manage flow and export regulations in the near term and to achieve a long-term Bay-Delta solution that addresses ecosystem and water supply reliability challenges. Achieving this goal will require continued participation and successful outcomes in the California WaterFix and the California EcoRestore efforts. See "–State Water Project" and "REGIONAL WATER RESOURCES–Local Water Supplies" in this Appendix A. The stated goal of the IRP is to manage State Water Project supplies in compliance with regulatory restrictions in the near-term for an average of 980,000 acre-feet of annual supplies, and to pursue a successful outcome in the California WaterFix and California EcoRestore efforts for long-term average supplies of approximately 1.2 million acre-feet annually from this resource. See "–State Water Project – Bay-Delta Proceedings Affecting State Water Project."

Colorado River Aqueduct. The CRA delivers water from the Colorado River, Metropolitan's original source of supply. Metropolitan has helped to fund and implement agricultural conservation programs, improvements to river operation facilities, land management programs and water transfers and exchanges through agreements with agricultural water districts in southern California, entities in Arizona and Nevada that use Colorado River water, and the Bureau of Reclamation. See "–Colorado River Aqueduct" and "–Water Transfer, Storage and Exchange Programs – Colorado River Aqueduct." The stated goal of the IRP for the CRA supplies is to maintain current levels of water supplies from existing programs, while also developing flexibility through dry-year programs and storage to ensure that a minimum of 900,000 acre-feet of CRA deliveries are available when needed, with a target of 1.2 million acre-feet in dry years.

Water Transfers and Exchanges. Under voluntary water transfer or exchange agreements, agricultural communities using irrigation water may periodically sell or conserve some of their water allotments for use in urban areas. The water may be delivered through existing State Water Project or CRA facilities, or may be exchanged for water that is delivered through such facilities. Metropolitan's policy toward potential transfers states that the transfers will be designed to protect and, where feasible, enhance environmental resources and avoid the mining of local groundwater supplies. See "–Water Transfer, Storage and Exchange Programs." The stated goal of the IRP is to pursue transfers and exchanges to hedge against shorter-term water demand and supply imbalances while long-term water supply solutions are developed and implemented.

Water Conservation. Conservation and other water use efficiencies are integral components of Metropolitan's IRP. Metropolitan has invested in conservation programs since the 1980s. Historically, most of the investments have been in water efficient fixtures in the residential sector. With outdoor water use comprising at least 50 percent of residential water demand, Metropolitan has increased its conservation efforts to target outdoor water use reduction in its service area. See "CONSERVATION AND WATER SHORTAGE MEASURES." The stated goal of the IRP is to pursue further water conservation savings of 485,000 acre-feet annually by 2040 through continued increased emphasis on outdoor water-use efficiency using incentives, outreach/education and other programs.

Local Water Supplies. Local supplies are a significant and growing component to the region's diverse water portfolio. While the extent to which each member agency's water supply is provided by imported water purchased from Metropolitan varies, in the aggregate, local supplies can provide over half of the region's water in a given year, and the maintenance of these supplies remain an integral part of the IRP. Similar to water conservation, local supplies serve the important function of reducing demands for imported water supplies and thereby making regional water system capacity and storage available and accessible to

meet the needs of the region. Local water supply projects may include, among other things, recycled water, groundwater recovery, conjunctive use, and seawater desalination. Metropolitan offers financial incentives to member agencies to help fund the development of a number of these types of local supply projects. The stated goal of the IRP is to seek to develop 230,000 acre-feet of additional local supplies produced by existing and future projects, with the region reaching a target of 2.4 million acre-feet of total dependable local supply by 2040. See "REGIONAL WATER RESOURCES–Local Water Supplies" in this Appendix A.

**State Water Project**

**Background**

One of Metropolitan's two major sources of water is the State Water Project, which is owned by the State, and managed and operated by DWR. The State Water Project is the largest state-built, multipurpose, user-financed water project in the country. It was designed and built primarily to deliver water, but also provides flood control, generates power for pumping, is used for recreation, and enhances habitat for fish and wildlife. The State Water Project provides irrigation water to 750,000 acres of farmland, mostly in the San Joaquin Valley, and provides municipal and industrial water to approximately 25 million of California's estimated 39.2 million residents, including the population within the service area of Metropolitan.

The State Water Project's watershed encompasses the mountains and waterways around the Feather River, the principal tributary of the Sacramento River, in the Sacramento Valley of Northern California. Through the State Water Project, Feather River water stored in and released from Oroville Dam (located about 70 miles north of Sacramento, east of the city of Oroville, California) and unregulated flows diverted directly from the Bay-Delta are transported south through the Central Valley of California, over the Tehachapi Mountains and into Southern California, via the California Aqueduct, to four delivery points near the northern and eastern boundaries of Metropolitan's service area. The total length of the California Aqueduct is approximately 444 miles long. See "METROPOLITAN'S WATER DELIVERY SYSTEM–Primary Facilities and Method of Delivery – State Water Project" in this Appendix A.

**State Water Contract**

In 1960, Metropolitan signed a water supply contract (as amended, the "State Water Contract") with DWR to receive water from the State Water Project. Metropolitan is one of 29 agencies and districts that have long-term contracts for water service from DWR (known collectively as the "State Water Contractors" and sometimes referred to herein as "Contractors"). Metropolitan is the largest of the State Water Contractors in terms of the number of people it serves (approximately 18.8 million), the share of State Water Project water that it has contracted to receive (approximately 46 percent), and the percentage of total annual payments made to DWR by agencies with State water contracts (approximately 52 percent for 2016). Metropolitan received its first delivery of State Water Project water in 1972.

Pursuant to the terms of the State water contracts, all water-supply related expenditures for capital and operations, maintenance, power, and replacement costs associated with the State Water Project facilities are paid for by the State Water Contractors. In exchange, Contractors have the right to participate in the system, with an entitlement to water service from the State Water Project and the right to use the portion of the State Water Project conveyance system necessary to deliver water to them. Each year DWR estimates the total State Water Project water available for delivery to the State Water Contractors and allocates the available project water among the State Water Contractors in accordance with the State water contracts. DWR's total water supply availability projections are refined over the course of the winter season based upon updated rainfall and snowpack values and allocations to the State Water Contractors are adjusted accordingly.

Metropolitan's State Water Contract has been amended a number of times since its original execution and delivery. Several of the amendments, entered into by DWR and various subsets of State Water Contractors, relate to the financing and construction of a variety of State Water Project facilities and

improvements and impose certain cost responsibility therefor on the affected Contractors, including Metropolitan. For a description of Metropolitan's financial obligations under its State Water Contract, including with respect to such amendments, see "METROPOLITAN EXPENSES–State Water Contract Obligations" in this Appendix A.

Amendments, approved by Metropolitan's Board in 1995, and since executed by DWR and 27 of the State Water Contractors (collectively known as the "Monterey Amendment"), among other things, made explicit that the Contractors' rights to use the portion of the State Water Project conveyance system necessary to deliver water to them also includes the right to convey non-State Water Project water at no additional cost as long as capacity exists. These amendments also expanded the ability of the State Water Contractors to carry over State Water Project water in State Water Project storage facilities, allowed participating Contractors to borrow water from terminal reservoirs, and allowed Contractors to store water in groundwater storage facilities outside a Contractor's service area for later use. These amendments provided the means for individual Contractors to increase supply reliability through water transfers and storage outside their service area. Metropolitan has subsequently developed and actively manages a portfolio of water supplies to convey through the California Aqueduct pursuant to these contractual rights. See "–Water Transfer, Storage and Exchange Programs." The Monterey Amendment is the subject of ongoing litigation. See "–Related Litigation – Monterey Amendment Litigation" below.

Under its State Water Contract, Metropolitan has a contractual right to its proportionate share of the State Water Project water that DWR determines annually is available for allocation to the Contractors. This determination is made by DWR each year based on existing supplies in storage, forecasted hydrology, and other factors. Available State Water Project water is then allocated to the Contractors in proportion to the amounts set forth in "Table A" of their respective State water contract. Pursuant to Table A of its State Water Contract, Metropolitan is entitled to approximately 46 percent of the total annual allocation made available to State Water Contractors each year.

Metropolitan's State Water Contract, under a 100 percent allocation, provides Metropolitan 1,911,500 acre-feet of water. The 100 percent allocation is referred to as the contracted amount. Late each year, DWR announces an initial allocation estimate for the upcoming year, but periodically provides subsequent estimates throughout the year if warranted by developing precipitation and water supply conditions. From calendar years 2004 through 2016, the amount of water received by Metropolitan from the State Water Project, including water from water transfer, groundwater banking and exchange programs delivered through the California Aqueduct (described under "–Water Transfer, Storage and Exchange Programs"), varied from a low of 593,000 acre-feet in calendar year 2015 to a high of 1,800,000 acre-feet in 2004. In calendar year 2016, DWR's allocation to State Water Contractors was 60 percent of contracted amounts, or 1,146,000 acre-feet, for Metropolitan.

On December 1, 2016, DWR announced an initial calendar year 2017 allocation of 20 percent. On December 21, 2016, DWR increased the allocation estimate to 45 percent. On January 18, 2017, DWR increased the allocation estimate to 60 percent of contracted amounts based on runoff from storms that increased the combined storage in Oroville and San Luis Reservoir by over 600,000 acre-feet. This increased allocation estimate reflects improving hydrologic conditions in California and increasing storage levels in the State's major reservoirs, but also takes into account federally mandated environmental restrictions that have been imposed upon water deliveries from the Bay-Delta, including the biological opinions discussed below. See "–Endangered Species Act and Other Environmental Considerations – Endangered Species Act Considerations – State Water Project – Delta Smelt and Salmon Federal ESA Biological Opinions." If necessary, Metropolitan may augment its State Water Project deliveries using withdrawals from its storage programs along the State Water Project and through water transfer and exchange programs. However, in light of current water conditions in California and the estimated 2017 allocation, supplies are expected to exceed projected demands and Metropolitan anticipates it will add water to its storage programs. See "–Water Transfer, Storage and Exchange Programs."

The term of Metropolitan's State Water Contract currently extends to December 31, 2035. Upon expiration of the State Water Contract term, Metropolitan has the option to continue service under substantially the same terms and conditions. Metropolitan and other State Water Contractors have undertaken negotiations with DWR to extend their State water contracts. In June 2014, DWR and the State Water Contractors reached an Agreement in Principle (the "Agreement in Principle") on an amendment to the State water contract to extend the contract and to make certain changes related to financial management of the State Water Project in the future. DWR and 25 of the State Water Contractors, including Metropolitan, have signed the Agreement in Principle. Under the Agreement in Principle, the term of the State water contract for each Contractor that signs an amendment would be extended until December 31, 2085. The Agreement in Principle will serve as the "proposed project" for purposes of environmental review under the California Environmental Quality Act ("CEQA"). DWR issued a Notice of Availability of the Draft Environmental Impact Report ("EIR") for the proposed project on August 17, 2016. The review period ended October 17, 2016. Following CEQA review, a State Water Project contract amendment will be prepared. Such amendment will be subject to review by the Legislature.

**Bay-Delta Proceedings Affecting State Water Project**

***General.*** In addition to being a source of water for diversion into the State Water Project, the Bay-Delta is also the source of water for local agricultural, municipal and industrial needs, and, in addition, supports significant resident and anadromous fish and wildlife resources and important recreational uses of water. Both the State Water Project's upstream reservoir operations and its Bay-Delta diversions can at times affect these other uses of Bay-Delta water directly, or indirectly, through impacts on Bay-Delta water quality. A variety of proceedings and other activities are ongoing with the participation of various State and federal agencies, as well as California's environmental, urban and agricultural communities, in an effort to develop long-term, collectively-negotiated solutions to the environmental and water management issues concerning the Bay-Delta, and Metropolitan actively participates in these proceedings. Metropolitan cannot predict the ultimate outcome of any of the litigation or regulatory processes described below, but believes that a materially adverse impact on the operation of State Water Project pumps, Metropolitan's State Water Project deliveries or Metropolitan's water reserves could result.

***SWRCB Regulatory Activities and Decisions.*** The State Water Resources Control Board (the "SWRCB") is the agency responsible for setting water quality standards and administering water rights throughout California. The SWRCB exercises its regulatory authority over the Bay-Delta by means of public proceedings leading to regulations and decisions that can affect the availability of water to Metropolitan and other users of State Water Project water. These include the Water Quality Control Plan ("WQCP") for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, which establishes the water quality objectives and proposed flow regime of the estuary, and water rights decisions, which assign responsibility for implementing the objectives of the WQCP to users throughout the system by adjusting their respective water rights permits.

The WQCP gets reviewed periodically and new standards and allocations of responsibility can be imposed on the State Water Project as a result. The last review was completed in 2006, and the current review has been ongoing since approximately 2010.

Since 2000, SWRCB's Water Rights Decision 1641 ("D-1641") has governed the State Water Project's ability to export water from the Bay-Delta for delivery to Metropolitan and other agencies receiving water from the State Water Project. D-1641 allocated responsibility for meeting flow requirements and salinity and other water quality objectives established earlier by the WQCP. In response to ongoing drought conditions in 2014 and 2015, DWR and the Bureau of Reclamation requested temporary relief from certain WQCP standards and filed petitions requesting changes to D-1641 terms that govern outflows and salinity standards in the Bay-Delta. The SWRCB approved temporary urgency changes in the Bay-Delta in 2014 and 2015, enabling water to be conserved in reservoirs in case of continued drought.

***Bay-Delta Planning Activities.*** In 2000, several State and federal agencies released the CALFED Bay Delta Programmatic Record of Decision ("ROD") and Environmental Impact Report/Environmental Impact Statement ("EIR/EIS") that outlined and disclosed the environmental impacts of a 30-year plan to improve the Bay-Delta's ecosystem, water supply reliability, water quality, and levee stability. The CALFED ROD remains in effect and many of the State, federal, and local projects begun under CALFED continue.

Building on CALFED and other Bay-Delta planning activities, in 2006 multiple State and federal resource agencies, water agencies, and other stakeholder groups entered into a planning agreement for the Bay-Delta Conservation Plan ("BDCP"). The BDCP was originally conceived as a comprehensive conservation strategy for the Bay-Delta designed to restore and protect ecosystem health, water supply, and water quality within a stable regulatory framework to be implemented over a 50-year time frame with corresponding long-term permit authorizations from fish and wildlife regulatory agencies. The BDCP includes both alternatives for new water conveyance infrastructure and extensive habitat restoration in the Bay-Delta.

In 2015, the State and federal lead agencies proposed an alternative implementation strategy and new alternatives to the BDCP to provide for the protection of water supplies conveyed through the Bay-Delta and the restoration of the ecosystem of the Bay-Delta, termed "California WaterFix" and "California EcoRestore," respectively. In this alternative approach, DWR and the Bureau of Reclamation would implement planned water conveyance improvements (California WaterFix) as a stand-alone project that would seek incidental take authorization for an unspecified period and would include only limited amounts of habitat restoration. The habitat restoration to be required would be that directly related to construction mitigation and the associated costs of such mitigation which would be underwritten by the public water agencies participating in the California WaterFix project. Ecosystem improvements and habitat restoration more generally (California EcoRestore) would be undertaken under a more phased approach than previously contemplated by the BDCP and would not be linked with the California WaterFix project or permits. Accelerated restoration actions totaling 30,000 acres of tidal marsh habitat were proposed to be undertaken in the coming decade to provide public benefits for listed fish in the Bay-Delta. (See also "–Endangered Species Act and Other Environmental Considerations – Endangered Species Act Considerations – State Water Project.") Subsequent actions would be based on the proven merits of restoration. Preliminary cost estimates for the WaterFix alternative are currently estimated to be $17 billion. When a decision selecting the final project has been made, costs will be updated and allocated. Metropolitan anticipates that it could bear approximately 25 percent of the costs of the project. The Final EIR/EIS for the BDCP/California WaterFix was completed and made available to the public and other agencies on December 22, 2016. The Notice of Availability of the Final EIR/EIS was published by the Bureau of Reclamation in the Federal Register on December 30, 2016. On January 4, 2017, the U.S. Secretary of the Interior issued an order to federal agencies involved in the California WaterFix stating the U.S. Fish and Wildlife Service will issue a final biological opinion by April 2017. A similar schedule is anticipated for the biological opinion to be issued by the National Marine Fisheries Service. Upon receipt of the biological opinions, the Bureau of Reclamation will be able to issue a Record of Decision for the project. Certification of the EIR/EIS under CEQA and final decision-making by DWR is expected at that same time. See also "–Endangered Species Act and Other Environmental Considerations – Endangered Species Act Considerations – State Water Project."

**Related Litigation**

***California Water Impact Network Litigation.*** On September 3, 2010, the California Water Impact Network and two other non-profit organizations filed a petition for writ of mandate and for declaratory and injunctive relief in Sacramento Superior Court against the SWRCB and DWR. The petition alleges that by permitting and carrying out the export of large volumes of water from the Bay-Delta through the State Water Project, the SWRCB and DWR have failed to protect public trust fishery resources in the delta; have been diverting water from the Bay-Delta wastefully and unreasonably in violation of the prohibition against waste

and unreasonable use in the California Constitution; and have failed to enforce and comply with water quality and beneficial use standards in D-1641, the 1995 WQCP, and the federal Porter-Cologne Act. Among the relief sought in the petition is an injunction against Bay-Delta exports by the State Water Project pending compliance with the various laws and administrative orders that are alleged to have been violated. The State Water Contractors filed a motion to intervene in this action, which was granted on March 25, 2011. In August 2016, the court dismissed the case without prejudice based on the failure of the petitioners to bring the case to trial within five years of filing their original petition.

***Monterey Amendment Litigation.*** On May 4, 2010, DWR completed an EIR and concluded a remedial CEQA review for the Monterey Amendment, which reflects the settlement of certain disputes regarding the allocation of State Water Project water. See "– State Water Contract" above. Central Delta Water Agency, South Delta Water Agency, California Water Impact Network, California Sportfishing Protection Alliance, and the Center For Biological Diversity filed a lawsuit against DWR in Sacramento County Superior Court challenging the validity of the EIR under CEQA and the validity of underlying agreements under a reverse validation action (the "Central Delta I" case). In January 2013, the Court ruled that the validation cause of action in Central Delta I was time barred by the statute of limitations. The court also held that DWR must complete a limited scope remedial CEQA review addressing the potential impacts of the Kern Water Bank, a portion of the Monterey Amendment that does not directly affect Metropolitan. The court also ruled that the State Water Project may continue to be operated under the terms of the Monterey Amendment while the remedial CEQA review is prepared and leaves in place the underlying project approvals while DWR prepares the remedial CEQA review. Plaintiffs appealed. Briefing by the parties was completed, but no date for oral argument has been set. Any adverse impact of this litigation and rulings on Metropolitan's State Water Project supplies cannot be determined at this time.

In September 2016, DWR certified the Final Revised Draft EIR for the Monterey Amendment, recorded a Notice of Determination, and filed papers in the trial demonstrating compliance with the court's order for remedial CEQA review. On October 21, 2016, the petitioner group from Central Delta I and a new lead petitioner, Center for Food Safety, filed litigation against DWR challenging this EIR and named Metropolitan and the other State Water Project contractors as respondent parties. Any adverse impact of this litigation and rulings on Metropolitan's State Water Project supplies cannot be determined at this time.

**Colorado River Aqueduct**

**Background**

The Colorado River was Metropolitan's original source of water after Metropolitan's establishment in 1928. Metropolitan has a legal entitlement to receive water from the Colorado River under a permanent service contract with the Secretary of the Interior. Water from the Colorado River and its tributaries is also available to other users in California, as well as users in the states of Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming (collectively, the "Colorado River Basin States"), resulting in both competition and the need for cooperation among these holders of Colorado River entitlements. In addition, under a 1944 treaty, Mexico has an allotment of 1.5 million acre-feet of Colorado River water annually except in the event of extraordinary drought or serious accident to the delivery system in the United States, in which event the water allotted to Mexico would be curtailed. Mexico can also schedule delivery of an additional 200,000 acre-feet of Colorado River water per year if water is available in excess of the requirements in the United States and the 1.5 million acre-feet allotted to Mexico.

Construction of the CRA, which is owned and operated by Metropolitan, was undertaken by Metropolitan to provide for the transportation of its Colorado River water entitlement to its service area. The CRA originates at Lake Havasu on the Colorado River and extends approximately 242 miles through a series of pump stations and reservoirs to its terminus at Lake Mathews in Riverside County. Up to 1.25 million acre-feet of water per year may be conveyed through the CRA to Metropolitan's member agencies, subject to

availability of Colorado River water for delivery to Metropolitan as described below. Metropolitan first delivered CRA water to its member agencies in 1941.

**Colorado River Water Apportionment and Seven-Party Agreement**

Pursuant to the federal Boulder Canyon Project Act of 1928, California is apportioned the use of 4.4 million acre-feet of water from the Colorado River each year plus one-half of any surplus that may be available for use collectively in Arizona, California and Nevada (the "Lower Basin States"). Under an agreement entered into in 1931 among the California entities that expected to receive a portion of California's apportionment of Colorado River water (the "Seven-Party Agreement") and which has formed the basis for the distribution of Colorado River water made available to California, Metropolitan holds the fourth priority right to 550,000 acre-feet per year. This is the last priority within California's basic apportionment. In addition, Metropolitan holds the fifth priority right to 662,000 acre-feet of water, which is in excess of California's basic apportionment. Until 2003, Metropolitan had been able to take full advantage of its fifth priority right as a result of the availability of surplus water and water apportioned to Arizona and Nevada that was not needed by those states. However, during the 1990s Arizona and Nevada increased their use of water from the Colorado River, and by 2002 no unused apportionment was available for California. As a result, California has limited its annual use to 4.4 million acre-feet since 2003, not including supplies made available under water supply programs such as intentionally-created surplus and certain conservation and storage agreements. In addition, a severe drought in the Colorado River Basin from 2000-2004 reduced storage in system reservoirs, ending the availability of surplus deliveries to Metropolitan. Prior to 2003, Metropolitan could divert over 1.25 million acre-feet in any year, but since that time, Metropolitan's net diversions of Colorado River water have ranged from a low of nearly 633,000 acre-feet in 2006 to a high of approximately 1,179,000 acre-feet in 2015, and totaled over 996,000 acre-feet in 2016. Average annual net deliveries for 2007 through 2016 were approximately 962,000 acre-feet, with annual volumes dependent primarily on programs to augment supplies, including transfers of conserved water from agriculture. See "– Quantification Settlement Agreement" and "– Colorado River Operations: Surplus and Shortage Guidelines – Interim Surplus Guidelines" below. See also "–Water Transfer, Storage and Exchange Programs – Colorado River Aqueduct."

The following table sets forth the existing priorities of the California users of Colorado River water established under the 1931 Seven-Party Agreement.

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**PRIORITIES UNDER THE 1931 CALIFORNIA SEVEN-PARTY AGREEMENT[1]**

| Priority | Description | Acre-Feet Annually |
|---|---|---|
| 1 | Palo Verde Irrigation District gross area of 104,500 acres of land in the Palo Verde Valley | 3,850,000 |
| 2 | Yuma Project in California not exceeding a gross area of 25,000 acres in California | |
| 3(a) | Imperial Irrigation District and other lands in Imperial and Coachella Valleys[2] to be served by All-American Canal | |
| 3(b) | Palo Verde Irrigation District - 16,000 acres of land on the Lower Palo Verde Mesa | |
| 4 | Metropolitan Water District of Southern California for use on the coastal plain | 550,000 |
| | **SUBTOTAL** | 4,400,000 |
| 5(a) | Metropolitan Water District of Southern California for use on the coastal plain | 550,000 |
| 5(b) | Metropolitan Water District of Southern California for use on the coastal plain[3] | 112,000 |
| 6(a) | Imperial Irrigation District and other lands in Imperial and Coachella Valleys to be served by the All-American Canal | 300,000 |
| 6(b) | Palo Verde Irrigation District - 16,000 acres of land on the Lower Palo Verde Mesa | |
| | **TOTAL** | 5,362,000 |
| 7 | Agricultural use in the Colorado River Basin in California | Remaining surplus |

*Source: Metropolitan.*

(1) Agreement dated August 18, 1931, among Palo Verde Irrigation District, Imperial Irrigation District, Coachella Valley County Water District, Metropolitan, the City of Los Angeles, the City of San Diego and the County of San Diego. These priorities were memorialized in the agencies' respective water delivery contracts with the Secretary of the Interior.

(2) The Coachella Valley Water District serves Coachella Valley.

(3) In 1946, the City of San Diego, the San Diego County Water Authority, Metropolitan and the Secretary of the Interior entered into a contract that merged and added the City and County of San Diego's rights to storage and delivery of Colorado River water to the rights of Metropolitan.

**Quantification Settlement Agreement**

The Quantification Settlement Agreement ("QSA"), executed by the Coachella Valley Water District ("CVWD"), Imperial Irrigation District ("IID") and Metropolitan in October 2003, establishes Colorado River water use limits for IID and CVWD, and provides for specific acquisitions of conserved water and water supply arrangements for up to 75 years. The QSA and related agreements provide a framework for Metropolitan to enter into other cooperative Colorado River supply programs and set aside several disputes among California's Colorado River water agencies.

Specific programs under the QSA and related agreements include lining portions of the All-American and Coachella Canals, which were completed in 2009 and conserve approximately 96,000 acre-feet annually. As a result, about 80,000 acre-feet of conserved water is delivered to the San Diego County Water Authority ("SDCWA") by exchange with Metropolitan. Metropolitan takes delivery of the remaining 16,000 acre-feet annually. The 16,000 acre-feet provided annually to Metropolitan will eventually be made available for the benefit of the La Jolla, Pala, Pauma, Rincon and San Pasqual Bands of Mission Indians, the San Luis Rey River Indian Water Authority, the City of Escondido and the Vista Irrigation District, upon completion of a water rights settlement. Also included under the QSA is a delivery and exchange agreement between Metropolitan and CVWD that provides for Metropolitan, when requested, to deliver annually up to 35,000 acre-feet of Metropolitan's State Water Project contractual water to CVWD by exchange with Metropolitan's available Colorado River supplies. The QSA and related agreements also authorized the transfer of water (up to a maximum expected amount in 2021 of 205,000 acre-feet) annually by IID to SDCWA. See description below under the caption "– Sale of Water by the Imperial Irrigation District to San Diego County Water Authority" below; see also "METROPOLITAN REVENUES–Principal Customers" in this Appendix A. With full implementation of the programs identified in the QSA, at times when California is limited to its basic apportionment of 4.4 million acre-feet per year, Metropolitan expects to be able to annually divert to its service area approximately 850,000 acre-feet of Colorado River water plus water from other water augmentation programs it develops, including the Palo Verde Land Management, Crop Rotation and Water Supply Program (described under "Water Transfer, Storage and Exchange Programs–Colorado River Aqueduct" below), which provides up to approximately 133,000 acre-feet of water per year. (Amounts of Colorado River water received by Metropolitan in 2007 through 2016 are discussed under the heading "–Colorado River Aqueduct–Colorado River Water Apportionment and Seven-Party Agreement" above.)

A complicating factor in completing the QSA was the fate of the Salton Sea. The Sea and its environs provide a habitat complex supporting more than 400 species of birds. Located at the lowest elevation of an inland basin and fed primarily by agricultural drainage with no outflows other than evaporation, the Salton Sea was naturally trending towards hyper-salinity, which had already impacted the Salton Sea's fishery. Without mitigation, the transfer of water from IID to SDCWA, one of the core programs implemented under the QSA, would reduce the volume of agricultural drainage from IID's service area flowing into the Salton Sea, which would reduce the volume of water in the Sea, exposing shoreline and accelerating the natural trend of the Salton Sea to hyper-salinity. See "– Sale of Water by the Imperial Irrigation District to San Diego County Water Authority" below. In 2002, the SWRCB issued Water Rights Order 2002-0013, which gave approval for the transfer of water from IID to SDCWA and CVWD, and which required Salton Sea mitigation water deliveries from 2003 through 2017.

In 2003, to facilitate implementation of the QSA, the Legislature directed the Secretary for the California Natural Resources Agency to undertake a restoration study to determine a preferred alternative for the restoration of the Salton Sea ecosystem and the protection of wildlife dependent on that ecosystem. In May 2007, the Secretary submitted his $8.9 billion preferred alternative to the Legislature. While withholding authorization of the preferred alternative, in 2008 the Legislature directed the California Natural Resources Agency to undertake demonstration projects and investigations called for in the Secretary's May 2007 recommendation. Since then, the California Natural Resources Agency and the U.S. Fish and Wildlife Service have been developing various pilot-scale projects which are at various stages of planning and implementation.

Concerned that the California Natural Resources Agency has not made sufficient progress to develop a long-term restoration plan for the Salton Sea, in November 2014, IID filed a petition with the SWRCB asking it to modify the SWRCB's 2002 order. IID stated that it is concerned that the scheduled termination of mitigation water deliveries to the Salton Sea at the end of 2017 will result in the shrinking of the Sea and an increase in exposed playa and fugitive dust emissions. IID's petition requested that the SWRCB modify its order to include a requirement that "the State fulfill its statutory obligation to restore the Salton Sea as a

condition of the QSA transfers." See "– Sale of Water by the Imperial Irrigation District to San Diego County Water Authority" below. The SWRCB has held various workshops to receive input on the petition.

During the spring of 2015, the Governor tasked a number of individuals from his staff, known as the "Salton Sea Task Force," to look into actions that could be taken at the Sea. In October 2015, the Salton Sea Task Force announced that it would implement a number of actions to address the Salton Sea ecosystem, including immediate implementation and further development of the Salton Sea management plan, meeting a short-term goal by 2020 of 9,000-12,000 acres of habitat creation and dust suppression projects and a medium-term goal after 2020 of 18,000-25,000 acres of habitat creation and dust suppression projects. In August 2016, the U.S. Department of the Interior and the California Natural Resources Agency entered into an MOU which outlines the manner in which federal agencies would cooperate with State and local agencies to assist the Salton Sea Task Force in achieving its stated goals. While projects that are currently underway or are anticipated to begin in 2017 are not expected to meet the Salton Sea Task Force's short-term goal, the Salton Sea Task Force continues its efforts to identify a long-term plan for the Salton Sea for construction to begin as early as 2018. In the absence of a Salton Sea restoration project, the QSA and related agreements provide for the control of exposed playa by IID as a mitigation measure funded by CVWD, IID, and SDCWA, with the State of California obligated to meet all mitigation costs that exceed $133 million in 2003 dollars. Metropolitan has no obligation to pay any costs associated with restoration of the Salton Sea.

**Sale of Water by the Imperial Irrigation District to San Diego County Water Authority**

On April 29, 1998, SDCWA and IID executed an agreement (the "Transfer Agreement") for SDCWA's purchase from IID of Colorado River water that is conserved within IID. An amended Transfer Agreement, executed as one of the QSA agreements, set the maximum transfer amount at 205,000 acre-feet in 2021, with the transfer gradually ramping up to that amount over an approximately twenty-year period, then stabilizing at 200,000 acre-feet per year beginning in 2023.

No facilities exist to deliver water directly from IID to SDCWA. Accordingly, Metropolitan and SDCWA entered into an exchange agreement, pursuant to which SDCWA makes available to Metropolitan at its intake at Lake Havasu on the Colorado River the conserved Colorado River water acquired by SDCWA from IID and water allocated to SDCWA that has been conserved as a result of the lining of the All-American and Coachella Canals. See "–Quantification Settlement Agreement" above. Metropolitan delivers an equal volume of water from its own sources of supply through portions of its delivery system to SDCWA. The deliveries to both Metropolitan and SDCWA are deemed to be made in equal monthly increments. In consideration for the conserved water made available to Metropolitan by SDCWA, a lower rate is paid by SDCWA for the exchange water delivered by Metropolitan. The price payable by SDCWA is calculated using the charges set by Metropolitan's Board from time to time to be paid by its member agencies for the conveyance of water through Metropolitan's facilities. See "METROPOLITAN REVENUES–Litigation Challenging Rate Structure" in this Appendix A for a description of Metropolitan's charges for the conveyance of water through Metropolitan's facilities and litigation in which SDCWA is challenging such charges. In 2016, 178,493 acre-feet were delivered to Metropolitan by SDCWA for exchange, consisting of 100,000 acre-feet of IID conservation plus 78,493 acre-feet of conserved water from the Coachella Canal and All-American Canal lining projects.

**Colorado River Operations: Surplus and Shortage Guidelines**

***General.*** The Secretary of the Interior is vested with the responsibility of managing the mainstream waters of the lower Colorado River pursuant to federal law. Each year, the Secretary of the Interior is required to declare the Colorado River water supply availability conditions for the Lower Basin States in terms of "normal," "surplus" or "shortage" and has adopted operations criteria in the form of guidelines to determine the availability of surplus or potential shortage allocations among the Lower Basin States and reservoir operations for such conditions.

***Interim Surplus Guidelines.*** In January 2001, the Secretary of the Interior adopted guidelines (the "Interim Surplus Guidelines"), initially for use through 2016, in determining if there is surplus Colorado River water available for use in California, Arizona and Nevada. The Interim Surplus Guidelines were amended in 2007 and now extend through 2026. The purpose of the Interim Surplus Guidelines was to provide mainstream users of Colorado River water, particularly those in California who utilize surplus flows, a greater degree of predictability with respect to the availability and quantity of surplus water.

Under the Interim Surplus Guidelines, Metropolitan initially expected to divert up to 1.25 million acre-feet of Colorado River water annually under foreseeable runoff and reservoir storage scenarios from 2004 through 2016. However, an extended drought in the Colorado River Basin reduced these initial expectations. In May 2002, the Southern Nevada Water Authority ("SNWA") and Metropolitan entered into an Agreement Relating to Implementation of Interim Colorado River Surplus Guidelines, in which SNWA and Metropolitan agreed to the allocation of unused apportionment as provided in the Interim Surplus Guidelines and on the priority of SNWA for interstate banking of water in Arizona. SNWA and Metropolitan entered into a storage and interstate release agreement on October 21, 2004. Under this agreement, SNWA can request that Metropolitan store unused Nevada apportionment in California. The amount of water stored through 2014 under this agreement was approximately 205,000 acre-feet. In subsequent years, SNWA may request recovery of the stored water. As part of a 2012 executed amendment to the agreement, it is expected that SNWA will not request return of the water stored with Metropolitan before 2022. In October 2015, SNWA and Metropolitan executed an additional amendment to the agreement under which Metropolitan paid SNWA approximately $44.4 million and SNWA stored an additional 150,000 acre-feet with Metropolitan during 2015. Of that amount, 125,000 acre-feet has been added to SNWA's storage account with Metropolitan, increasing the total amount of water stored to approximately 330,000 acre-feet. When SNWA requests the return of any of the stored 125,000 acre-feet, SNWA will reimburse Metropolitan for an equivalent proportion of the $44.4 million plus inflation based on the amount of water returned. The stored water allowed Metropolitan to have a full water supply from the Colorado River in 2015.

***Lower Basin Shortage Guidelines and Coordinated Management Strategies for Lake Powell and Lake Mead.*** In May 2005, the Secretary of the Interior directed the Bureau of Reclamation to develop additional strategies for improving coordinated management of the reservoirs of the Colorado River system. In November 2007, the Bureau of Reclamation issued a Final Environmental Impact Statement ("EIS") regarding new federal guidelines concerning the operation of the Colorado River system reservoirs, particularly during drought and low reservoir conditions. These guidelines provide water release criteria from Lake Powell and water storage and water release criteria from Lake Mead during shortage and surplus conditions in the Lower Basin, provide a mechanism for the storage and delivery of conserved system and non-system water in Lake Mead and extend the Interim Surplus Guidelines through 2026. The Secretary of the Interior issued the final guidelines through a Record of Decision signed in December 2007. The Record of Decision and accompanying agreement among the Colorado River Basin States protect reservoir levels by reducing deliveries during drought periods, encourage agencies to develop conservation programs and allow the Colorado River Basin States to develop and store new water supplies. The Colorado River Basin Project Act of 1968 insulates California from shortages in all but the most extreme hydrologic conditions. Consistent with these legal protections, under the guidelines, Arizona and Nevada are first subject to the initial annual shortages identified by the Secretary up to 500,000 acre-feet.

The guidelines also created the Intentionally Created Surplus ("ICS") program, which allows the Lower Basin States to store conserved water in Lake Mead. Under this program, ICS water (water that has been conserved through an extraordinary conservation measure, such as land fallowing) is eligible for storage in Lake Mead by Metropolitan. See the table "Metropolitan's Water Storage Capacity and Water in Storage" under the heading "–Storage Capacity and Water in Storage" below. The Secretary of the Interior delivers the stored ICS water to Metropolitan in accordance with the terms of December 13, 2007, January 6, 2010, and November 20, 2012 Delivery Agreements between the United States and Metropolitan. As of January 1, 2017, Metropolitan had an estimated 71,000 acre-feet in its ICS accounts. These surplus accounts are made

up of water conserved by fallowing in the Palo Verde Valley, projects implemented with IID in its service area, groundwater desalination, the Warren H. Brock Reservoir Project, and the Yuma Desalting Plant pilot run, which have not been delivered to the region.

**Related Litigation**

***Navajo Nation Litigation.*** The Navajo Nation filed litigation against the Department of the Interior, specifically the Bureau of Reclamation and the Bureau of Indian Affairs, in 2003, alleging that the Bureau of Reclamation has failed to determine the extent and quantity of the water rights of the Navajo Nation in the Colorado River and that the Bureau of Indian Affairs has failed to otherwise protect the interests of the Navajo Nation. The complaint challenges the adequacy of the environmental review for the Interim Surplus Guidelines (described under "– Colorado River Operations: Surplus and Shortage Guidelines" above) and seeks to prohibit the Department of the Interior from allocating any "surplus" water until such time as a determination of the rights of the Navajo Nation is completed. Metropolitan and other California water agencies filed motions to intervene in this action. In October 2004 the court granted the motions to intervene and stayed the litigation to allow negotiations among the Navajo Nation, federal defendants, Central Arizona Water Conservation District ("CAWCD"), State of Arizona and Arizona Department of Water Resources. After years of negotiations, a tentative settlement was proposed in 2012 that would provide the Navajo Nation with specified rights to water from the Little Colorado River and groundwater basins under the reservation, along with federal funding for development of water supply systems on the tribe's reservation. The proposed agreement was rejected by tribal councils for both the Navajo and the Hopi, who were seeking to intervene. On May 16, 2013, the stay of proceedings was lifted. On June 3, 2013, the Navajo Nation moved for leave to file a first amended complaint, which the court granted on June 27, 2013. The amended complaint added a legal challenge to the Lower Basin Shortage Guidelines adopted by the Secretary of the Interior in 2007 that allow Metropolitan and other Colorado River water users to store water in Lake Mead (described under "– Colorado River Operations: Surplus and Shortage Guidelines" above). Metropolitan has used these new guidelines to store over 500,000 acre-feet of water in Lake Mead, a portion of which has been delivered, and the remainder of which may be delivered at Metropolitan's request in future years. On July 22, 2014, the district court dismissed the lawsuit in its entirety, ruling that the Navajo Nation lacked standing and that the claim was barred against the federal defendants. The district court denied a motion by the Navajo Nation for leave to amend the complaint further after the dismissal. On September 19, 2014, the Navajo Nation appealed the dismissal of its claims related to the Interim Surplus Guidelines, the Lower Basin Shortage Guidelines, and breach of the federal trust obligation to the tribe. Briefing by the parties was completed by May 20, 2015. Oral argument in the Ninth Circuit Court of Appeals has been set for February 14, 2017. Metropolitan is unable to assess at this time the likelihood of success of this appeal or any future claims, or their potential effect on Colorado River water supplies.

**Endangered Species Act and Other Environmental Considerations**

**Endangered Species Act Considerations – State Water Project**

***General.*** DWR has altered the operations of the State Water Project to accommodate species of fish listed as threatened or endangered under the Federal ESA or California ESA. Currently, five species (the winter-run and spring-run Chinook salmon, Delta smelt, North American green sturgeon and Central Valley steelhead) are listed under the ESAs. In addition, the longfin smelt is listed as a threatened species under the California ESA. These changes in project operations have limited the flexibility of the State Water Project and adversely affected State Water Project deliveries to Metropolitan. State Water Project operational requirements may be further modified in the future under new biological opinions for listed species under the Federal ESA or by the California Department of Fish and Wildlife's issuance of incidental take authorizations under the California ESA. Additionally, new litigation, listings of additional species or new regulatory requirements could further adversely affect State Water Project operations in the future by requiring additional export reductions, releases of additional water from storage or other operational changes impacting the water supply available for export. Such operational constraints are likely to continue until long-term solutions to the problems in the Bay-Delta are identified and implemented. See also "–State Water Project – Bay-Delta Proceedings Affecting State Water Project."

The Federal ESA requires that before any federal agency authorizes funds or carries out an action that may affect a listed species or designated critical habitat, it must consult with the appropriate federal fishery agency to determine whether the action would jeopardize the continued existence of any threatened or endangered species, or adversely modify habitat critical to the species' needs. The result of the consultation is known as a "biological opinion." In the biological opinion the federal fishery agency determines whether the action would cause jeopardy to a threatened or endangered species or adverse modification to critical habitat, and recommends reasonable and prudent alternatives or measures that would allow the action to proceed without causing jeopardy or adverse modification. The biological opinion also includes an "incidental take statement." The incidental take statement allows the action to go forward even though it will result in some level of "take," including harming or killing some members of the species, incidental to the agency action, provided that the agency action does not jeopardize the continued existence of any threatened or endangered species and complies with reasonable mitigation and minimization measures recommended by the federal fishery agency.

***Delta Smelt and Salmon Federal ESA Biological Opinions.*** The United States Fish and Wildlife Service (USFWS) released a biological opinion on December 15, 2008 on the impacts of the State Water Project and the federal Central Valley Project on Delta smelt. On June 4, 2009, the National Marine Fisheries Service (NMFS) released a biological opinion for salmonid species. The water supply restrictions imposed by these biological opinions on Delta smelt and salmonid species have a range of impacts on Metropolitan's deliveries from the State Water Project, depending on hydrologic conditions. The impact on total State Water Project deliveries to State Water Contractors attributable to the Delta smelt and salmonid species biological opinions combined is estimated to be one million acre-feet in an average year, reducing total State Water Project deliveries to State Water Contractors from approximately 3.3 million acre-feet to approximately 2.3 million acre-feet for the year under average hydrology. Reductions are estimated to range from 0.3 million acre-feet during critically dry years to 1.3 million acre-feet in above normal water years. Total State Water Project delivery impacts to Metropolitan for calendar years 2008 through 2016 are estimated to be 2.0 million acre-feet.

**Endangered Species Act Considerations - Colorado River**

Federal and state environmental laws protecting fish species and other wildlife species have the potential to affect Colorado River operations. A number of species that are on either "endangered" or "threatened" lists under the ESAs are present in the area of the Lower Colorado River, including among others, the bonytail chub, razorback sucker, southwestern willow flycatcher and Yuma clapper rail. To address this issue, a broad-based state/federal/tribal/private regional partnership that includes water, hydroelectric power and wildlife management agencies in Arizona, California and Nevada have developed a multi-species conservation program for the main stem of the Lower Colorado River (the Lower Colorado River Multi-Species Conservation Program or "MSCP"). The MSCP allows Metropolitan to obtain federal and state permits for any incidental take of protected species resulting from current and future water and power operations of its Colorado River facilities and to minimize any uncertainty from additional listings of endangered species. The MSCP also covers operations of federal dams and power plants on the river that deliver water and hydroelectric power for use by Metropolitan and other agencies. The MSCP covers 27 species and habitat in the Lower Colorado River from Lake Mead to the Mexican border for a term of 50 years (commencing in 2005). Over the 50-year term of the program, the total cost to Metropolitan will be about $88.5 million (in 2003 dollars), and annual costs will range between $0.8 million and $4.7 million (in 2003 dollars).

**Invasive Species - Mussel Control Programs**

Zebra and quagga mussels are established in many regions of the United States. Mussels can reproduce quickly and, if left unmanaged, can clog intakes and raw water conveyance systems, alter or destroy fish habitats and affect lakes and beaches. Quagga mussels were introduced in the Great Lakes in the late 1980s. These organisms infest much of the Great Lakes basin, the St. Lawrence Seaway, and much of the Mississippi River drainage system. In January 2007 quagga mussels were discovered in Lake Mead. The

most likely source of the quagga mussel infestation in the Colorado River was recreational boats with exposure to water bodies around the Great Lakes. Metropolitan developed a program in 2007 to address the long term introduction of mussel larvae into the CRA from the Lower Colorado River, which is now heavily colonized from Lake Mead through Lake Havasu. The quagga mussel control program consists of surveillance activities and control measures. Surveillance activities are conducted annually in conjunction with regularly scheduled two- to three-week long CRA shutdowns, which have the added benefit of desiccating exposed quagga mussels. Control activities consist of continuous chlorination at Copper Basin, Lake Skinner outlet conduit, and Lake Mathews Forebay, quarterly chlorination of the outlet towers at Lake Skinner and Mathews, and physical removal of mussels from the trash racks in Lake Havasu. Recent shutdown inspections have demonstrated that the combined use of chlorine and regular cleaning during scheduled shutdowns effectively control mussel infestation in the CRA. Metropolitan's costs for controlling quagga mussels in the CRA are between $4 million and $5 million per year.

Quagga and zebra mussel populations are located within 16 miles of the State Water Project. An isolated population of zebra mussels is established in San Justo Reservoir in Central California and Lake Piru in Southern California has been infested with quagga mussels since 2013. To prevent the further spread of the mussels into the State Water Project, the Bay-Delta and other bodies of water and water systems, DWR has joined the California Department of Fish and Wildlife, as the lead agency, and other state and federal agencies on a number of activities. These include boat inspections, monitoring of water bodies and water systems and education of the public. In addition, DWR has developed a Rapid Response Plan, Vector Management Plan, and Long-Term Mussel Management and Control Plan as mandated by the California Fish and Game Code.

In December 2016, DWR found dead adult mussels in the Angeles Tunnel, which connects Pyramid Lake to Castaic Lake. Through DNA testing, they were confirmed to be quagga mussels. As a result of such findings, the California Department of Fish and Wildlife has deemed the State Water Project West Branch (including Pyramid and Castaic Lakes) to be infested with quagga mussels and has implemented boat inspection requirements on boats leaving Pyramid Lake and Castaic Lake to help prevent the spreading of the invasive species.

In February 2017, DWR detected mussel veligers (microscopic, free-floating larval lifestage) in water samples collected on the State Water Project East Branch at the North Park valve of the Santa Ana Valley Pipeline, which transports water from Silverwood Lake located in San Bernardino County to Lake Perris located in Riverside County. Extensive sampling has occurred upstream and downstream of the North Park valve and no mussels have been detected. Currently, there is no evidence of mussels in Silverwood Lake or Lake Perris.

There are no impacts on State Water Project allocation or deliveries at this time and the future level of mussel impacts is unknown. Metropolitan will coordinate with other agencies to increase the monitoring of mussels and adapt the existing quagga mussel control program for the State Water Project as required.

**Water Transfer, Storage and Exchange Programs**

**General**

To supplement its State Water Project and Colorado River water supplies, Metropolitan has developed and actively manages a portfolio of water supply programs, including water transfer, storage and exchange agreements, the supplies created by which are conveyed through the California Aqueduct of the State Water Project, utilizing Metropolitan's rights under its State Water Contract to use the portion of the State Water Project conveyance system necessary to deliver water to it, or through available CRA capacity. Consistent with its IRP, Metropolitan will continue to pursue voluntary water transfer and exchange programs with State, federal, public and private water districts and individuals to help mitigate supply/demand imbalances and provide additional dry-year supply sources. A summary description of certain of Metropolitan's supply programs are set forth below. In addition to the arrangements described

below, Metropolitan is entitled to storage and access to stored water in connection with various other storage programs and facilities. See "–Colorado River Aqueduct" above in this Appendix A, as well as the table "Metropolitan's Water Storage Capacity and Water in Storage" under the heading "–Storage Capacity and Water in Storage."

**State Water Project**

In addition to the basic State Water Project contract provisions, Metropolitan has other contract rights that accrue to the overall value of the State Water Project. Because each contractor is paying for physical facilities, they also have the right to use the facilities to move water supplies associated with agreements, water transfers and water exchanges. Metropolitan has entered into agreements and exchanges that provide additional water supplies.

***Castaic Lake and Lake Perris.*** Metropolitan has contractual rights to store up to 65,000 acre-feet of water in Lake Perris (East Branch terminal reservoir) and 153,940 acre-feet of water in Castaic Lake (West Branch terminal reservoir). This storage provides Metropolitan with additional options for managing State Water Project deliveries to maximize yield from the project. Any water used must be returned to the State Water Project within five years or it is deducted from allocated amounts in the sixth year.

***Metropolitan Article 56 Carryover.*** Metropolitan has the right to store its allocated contract amount for delivery in the following year. Metropolitan can store between 100,000 and 200,000 acre-feet, depending on the final water supply allocation percentage.

California's agricultural activities consume approximately 34 million acre-feet of water annually, which is approximately 80 percent of the total water used in the State for agricultural and urban uses and 40 percent of the water used for all consumptive uses, including environmental demands. Voluntary water transfers and exchanges can make a portion of this agricultural water supply available to support the State's urban areas. Such existing and potential water transfers and exchanges are an important element for improving the water supply reliability within Metropolitan's service area and accomplishing the reliability goal set by Metropolitan's Board. The portfolio of supplemental supplies that Metropolitan has developed to be conveyed through the State Water Project California Aqueduct extend from north of the Bay-Delta to Southern California. Certain of these arrangements are described below.

***Yuba River Accord.*** Metropolitan entered into an agreement with DWR in December 2007 to purchase a portion of the water released by the Yuba County Water Agency ("YCWA"). YCWA was involved in a SWRCB proceeding in which it was required to increase Yuba River fishery flows. Within the framework of agreements known as the Yuba River Accord, DWR entered into an agreement for the long-term purchase of water from YCWA. The agreement permits YCWA to transfer additional supplies at its discretion. Metropolitan, other State Water Contractors, and the San Luis Delta Mendota Water Authority entered into separate agreements with DWR for the purchase of portions of the water made available. Metropolitan's agreement allows Metropolitan to purchase, in dry years through 2025, available water supplies which have ranged from approximately 6,555 acre-feet to 67,068 acre-feet per year.

In addition to water made available under the Yuba River Accord, Metropolitan has developed groundwater storage agreements that allow Metropolitan to store available supplies in the Central Valley for return later. Metropolitan has also developed exchanges and transfers with other State Water Contractors.

***Arvin-Edison/Metropolitan Water Management Program.*** In December 1997, Metropolitan entered into an agreement with the Arvin-Edison Water Storage District ("Arvin-Edison"), an irrigation agency located southeast of Bakersfield, California. Under the program, Arvin-Edison stores water on behalf of Metropolitan. In January 2008, Metropolitan and Arvin-Edison amended the agreement to enhance the program's capabilities and to increase the delivery of water to the California Aqueduct. Up to 350,000 acre-feet of Metropolitan's water may be stored and Arvin-Edison is obligated to return up to 75,000 acre-feet of stored water in any year to Metropolitan, upon request. The agreement will terminate in 2035 unless

extended. To facilitate the program, new wells, spreading basins and a return conveyance facility connecting Arvin-Edison's existing facilities to the California Aqueduct have been constructed. The agreement also provides Metropolitan priority use of Arvin-Edison's facilities to convey high quality water available on the east side of the San Joaquin Valley to the California Aqueduct. Metropolitan's current storage account under the Arvin-Edison/Metropolitan Water Management Program is shown in the table "Metropolitan's Water Storage Capacity and Water in Storage" under the heading "–Storage Capacity and Water in Storage."

***Semitropic/Metropolitan Groundwater Storage and Exchange Program.*** In 1994, Metropolitan entered into an agreement with the Semitropic Water Storage District ("Semitropic"), located adjacent to the California Aqueduct north of Bakersfield, to store water in the groundwater basin underlying land within Semitropic. The minimum annual yield available to Metropolitan from the program is 39,700 acre-feet of water and the maximum annual yield is 231,200 acre-feet of water depending on the available unused capacity and the State Water Project allocation. Metropolitan's current storage account under the Semitropic program is shown in the table "Metropolitan's Water Storage Capacity and Water in Storage" under the heading "–Storage Capacity and Water in Storage."

***Kern Delta Storage Program.*** Metropolitan entered into an agreement with Kern Delta Water District ("Kern Delta") in May 2003, for a groundwater banking and exchange transfer program to allow Metropolitan to store up to 250,000 acre-feet of State Water Contract water in wet years and to permit Metropolitan, at Metropolitan's option, a return of up to 50,000 acre-feet of water annually during hydrologic and regulatory droughts.

***Mojave Storage Program.*** Metropolitan entered into a groundwater banking and exchange transfer agreement with Mojave Water Agency ("Mojave") in October 2003. This agreement was amended in 2011 to allow for the cumulative storage of up to 390,000 acre-feet. The agreement allows for Metropolitan to store water in an exchange account for later return. Through 2021, and when the State Water Project allocation is 60 percent or less, Metropolitan can annually withdraw Mojave's State Water Project contractual amounts in excess of a 10 percent reserve. When the State Water Project allocation is over 60 percent, the reserved amount for Mojave's local needs increases to 20 percent. Under a 100 percent allocation, the State Water Contract provides Mojave 82,800 acre-feet of water. Metropolitan's current storage account under this program is shown in the table "Metropolitan's Water Storage Capacity and Water in Storage" under the heading "–Storage Capacity and Water in Storage."

***Antelope Valley East Kern Storage and Exchange Program.*** In 2016, Metropolitan entered into an agreement with the Antelope Valley-East Kern Water Agency ("AVEK"), the third largest State Water Project Contractor, to both exchange supplies and store water in the Antelope Valley groundwater basin. Under this agreement, AVEK would provide at least 30,000 acre-feet over ten years of its unused Table A State Water Project water to Metropolitan. For every two acre-feet provided to Metropolitan as part of the exchange, AVEK would receive back one acre-foot in the future. For the one acre-foot that is retained by Metropolitan, Metropolitan would pay AVEK under a set price schedule based on the State Water Project allocation at the time. The payment would range from $587/acre-foot under a 5 percent State Water Project allocation to $38/acre-foot under an 86 percent State Water Project allocation.

***San Bernardino Valley Municipal Water District Coordinated Operating Agreement.*** Metropolitan entered into an agreement with the San Bernardino Valley Municipal Water District ("SBVMWD") in April 2001 to coordinate the use of facilities and State Water Project water supplies. The agreement allows Metropolitan a minimum purchase of 20,000 acre-feet on an annual basis with the option to purchase additional water when available. The program includes 50,000 acre-feet of storage capacity for the carryover of water purchased from SBVMWD. In addition to water being supplied using the State Water Project, the previously stored water can be returned using an interconnection between the San Bernardino Central Feeder and Metropolitan's Inland Feeder.

***San Gabriel Valley Municipal Water District and Other Exchange Programs.*** In 2013, Metropolitan entered into an agreement with the San Gabriel Valley Municipal Water District ("SGVMWD"). Under this agreement, Metropolitan delivers treated water to a SGVMWD subagency in exchange for twice as much untreated State Water Project supplies delivered into the groundwater basin that supplies this agency and metropolitan subagencies. Metropolitan can purchase at least 5,000 acre-feet per year, in excess of the unbalanced exchange amount. This program has the potential to increase Metropolitan's reliability by providing 115,000 acre-feet through 2035.

Metropolitan has been negotiating, and will continue to pursue, water purchase, storage and exchange programs with other agencies in the Sacramento and San Joaquin Valleys. These programs involve the storage of both State Water Project supplies and water purchased from other sources to enhance Metropolitan's dry-year supplies and the exchange of normal year supplies to enhance Metropolitan's water reliability and water quality, in view of dry conditions and potential impacts from the ESA cases discussed above under the heading "–Endangered Species Act and Other Environmental Considerations–Endangered Species Act Considerations - State Water Project." In 2016, Metropolitan entered into an agreement with the State Water Contractors, Inc. to pursue water transfer supplies. These purchases were not completed, however due to the 60 percent State Water Project allocation, which resulted in no conveyance capacity to move the transfer supplies to Metropolitan.

Metropolitan has also entered into an agreement with certain State Water Contractors for the exchange of a portion of its Colorado River supply for their State Water Project contracted amounts. One benefit of the agreement is reducing Metropolitan's State Water Project fixed costs in wetter years when there are more than sufficient supplies to meet Metropolitan's water management goals, while preserving its dry-year State Water Project Supply.

***Metropolitan/CVWD/Desert Water Agency Exchange and Advance Delivery Agreement.*** Metropolitan has agreements with the CVWD and the Desert Water Agency ("DWA") in which Metropolitan exchanges its Colorado River water for those agencies' State Water Project contractual water on an annual basis. Because CVWD and DWA do not have a physical connection to the State Water Project, Metropolitan takes delivery of CVWD's and DWA's State Water Project supplies and delivers a like amount of Colorado River water to the agencies. In accordance with an advance delivery agreement executed by Metropolitan, CVWD and DWA, Metropolitan has delivered Colorado River water in advance to these agencies for storage in the Upper Coachella Valley groundwater basin. In years when it is necessary to augment available supplies to meet local demands, Metropolitan has the option to meet the exchange delivery obligation through drawdowns of the advance delivery account, rather than deliver its Colorado River supply. Metropolitan's current storage account under the CVWD/DWA program is shown in the table "Metropolitan's Water Storage Capacity and Water in Storage" under the heading "–Storage Capacity and Water in Storage." In addition to the CVWD/DWA exchange agreements, Metropolitan has entered into separate agreements with CVWD and DWA for delivery of non-State Water Project supplies acquired by CVWD or DWA. Similarly, Metropolitan takes delivery of these supplies from State Water Project facilities and incurs an exchange obligation to CVWD or DWA. From 2008 through 2016, Metropolitan has received a net additional supply of 88,527 acre-feet of water acquired by CVWD and DWA.

**Colorado River Aqueduct**

Metropolitan has taken steps to augment its share of Colorado River water through agreements with other agencies that have rights to use such water, including through cooperative programs with other water agencies to conserve and develop supplies and through programs to exchange water with other agencies. These supplies are conveyed through the CRA. Metropolitan determines the delivery schedule of these supplies throughout the year based on changes in the availability of State Water Project and Colorado River water. Under certain of these programs, water may be delivered to Metropolitan's service area in the year made available or in a subsequent year as ICS water from Lake Mead storage. See "–Colorado River

Aqueduct – Colorado River Operations: Surplus and Shortage Guidelines – Lower Basin Shortage Guidelines and Coordinated Management Strategies for Lake Powell and Lake Mead."

***IID/Metropolitan Conservation Agreement.*** Under a 1988 water conservation agreement, as amended in 2003 and 2007 (the "1988 Conservation Agreement") between Metropolitan and IID, Metropolitan provided funding for IID to construct and operate a number of conservation projects that have conserved up to 109,460 acre-feet of water per year that has been provided to Metropolitan. As amended, the agreement's initial term has been extended to at least 2041 or 270 days after the termination of the QSA. In 2016, 105,000 acre-feet of conserved water was made available by IID to Metropolitan. Under the QSA and related agreements, Metropolitan, at the request of CVWD, forgoes up to 20,000 acre-feet of this water each year for diversion by CVWD. In 2015 and 2016, CVWD's requests were for 6,715 and an estimated 15,942 acre-feet, respectively, leaving 101,105 acre-feet in 2015 and an estimated 89,058 acre-feet in 2016 for Metropolitan. See "–Colorado River Aqueduct – Quantification Settlement Agreement."

***Palo Verde Land Management, Crop Rotation and Water Supply Program.*** In August 2004, Metropolitan and the Palo Verde Irrigation District ("PVID") signed the program agreement for a Land Management, Crop Rotation and Water Supply Program. Under this program, participating landowners in the PVID service area are compensated for reducing water use by not irrigating a portion of their land. This program provides up to 133,000 acre-feet of water to be available to Metropolitan in certain years. The term of the program is 35 years. Fallowing began on January 1, 2005. In March 2009, Metropolitan and PVID entered into a supplemental fallowing program within PVID that provided for the fallowing of additional acreage in 2009 and 2010. In calendar years 2009 and 2010, an additional 24,100 acre-feet and 32,300 acre-feet of water, respectively, were saved and made available to Metropolitan under the supplemental program. The following table shows annual volumes of water saved and made available to Metropolitan under the Land Management, Crop Rotation and Water Supply Program with PVID:

**WATER AVAILABLE FROM PVID LAND MANAGEMENT, CROP ROTATION AND WATER SUPPLY PROGRAM**

| Calendar Year | Volume (acre-feet) |
|---|---|
| 2006 | 105,000 |
| 2007 | 72,300 |
| 2008 | 94,300 |
| 2009[1] | 144,300 |
| 2010[1] | 148,600 |
| 2011 | 122,200 |
| 2012 | 73,700 |
| 2013 | 32,750 |
| 2014 | 43,010 |
| 2015 | 94,480 |
| 2016[2] | 125,000 |

*Source: Metropolitan.*

(1) Includes water from the supplemental fallowing program that provided for fallowing of additional acreage in 2009 and 2010.
(2) Estimate.

***Lake Mead Storage Program.*** As described under "–Colorado River Aqueduct–Colorado River Operations: Surplus and Shortage Guidelines–Lower Basin Shortage Guidelines and Coordinated Management Strategies for Lake Powell and Lake Mead," in December 2007, Metropolitan entered into agreements to set forth the guidelines under which ICS water is developed, and stored in and delivered from Lake Mead. The amount of water stored in Lake Mead must be created through extraordinary conservation,

system efficiency, or tributary conservation methods. Metropolitan has participated in projects to create ICS as described below:

Drop 2 (Warren H. Brock) Reservoir. In May 2008, Metropolitan provided $28.7 million to join the CAWCD and the SNWA in funding the Bureau of Reclamation's construction of an 8,000 acre-foot off-stream regulating reservoir near Drop 2 of the All-American Canal in Imperial County (officially named the Warren H. Brock Reservoir). Construction was completed in October 2010 and the Bureau of Reclamation refunded approximately $3.71 million in unused contingency funds to Metropolitan. The Warren H. Brock Reservoir conserves about 70,000 acre-feet of water per year by capturing and storing water that would otherwise be lost from the system. In return for its funding, Metropolitan received 100,000 acre-feet of water that was stored in Lake Mead for its future use, and has the ability to receive up to 25,000 acre-feet of water in any single year. Besides the additional water supply, the addition of the Warren H. Brock reservoir adds to the flexibility of Colorado River operations by storing underutilized Colorado River water orders caused by unexpected canal outages, changes in weather conditions, and high runoff into the Colorado River. As of January 1, 2016, Metropolitan had taken delivery of 43,992 acre-feet of this water, and had 56,008 acre-feet remaining in storage.

Yuma Desalting Plant. In September 2009, Metropolitan authorized participation with SNWA, the Colorado River Commission of Nevada, the CAWCD and the Bureau of Reclamation in the pilot operation of the Yuma Desalting Plant. The Bureau of Reclamation concluded the pilot operation of the Yuma Desalting Plant in March 2011. Metropolitan's contribution for the funding agreement was approximately $8.4 million, of which approximately $1.1 million was refunded to Metropolitan. Metropolitan's yield from the pilot run of the project was 24,397 acre-feet. As of January 1, 2016, that water was stored in Lake Mead for Metropolitan's future use.

Mexico Pilot Project. In November 2012, Metropolitan executed agreements in support of a program to augment Metropolitan's Colorado River supply from 2013 through 2017 through an international pilot project in Mexico. Metropolitan's total share of costs was $5 million for 47,500 acre-feet of project supplies. In December 2013, Metropolitan and IID executed an agreement under which IID has paid half of Metropolitan's program costs, or $2.5 million, in return for half of the project supplies, or 23,750 acre-feet. In addition, 23,750 acre-feet of conserved water will be credited to Metropolitan's binational ICS water account no later than December 31, 2017. See "–Colorado River Aqueduct – Colorado River Operations: Surplus and Shortage Guidelines – Lower Basin Shortage Guidelines and Coordinated Management Strategies for Lake Powell and Lake Mead."

**Storage Capacity and Water in Storage**

Metropolitan's storage capacity, which includes reservoirs, conjunctive use and other groundwater storage programs within Metropolitan's service area and groundwater and surface storage accounts delivered through the State Water Project or CRA, is approximately 5.83 million acre-feet. In 2016, approximately 626,000 acre-feet of stored water was emergency storage that was reserved for use in the event of supply interruptions from earthquakes or similar emergencies (see "METROPOLITAN'S WATER DELIVERY SYSTEM–Seismic Considerations" in this Appendix A), as well as extended drought. Metropolitan's emergency storage requirement is established periodically to provide a six-month water supply at 75 percent of member agencies' retail demand under normal hydrologic conditions. Metropolitan's ability to replenish water storage, both in the local groundwater basins and in surface storage and banking programs, has been limited by Bay-Delta pumping restrictions under the biological opinions issued for listed species. See "–Endangered Species Act and Other Environmental Considerations – Endangered Species Act Considerations – State Water Project – Delta Smelt and Salmon Federal ESAs Biological Opinions." Metropolitan replenishes its storage accounts when available imported supplies exceed demands. Effective storage management is dependent on having sufficient years of excess supplies to store water so that it can be used during times of shortage. Historically, excess supplies have been available in about seven of every ten years. Metropolitan forecasts that, with anticipated supply reductions from the State Water Project due to pumping

restrictions, it will need to draw down on storage in about seven of ten years and will be able to replenish storage in about three years out of ten. This reduction in available supplies extends the time required for storage to recover from drawdowns and could require Metropolitan to implement its Water Supply Allocation Plan during extended dry periods. See "CONSERVATION AND WATER SHORTAGE MEASURES–Water Supply Allocation Plan." As a result of increased State Water Project supplies and reduced demands from 2010 to 2012, Metropolitan rebuilt its storage after several years of withdrawals to approximately 3.375 million acre-feet, including emergency storage. This was the highest end-of-year total water reserves in Metropolitan's history. In 2014, Metropolitan withdrew approximately 1.2 million acre-feet from storage, reducing overall storage to approximately 1.8 million acre-feet. Approximately 300,000 acre-feet were withdrawn from storage reserves in 2015, leaving approximately 1.5 million acre-feet in storage reserves as of January 1, 2016. Approximately 350,000 acre-feet were returned to storage reserves in 2016, providing for nearly 1.9 million acre-feet in reserves as of January 1, 2017. The following table shows three years of Metropolitan's water in storage as of January 1, including emergency storage.

**METROPOLITAN'S WATER STORAGE CAPACITY AND WATER IN STORAGE[1]**
**(in Acre-Feet)**

| Water Storage Resource | Storage Capacity | Water in Storage January 1, 2017 | Water in Storage January 1, 2016 | Water in Storage January 1, 2015 |
|---|---|---|---|---|
| *Colorado River Aqueduct* | | | | |
| Desert / CVWD Advance Delivery Account | 800,000 | 38,000 | 200,000 | 249,000 |
| Lake Mead ICS | 1,500,000 | 71,000 | 80,000 | 151,000 |
| **Subtotal** | **2,300,000** | **109,000** | **280,000** | **400,000** |
| *State Water Project* | | | | |
| Arvin-Edison Storage Program | 350,000 | 108,000 | 124,000 | 166,000 |
| Semitropic Storage Program | 350,000 | 125,000 | 137,000 | 194,000 |
| Kern Delta Storage Program | 250,000 | 99,000 | 119,000 | 150,000 |
| San Bernardino Valley MWD Coordinated Operating Agreement | 50,000 | -0- | -0- | -0- |
| Mojave Storage Program | 390,000[5] | 27,000 | 31,000 | 39,000 |
| Castaic Lake and Lake Perris[2] | 219,000 | 154,000 | 30,000 | -0- |
| Metropolitan Article 56 Carryover[3] | 200,000[6] | 210,000 | 3,000 | 36,000 |
| Other State Water Project Carryover[4] | n/a | -0- | -0- | -0- |
| Emergency Storage | 334,000 | 328,000 | 328,000 | 328,000 |
| **Subtotal** | **2,143,000** | **1,051,000** | **772,000** | **913,000** |
| *Within Metropolitan's Service Area* | | | | |
| Diamond Valley Lake | 810,000 | 566,000 | 315,000 | 394,000 |
| Lake Mathews | 182,000 | 135,000 | 141,000 | 78,000 |
| Lake Skinner | 44,000 | 37,000 | 34,000 | 30,000 |
| **Subtotal[7]** | **1,036,000** | **738,000** | **490,000** | **502,000** |
| *Member Agency Storage Programs* | | | | |
| Cyclic Storage and Conjunctive Use | 352,000 | 1,000 | 7,000 | 28,000 |
| **Total** | **5,831,000** | **1,899,000** | **1,549,000** | **1,843,000** |

*Source: Metropolitan.*

*(footnotes on next page)*

*(footnotes to table on prior page)*

(1) Water storage capacity and water in storage are measured based on engineering estimates and are subject to change.
(2) Flexible storage allocated to Metropolitan under its State Water Contract. Withdrawals must be returned within 5 years.
(3) Article 56 Carryover storage capacity is dependent on the annual State Water Project allocation, which varies from year to year. Article 56 supplies represent water that is allocated to a State Water Project contractor in a given year and carried over to the next year pursuant to the State Water Contract. The January 1, 2017 value includes 42,000 acre-feet of Article 56 carried over by Metropolitan on behalf of Desert Water Agency and Coachella Valley Water District.
(4) Includes Article 56 Carryover from prior years, non-project carryover, and carryover of curtailed deliveries pursuant to Article 14(b) of Metropolitan's State Water Contract.
(5) The Mojave Storage Program agreement was amended in 2011 to allow for cumulative storage of up to 390,000 acre-feet.
(6) Metropolitan's State Water Project carryover capacity ranges from 100,000 to 200,000 acre-feet, on a sliding scale that depends on the final State Water Project allocation. At allocations of 50 percent or less, Metropolitan may store 100,000 acre-feet, and at allocations of 75 percent or greater, Metropolitan may store up to 200,000 acre-feet. For the purposes of this table, the highest possible carryover capacity is displayed.
(7) Includes 298,000 acre-feet of emergency storage in Metropolitan's reservoirs in 2015, 2016, and 2017.

## CONSERVATION AND WATER SHORTAGE MEASURES

### General

The central objective of Metropolitan's water conservation program is to help ensure adequate, reliable and affordable water supplies for Southern California by actively promoting efficient water use. The importance of conservation to the region has increased in recent years because of drought conditions in the State Water Project watershed and court-ordered restrictions on Bay-Delta pumping, as described under "METROPOLITAN'S WATER SUPPLY–State Water Project – Bay-Delta Proceedings Affecting Water Supply" and "–Endangered Species Act and Other Environmental Considerations – Endangered Species Act Considerations – State Water Project – Delta Smelt and Salmon Federal ESAs Biological Opinions." Conservation reduces the need to import water to deliver to member agencies through Metropolitan's system. Water conservation is an integral component of Metropolitan's IRP, WSDM Plan and Water Supply Allocation Plan.

Metropolitan's conservation program has largely been developed to assist its member agencies in meeting the "best management practices" ("BMPs") of the California Urban Water Conservation Council's Memorandum of Understanding Regarding Urban Water Conservation in California ("CUWCC MOU") and to meet the conservation goals of the most recent IRP Update. See "METROPOLITAN'S WATER SUPPLY–Integrated Water Resources Plan." Under the terms of the CUWCC MOU and Metropolitan's Conservation Credits Program, Metropolitan administers regional conservation programs and also co-funds member agency conservation programs designed to achieve greater water use efficiency in residential, commercial, industrial, institutional and landscape uses. Metropolitan uses its Water Stewardship Rate, which is charged for every acre-foot of water conveyed by Metropolitan, together with available grant funds, to fund conservation incentives and other water management programs. All users of Metropolitan's system benefit from the system capacity made available by investments in demand management programs like the Conservation Credits Program. See "METROPOLITAN REVENUES–Rate Structure – Water Stewardship Rate" in this Appendix A. Direct spending by Metropolitan on active conservation incentives, including rebates for water-saving plumbing fixtures, appliances and equipment, from fiscal year 1989-90 through fiscal year 2015-16 was about $731 million. The 2015 IRP Update estimates that 1,197,000 acre-feet of water will be conserved annually in southern California by 2025. See also "METROPOLITAN'S WATER SUPPLY–Integrated Water Resources Plan" in this Appendix A and "–Drought Response Actions" below.

In addition to ongoing conservation, Metropolitan has developed a WSDM Plan, which splits resource actions into two major categories: Surplus Actions and Shortage Actions. See "–Water Surplus and Drought Management Plan." Conservation and water efficiency programs are part of Metropolitan's resource management strategy which makes up these Surplus and Shortage actions.

Metropolitan's Water Supply Allocation Plan allocates Metropolitan's water supplies among its member agencies, based on the principles contained in the WSDM Plan, to reduce water use and drawdowns from water storage reserves. See "–Water Supply Allocation Plan." Metropolitan's member agencies and retail water suppliers in Metropolitan's service area also have the ability to implement water conservation and allocation programs, and some of the retail suppliers in Metropolitan's service area have initiated conservation measures. The success of conservation measures in conjunction with the Water Supply Allocation Plan is evidenced as a contributing factor in the lower than budgeted water sales during fiscal years 2009-10, 2010-11, 2011-12 and 2015-16.

Legislation approved in November 2009 sets a statewide conservation target for urban per capita water use of 20 percent reductions by 2020 (with credits for existing conservation) at the retail level, providing an additional catalyst for conservation by member agencies and retail suppliers. Metropolitan's water sales projections incorporate an estimate of conservation savings that will reduce retail demands. Current projections include an estimate of additional water use efficiency savings that would result from local agencies reducing their per capita water use in response to the 20 percent by 2020 conservation savings goals required by the 2009 legislation, as well as an estimate of additional conservation that would have to occur to reach Metropolitan's IRP goal of reducing overall regional per capita water use by 20 percent by 2020.

**Water Surplus and Drought Management Plan**

In addition to the long-term planning guidelines and strategy provided by its IRP, Metropolitan has developed its WSDM Plan for the on-going management of its resources and water supplies in response to hydrologic conditions. The WSDM Plan, which was adopted by Metropolitan's Board in April 1999, evolved from Metropolitan's experiences during the droughts of 1976-77 and 1987-92. The WSDM Plan is a planning document that Metropolitan uses to guide inter-year and intra-year storage operations, and splits resource actions into two major categories: surplus actions and shortage actions. The surplus actions emphasize storage of surplus water inside the region, followed by storage of surplus water outside the region. The shortage actions emphasize critical storage programs and facilities and conservation programs that make up part of Metropolitan's response to shortages. Implementation of the plan is directed by a WSDM team, made up of Metropolitan staff, that meets regularly throughout the year and more frequently between November and April as hydrologic conditions develop. The WSDM team develops and recommends storage actions to senior management on a regular basis and provides updates to the Board on hydrological conditions, storage levels and planned storage actions through detailed reports.

**Water Supply Allocation Plan**

In times of prolonged or severe water shortages, Metropolitan manages its water supplies through the implementation of its Water Supply Allocation Plan. The Water Supply Allocation Plan was originally approved by Metropolitan's Board in February 2008, and has been implemented three times since its adoption, including most recently in April 2015. The Water Supply Allocation Plan provides a formula for equitable distribution of available water supplies in case of extreme water shortages within Metropolitan's service area. In December 2014, the Board approved certain adjustments to the formula for calculating member agency supply allocations during subsequent periods of implementation of the Water Supply Allocation Plan. Although the Act gives each of Metropolitan's member agencies a preferential entitlement to purchase a portion of the water served by Metropolitan (see "METROPOLITAN REVENUES–Preferential Rights"), historically, these rights have not been used in allocating Metropolitan's water. Metropolitan's member agencies and retail water suppliers in Metropolitan's service area also may implement water conservation and allocation programs within their respective service territories in times of shortage. See also "–Drought Response Actions."

On April 14, 2015, the Board declared a Water Supply Condition 3 and the implementation of the Water Supply Allocation Plan at a Level 3 Regional Shortage Level, effective July 1, 2015 through June 30, 2016. Implementation of the Water Supply Allocation Plan at a Level 3 Regional Shortage Level, and

response to the Governor's Order and related implementing regulations (described under "–Drought Response Actions"), reduced supplies delivered by Metropolitan to Metropolitan's member agencies to approximately 1.6 million acre-feet in fiscal year 2015-16. See also "CONSERVATION AND WATER SHORTAGE MEASURES–General." Due to improved hydrologic conditions, on May 10, 2016, the Board rescinded the Water Supply Allocation Plan, declared a Condition 2 Water Supply Alert, and decided not to implement the Water Supply Allocation Plan for fiscal year 2016-17. In April 2017, the Board will evaluate current water supply conditions and determine if implementation of the Water Supply Allocation Plan is needed for fiscal year 2017-18. In light of current hydrologic conditions and current DWR State Water Project allocation estimates, implementation of the Water Supply Allocation Plan for fiscal year 2017-18 is not currently expected.

**Drought Response Actions**

The most recent drought of 2012-2015 represents one of the driest periods in the hydrologic record since 1931-1934. In calendar years 2012-2015, to offset reductions in State Water Project supplies and mitigate impacts of the California drought, in addition to utilizing the limited available supplies from the Colorado River and State Water Project deliveries, Metropolitan met water demands in its service area by supplemental water transfers and purchases, and drawing on storage reserves, while also encouraging responsible and efficient water use to lower demands.

As noted under "–Water Supply Allocation Plan" above, actions taken in response to the drought by the State, Metropolitan's Board, and Metropolitan member agencies have contributed to reduced demands in Metropolitan's service area. Following the declaration by Governor Brown on January 17, 2014 of a drought state of emergency for California, on April 1, 2015 Governor Brown issued an Executive Order ("Order") calling for a 25 percent reduction in consumer water use in response to the historically dry conditions. The Governor's Order was implemented through emergency regulation adopted by the SWRCB. On May 18, 2016, the SWRCB adopted modifications to the emergency regulation which replace the state-mandated conservation targets with a supply-based approach that mandates urban water suppliers take actions to ensure at least a three year supply of water to their customers under drought conditions. As a wholesale water agency providing a supplemental water supply to its member agencies, Metropolitan is not subject to the requirements of the Order, which applies to retail water agencies. However, water sales of Metropolitan's member agencies have declined as a result of conservation efforts and other actions taken to comply with the Order and implementing regulation. In addition, since Governor Brown's initial drought emergency proclamation in January 2014, Metropolitan has worked proactively with its member agencies to conserve water supplies in its service area, and significantly expanded its water conservation and outreach programs and increased funding for conservation incentive programs. See "CONSERVATION AND WATER SHORTAGE MEASURES–General." In calendar year 2016, Metropolitan returned approximately 350,000 acre-feet of water to storage and continued to encourage responsible and efficient water use.

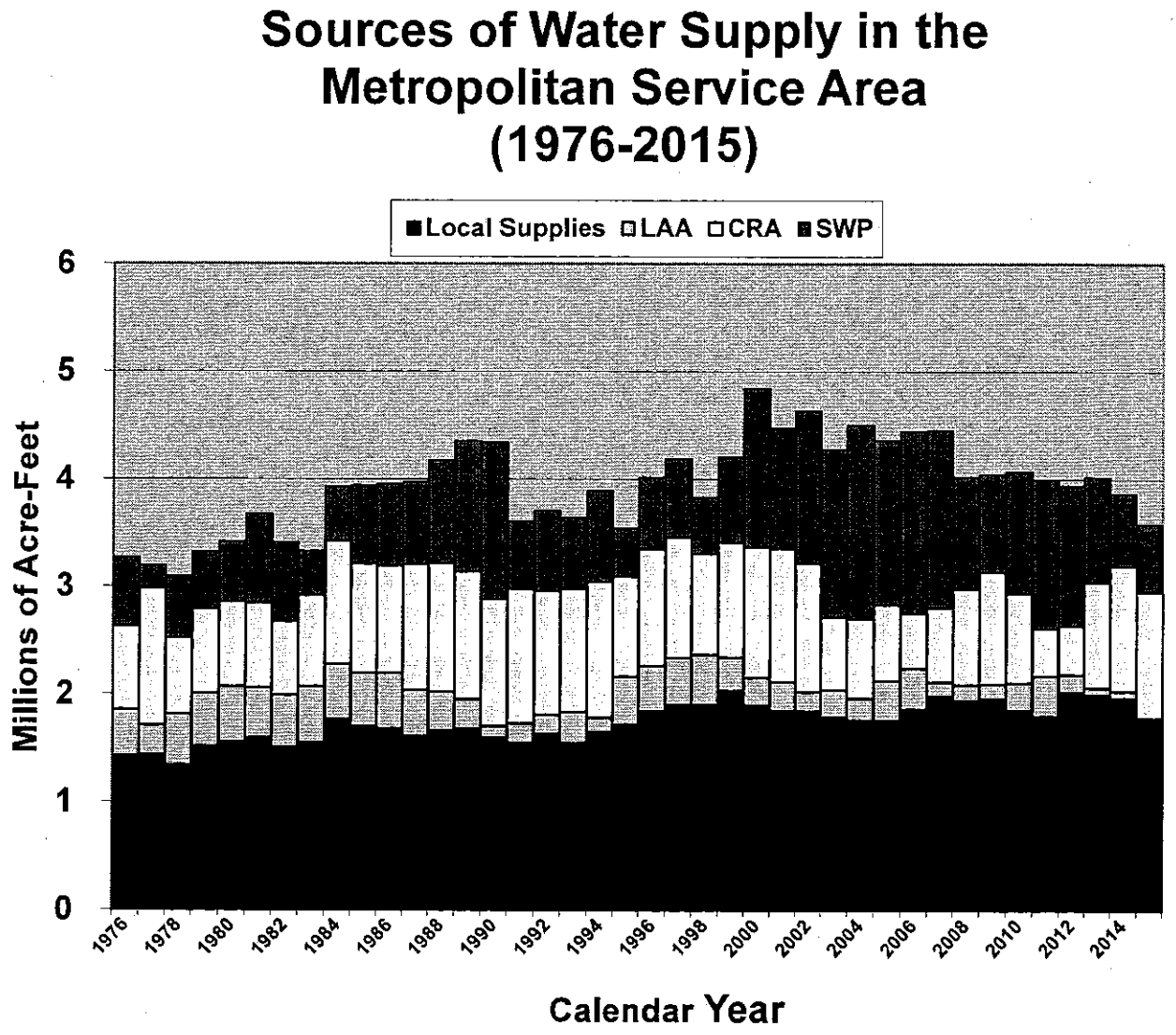
## REGIONAL WATER RESOURCES

The water supply for Metropolitan's service area is provided in part by Metropolitan and in part by non-Metropolitan sources available to members. Approximately 60 percent of the water supply for Metropolitan's service area is imported water received by Metropolitan from the CRA and the State Water Project and by the City of Los Angeles (the "City") from the Los Angeles Aqueduct. While the City is one of the largest water customers of Metropolitan, it receives a substantial portion of its water from the Los Angeles Aqueduct and local groundwater supply. The balance of water within the region is produced locally, primarily from groundwater supplies and runoff.

Metropolitan's member agencies are not required to purchase or use any of the water available from Metropolitan. Some agencies depend on Metropolitan to supply nearly all of their water needs, regardless of the weather. Other agencies, with local surface reservoirs or aqueducts that capture rain or snowfall, rely on Metropolitan more in dry years than in years with heavy rainfall, while others, with ample groundwater supplies, purchase Metropolitan water only to supplement local supplies and to recharge groundwater basins.

The demand for supplemental supplies provided by Metropolitan is dependent on water use at the retail consumer level and the amount of locally supplied and conserved water. See "CONSERVATION AND WATER SHORTAGE MEASURES" in this Appendix A and "–Local Water Supplies" below. Consumer demand and locally supplied water vary from year to year, resulting in variability in water sales. Future reliance on Metropolitan supplies will depend on, among other things, local projects and the amount of water, if any, that may be derived from sources other than Metropolitan. In recent years, supplies and demands have been affected by drought, water use restrictions, economic conditions, weather conditions and environmental laws, regulations and judicial decisions, as described in this Appendix A under "METROPOLITAN'S WATER SUPPLY." For information on Metropolitan's water sales revenues, see "METROPOLITAN REVENUES" and "MANAGEMENT'S DISCUSSION OF HISTORICAL AND PROJECTED REVENUES AND EXPENSES" in this Appendix A.

The following graph shows a summary of the regional sources of water supply for the years 1976 to 2015. Local supplies available within Metropolitan's service area are augmented by water imported by the City through the Los Angeles Aqueduct and Metropolitan supplies provided through the CRA and State Water Project.




*Source: Metropolitan.*

The major sources of water available to some or all of Metropolitan's member agencies in addition to supplies provided by Metropolitan are described below.

**Los Angeles Aqueduct**

The City, through its Department of Water and Power ("LADWP"), operates its Los Angeles Aqueduct system to import water from the Owens Valley and the Mono Basin on the eastern slopes of the Sierra Nevada in eastern California. Prior to the 1990-1991 drought, the City had imported an average of 440,000 acre-feet of water annually from the combined Owens Valley/Mono Basin system, of which about 90,000 acre-feet came from the Mono Basin. Under the Mono Lake Basin Water Right Decision (Decision 1631) issued in September 1994, which revised LADWP's water rights licenses in the Mono Basin, the City is limited to export 4,500 acre-feet annually when Mono Lake elevation is between 6,377 to 6,380 feet above mean sea level, and 16,000 acre-feet annually when the elevation is between 6,380 to 6,391 feet above mean sea level, on April 1 of the runoff year. On April 1, 2016, the water level of Mono Lake was 6,378.1 feet above mean sea level. Therefore, Mono Basin water exports for runoff year 2016 were limited to 4,500 acre-feet. The 4,500 acre-feet export limit will remain until the water level in Mono Lake reaches 6,380 feet above mean sea level. Once the elevation of Mono Lake reaches 6,391 feet above mean sea level, a moderate increase in water exports from the Mono Basin above the 16,000 acre-feet limit will be permitted pursuant to Decision 1631.

Pursuant to the City's turnout agreement with DWR, AVEK and Metropolitan, LADWP commenced construction in 2010 of the turnout facilities along the California Aqueduct within AVEK's service area. Upon completion, which is expected in 2017, the turnout will enable delivery of water from the California Aqueduct to the Los Angeles Aqueduct. Conditions precedent to such delivery of water include obtaining agreements for the transfer of non-State Water Project water directly from farmers, water districts or others in Northern and Central California, available capacity in the California Aqueduct and compliance with State Water Project water quality requirements. The agreement allows for use of the turnout for delivery of non-State Water Project water to the City in amounts not to exceed the supplies lost to the City as a result of its Eastern Sierra environmental obligations.

Historically, the Los Angeles Aqueduct and local groundwater supplies have been nearly sufficient to meet the City's water demands during normal water supply years. As a result, prior to the 1990-1991 drought, only about 13 percent of the City's water needs (approximately 82,000 acre-feet) were supplied by Metropolitan. From fiscal year 2000-01 to fiscal year 2015-16, approximately 31 to 75 percent of the City's total water requirements were met by Metropolitan. For the five fiscal years ended June 30, 2016, the City's water deliveries from Metropolitan averaged approximately 348,680 acre-feet per year, which constituted approximately 64 percent of the City's total water supply. Deliveries from Metropolitan to the City during this period varied between approximately 166,000 acre-feet per year and approximately 442,000 acre-feet per year. See "METROPOLITAN REVENUES–Principal Customers" in this Appendix A. According to LADWP's 2015 Urban Water Management Plan, the City is planning to increase locally-developed supplies including recycled water, new conservation, stormwater capture and local groundwater from the average for the five-year period ending June 30, 2015 of 14 percent to 47 percent of its normal year supplies by fiscal year 2039-40. Accordingly, the City's reliance on Metropolitan supplies is expected to decrease from the five year average ending June 30, 2016 of 64 percent to 11 percent of its normal year supplies by fiscal year 2039-40. However, the City may still purchase up to 311,000 acre-feet per year or 44 percent of its dry year supplies from Metropolitan until 2040. This corresponds to an increase from normal to dry years of approximately 237,000 acre-feet in potential demand for supplies from Metropolitan.

LADWP analyzed the additional impacts to the Los Angeles Aqueduct's water supply deliveries for various environmental projects aimed at improving air quality and fish and riparian habitat in the Owens Valley. In November 2014, LADWP reached an agreement over implementation of dust control measures on Owens Lake which saved approximately 12,000 to 14,000 acre-feet of water in 2015 and is expected to expand water savings in the future. LADWP reports that in 2016, 71,400 acre-feet of water was devoted to

dust and environmental mitigation projects in the Owens Valley and Eastern Sierra, resulting in the need to purchase an equivalent amount of Metropolitan supply.

**Local Water Supplies**

Local water supplies are made up of groundwater, groundwater recovery, surface runoff, recycled water, and seawater desalination. Metropolitan supports local resources development through its Local Resources Program ("LRP"), which provides financial incentives up to $340 per acre-foot of water production from local water recycling, groundwater recovery and seawater desalination projects. Metropolitan utilizes conjunctive use of groundwater to encourage storage in groundwater basins. Member agencies and other local agencies have also independently funded and developed additional local supplies, including groundwater clean-up, recycled water and desalination of brackish or high salt content water.

Metropolitan's water sales projections are based in part on projections of locally-supplied water. Projections of future local supplies are based on estimated yields from sources and projects that are currently producing water or are under construction at the time a water sales projection is made. Additional reductions in Metropolitan's water sales projections are made to account for future local supply augmentation projects, based on the IRP Update goals. See "MANAGEMENT'S DISCUSSION OF HISTORICAL AND PROJECTED REVENUES AND EXPENSES–Water Sales Projections" and "METROPOLITAN'S WATER SUPPLY–Integrated Water Resources Plan" in this Appendix A.

***Groundwater.*** Demands for about 1.35 million acre-feet per year, about one-third of the annual water demands for approximately 18.8 million residents of Metropolitan's service area, are met from groundwater production. Local groundwater supplies are supported by recycled water, which is blended with imported water and recharged into groundwater basins, and also used for creating seawater barriers that protect coastal aquifers from seawater intrusion.

***Member Agency Storage Programs.*** Metropolitan has developed a number of local programs to work with its member agencies to increase storage in groundwater basins. Metropolitan has encouraged storage through its cyclic and conjunctive use storage programs. These programs allow Metropolitan to deliver water into a groundwater basin in advance of agency demands. Metropolitan has drawn on dry-year supply from cyclic storage accounts and nine contractual conjunctive use storage programs to address shortages from the State Water Project and the CRA.

Cyclic storage agreements allow pre-delivery of imported water for recharge into groundwater basins in excess of an agency's planned and budgeted deliveries making best use of available capacity in conveyance pipelines, use of storm channels for delivery to spreading basins, and spreading basins. This water is then purchased at a later time when the agency has a need for groundwater replenishment deliveries.

Conjunctive use agreements provide for storage of imported water that can be called for use by Metropolitan during dry, drought, or emergency conditions. During a dry period, Metropolitan has the option to call water stored in the groundwater basins pursuant to its contractual conjunctive use agreements. At the time of the call, the member agency pays Metropolitan the prevailing rate for that water. Nine conjunctive use projects provide about 210,000 acre-feet of groundwater storage and have a combined extraction capacity of about 70,000 acre-feet per year. As of January 2017, the balance in the nine accounts was approximately 1,000 acre-feet. See table "Metropolitan's Water Storage Capacity and Water in Storage" under "METROPOLITAN'S WATER SUPPLY–Storage Capacity and Water in Storage" in this Appendix A.

***Recovered Groundwater.*** Contamination of groundwater supplies is a growing threat to local groundwater production. Metropolitan has been supporting increased groundwater production and improved regional supply reliability by offering financial incentives to agencies for production and treatment of degraded groundwater since 1991. Metropolitan has executed agreements with local agencies to provide financial incentives to 25 projects that recover contaminated groundwater with total contract yields of about

118,000 acre-feet per year. During fiscal year 2015-16, Metropolitan provided incentives for approximately 49,000 acre-feet of recovered water under these agreements. Total groundwater recovery use under executed agreements is expected to grow to 79,000 acre-feet in 2020.

***Surface Runoff.*** Local surface water resources consist of runoff captured in storage reservoirs and diversions from streams. Since 1980, agencies have used an average of 116,000 acre-feet per calendar year of local surface water. Local surface water supplies are heavily influenced by year to year local weather conditions, varying from a high of 188,000 acre-feet in calendar year 1998 to a low of 65,000 acre-feet in calendar year 2003.

***Recycled Water.*** Metropolitan has supported recycled water use to offset water demands and improve regional supply reliability by offering financial incentives to agencies for production and sales of recycled water since 1982. Metropolitan has executed agreements with local agencies to provide financial incentives to 82 recycled water projects with total contract yields of about 323,000 acre-feet per year. During fiscal year 2015-16, Metropolitan provided incentives for approximately 179,000 acre-feet of reclaimed water under these agreements. Total recycled water use under executed agreements is expected to be approximately 193,000 acre-feet by 2020.

***Seawater Desalination.*** Metropolitan's IRP includes seawater desalination as a part of the region's local supply that could help increase supply reliability in Metropolitan's service area. The IRP also supports foundational actions to lay the groundwork for accelerating seawater desalination development as needed in the future. To encourage local development, Metropolitan has signed Seawater Desalination Program ("SDP") incentive agreements with three of its member agencies: Long Beach, Municipal Water District of Orange County ("MWDOC") and West Basin Municipal Water District. The SDP agreements provide incentives to the member agencies of up to $250 per acre-foot when the desalinated supplies are produced. Agreement terms are for the earlier of 25 years or through 2040 and are designed to phase out if Metropolitan's rates surpass the unit cost of producing desalinated seawater. SDP agreements are subject to final approval by Metropolitan's Board after review of the complete project description and environmental documentation. These projects are currently in the development phase and collectively, if completed, are anticipated to produce up to 46,000 acre-feet annually. Each agreement automatically terminates in 2020 if the related project is not operational by that time. In October 2014, seawater desalination projects became eligible for funding under Metropolitan's Local Resources Program.

In late 2015, Poseidon Resources LLC ("Poseidon") completed and began operating the 56,000 acre-foot capacity Carlsbad Desalination Project ("Carlsbad Project") and associated pipeline. The SDCWA has a purchase agreement with Poseidon for a minimum of 48,000 acre-feet per year with an option to purchase an additional 8,000 acre-feet per year. Other seawater desalination projects that could provide supplies to Metropolitan's service area are under development or consideration. In partnership with the Orange County Water District, Poseidon is also developing a 56,000 acre-feet per year plant in Huntington Beach which is currently in the permitting phase. SDCWA is also studying the potential for a seawater desalination plant in Camp Pendleton which would initially produce up to 56,000 acre-feet per year and potentially up to 168,000 acre-feet per year with a phased build out. Calleguas Municipal Water District is studying the potential for a 20,000 to 80,000 acre-feet per year project in Ventura County. Otay Water District, located in San Diego County along the Mexico border, is considering the feasibility of purchasing water from a seawater desalination project in Rosarito Beach, Mexico. The 56,000 to 112,000 acre-feet per year project is in the pre-construction phase, and could also supply Metropolitan's service area through exchange agreements. Approvals from a number of U.S. and Mexican federal agencies, along with State and local approvals, would be needed for the cross-border project to proceed.

## METROPOLITAN'S WATER DELIVERY SYSTEM

### Primary Facilities and Method of Delivery

Metropolitan's water delivery system is made up of three basic components: the CRA, the California Aqueduct of the State Water Project and Metropolitan's internal water distribution system. Metropolitan's delivery system is integrated and designed to meet the differing needs of its member agencies. Metropolitan seeks redundancy in its delivery system to assure reliability in the event of an outage. Improvements are designed to increase the flexibility of the system. Since local sources of water are generally used to their maximum each year, growth in the demand for water is partially met by Metropolitan. Accordingly, the operation of Metropolitan's water system is being made more reliable through the rehabilitation of key facilities as needed, improved preventive maintenance programs and the upgrading of Metropolitan's operational control systems. See "CAPITAL INVESTMENT PLAN" in this Appendix A.

***Colorado River Aqueduct.*** Work on the CRA commenced in 1933 and water deliveries started in 1941. Additional facilities were completed by 1961 to meet additional requirements of Metropolitan's member agencies. The CRA is 242 miles long, starting at the Lake Havasu intake and ending at the Lake Mathews terminal reservoir. Metropolitan owns all of the components of the CRA, which include five pumping plants, 64 miles of canal, 92 miles of tunnels, 55 miles of concrete conduits and 144 underground siphons totaling 29 miles in length. The pumping plants lift the water approximately 1,617 feet over several mountain ranges to Metropolitan's service area. See "METROPOLITAN'S WATER SUPPLY–Colorado River Aqueduct" in this Appendix A.

***State Water Project.*** The initial portions of the State Water Project serving Metropolitan were completed in 1973. The State Water Project, managed and operated by DWR, is one of the largest water supply projects undertaken in the history of water development. The State Water Project facilities dedicated to water delivery consist of a complex system of dams, reservoirs, power plants, pumping plants, canals and aqueducts to deliver water. Water from rainfall and snowmelt runoff is captured and stored in State Water Project conservation facilities and then delivered through State Water Project transportation facilities to water agencies and districts located throughout the Upper Feather River, Bay Area, Central Valley, Central Coast, and Southern California. Metropolitan receives water from the State Water Project through the main stem of the aqueduct system, the California Aqueduct, which is 444 miles long and includes 381 miles of canals and siphons, 49 miles of pipelines or tunnels and 13 miles of channels and reservoirs.

As described herein, Metropolitan is the largest (in terms of number of people it serves, share of State Water Project water it has contracted to receive, and percentage of total annual payments made to DWR therefor) of twenty-nine agencies and districts that have entered into contracts with DWR to receive a water entitlement from the State Water Project. Contractors pay all costs of the facilities in exchange for participation rights in the system. Thus, Contractors also have the right to use the portion of the State Water Project conveyance system necessary to deliver water to them at no additional cost as long as capacity exists. See "METROPOLITAN'S WATER SUPPLY–State Water Project" in this Appendix A.

***Internal Distribution System.*** Metropolitan's internal water distribution system includes components that were built beginning in the 1930s and through the present. Metropolitan owns all of these components, including 14 dams and reservoirs, five regional treatment plants, over 800 miles of transmission pipelines, feeders and canals, and 16 hydroelectric plants with an aggregate capacity of 131 megawatts.

***Diamond Valley Lake.*** Diamond Valley Lake, a man-made reservoir, built, owned and operated by Metropolitan, is located southwest of the city of Hemet, California. It covers approximately 4,410 acres and has capacity to hold approximately 810,000 acre-feet or 265 billion gallons of water. Diamond Valley Lake was constructed to serve approximately 90 percent of Metropolitan's service area by gravity flow. Imported water is delivered to Diamond Valley Lake during surplus periods. The reservoir provides more reliable delivery of imported water from the State Water Project and the CRA during summer months, droughts and emergencies. In addition, Diamond Valley Lake is capable of providing more than one-third of Southern

California's water needs from storage for approximately six months after a major earthquake (assuming that there has been no impairment of Metropolitan's internal distribution network). See the table "Metropolitan's Water Storage Capacity and Water in Storage" under "METROPOLITAN'S WATER SUPPLY–Storage Capacity and Water in Storage" in this Appendix A for the amount of water in storage at Diamond Valley Lake. Excavation at the project site began in May 1995. Diamond Valley Lake was completed in March 2000, at a total cost of $2 billion, and was in full operation in December 2001.

***Inland Feeder.*** Metropolitan's Inland Feeder is a 44-mile-long conveyance system that connects the State Water Project to Diamond Valley Lake and the CRA. The Inland Feeder provides greater flexibility in managing Metropolitan's major water supplies and allows greater amounts of State Water Project water to be accepted during wet seasons for storage in Diamond Valley Lake. In addition, the Inland Feeder increases the conveyance capacity from the East Branch of the State Water Project by 1,000 cubic feet per second, allowing the East Branch to operate up to its full capacity. Construction of the Inland Feeder was completed in September 2009 at a total cost of $1.14 billion.

***Operations Control Center.*** Metropolitan's water conveyance and distribution system operations are coordinated from the Operations Control Center ("OCC") located in the Eagle Rock area of Los Angeles. The OCC plans, balances and schedules daily water and power operations to meet member agencies' demands, taking into consideration the operational limits of the entire system.

**Water Treatment**

Metropolitan filters and disinfects water at five water treatment plants: the F.E. Weymouth Treatment Plant, the Joseph Jensen Treatment Plant, the Henry J. Mills Treatment Plant, the Robert B. Diemer Treatment Plant, and the Robert A. Skinner Treatment Plant. In recent years, the plants typically treat between 0.8 billion and 1.0 billion gallons of water per day, and have a maximum capacity of approximately 2.6 billion gallons per day. Approximately 50 percent of Metropolitan's water deliveries are treated water.

Federal and state regulatory agencies continually monitor and establish new water quality standards. New water quality standards could affect availability of water and impose significant compliance costs on Metropolitan. The federal Safe Drinking Water Act ("SDWA") establishes drinking water quality standards, monitoring, and public notification and enforcement requirements for public water systems. To achieve these objectives, the USEPA, as the lead regulatory authority, promulgates national drinking water regulations and develops the mechanism for individual states to assume primary enforcement responsibilities. The SWRCB Division of Drinking Water ("DDW"), formerly the Drinking Water Program under the California Department of Public Health ("CDPH"), has primary responsibility for the regulation of public water supply systems in the State. Drinking water delivered to customers must comply with statutory and regulatory water quality standards designed to protect public health and safety that are now administered by DDW. Metropolitan operates its five water treatment plants under a domestic water supply permit issued by DDW which is amended, as necessary, such as when significant facility modifications occur. Metropolitan operates and maintains water storage, treatment and conveyance facilities, implements watershed management and protection activities, performs inspections, monitors drinking water quality, and submits monthly and annual compliance reports. In addition, public water system discharges to state and federal waters are regulated under general National Pollutant Discharge Elimination System ("NPDES") permits. The SWRCB issued these NPDES permits to Metropolitan which contain numerical effluent limitations, monitoring, reporting, and notification requirements for water discharges from the facilities and pipelines of Metropolitan's water supply and distribution system.

Metropolitan continually monitors new water quality laws and regulations and frequently comments on new legislative proposals and regulatory rules. Metropolitan is currently operating in compliance with all state and federal drinking water regulations and permit requirements.

**Seismic Considerations**

***General.*** Although the magnitude of damages resulting from a significant seismic event are impossible to predict, Metropolitan's water conveyance and distribution facilities are designed either to withstand a maximum probable seismic event or to minimize the potential repair time in the event of damage. The five pumping plants on the CRA have been buttressed to better withstand seismic events. Other components of the CRA are monitored for any necessary rehabilitation and repair. Metropolitan personnel and independent consultants periodically reevaluate the internal water distribution system's vulnerability to earthquakes. As facilities are evaluated and identified for seismic retrofitting, they are prioritized, with those facilities necessary for delivering or treating water scheduled for upgrade before non-critical facilities. However, major portions of the California Aqueduct and the CRA are located near major earthquake faults, including the San Andreas Fault. A significant earthquake could damage structures and interrupt the supply of water, adversely affecting Metropolitan's revenues and its ability to pay its obligations. Therefore, emergency supplies are stored for use throughout Metropolitan's service area, and a six-month reserve supply of water normally held in local storage (including emergency storage in Diamond Valley Lake) provides reasonable assurance of continuing water supplies during and after such events (assuming there has been no impairment of Metropolitan's internal distribution network).

Metropolitan has an ongoing surveillance program that monitors the safety and structural performance of its 14 dams and reservoirs. Operating personnel perform regular inspections that include monitoring and analyzing seepage flows and pressures. Engineers responsible for dam safety review the inspection data and monitor the horizontal and vertical movements for each dam. Major on-site inspections are performed at least twice each year. Instruments that transmit seismic acceleration time histories for analysis any time a dam is subjected to strong motion during an earthquake are located at a number of selected sites.

In addition, Metropolitan has developed an emergency plan that calls for specific levels of response appropriate to an earthquake's magnitude and location. Included in this plan are various communication tools, as well as a structured plan of management that varies with the severity of the event. Pre-designated personnel follow detailed steps for field facility inspection and distribution system patrol. Approximately 40 employees are designated to respond immediately under certain identifiable seismic events. An emergency operations center is maintained at the OCC. The OCC, which is specifically designed to be earthquake resistant, contains communication equipment, including a radio transmitter, microwave capability and a response line linking Metropolitan with its member agencies, DWR, other utilities and the State's Office of Emergency Services.

Metropolitan also maintains machine, fabrication and coating shops at its facility in La Verne, California. Several construction projects have been completed to upgrade and expand these shops. A total of nearly $40 million has been invested to enhance Metropolitan's capacity not only to provide fabrication and coating services for planned rehabilitation work, maintenance activities, and capital projects, but also to perform emergency fabrication support to Metropolitan and its member agencies. Metropolitan has also maintained reimbursable agreements with DWR to perform machining, fabrication, and coating services for critical repair and rehabilitation of State Water Project facilities. These agreements have enhanced timely and cost-effective emergency response capabilities. Materials to fabricate pipe and other appurtenant fittings are kept in inventory at the La Verne site. In the event of earthquake damage, Metropolitan has taken measures to provide the design and fabrication capacity to fabricate pipe and related fittings. Metropolitan is also staffed to perform emergency repairs and has pre-qualified contractors for emergency repair needs at various locations throughout Metropolitan's service area.

***State Water Project Facilities- California Aqueduct.*** The California Aqueduct crosses all major faults either by canal at ground level or by pipeline at very shallow depths to ease repair in case of damage from movement along a fault. State Water Project facilities are designed to withstand major earthquakes along a local fault or magnitude 8.1 earthquakes along the San Andreas Fault without major damage. Dams, for example, are designed to accommodate movement along their foundations and to resist earthquake forces

on their embankments. Earthquake loads have been taken into consideration in the design of project structures such as pumping and power plants. The location of check structures on the canal allows for hydraulic isolation of the fault-crossing repair.

While the dams, canals, pump stations and other constructed State Water Project facilities have been designed to withstand earthquake forces, the critical supply of water from Northern California must traverse the Bay-Delta through hundreds of miles of varying levels of engineered levees that are susceptible to major failures due to flood and seismic risk. In the event of a failure of the Bay-Delta levees, the quality of the Bay-Delta's water could be severely compromised as salt water comes in from the San Francisco Bay. Metropolitan's supply of State Water Project water would be adversely impacted if pumps that move Bay-Delta water southward to the Central Valley and Southern California are shut down to contain the salt water intrusion. Metropolitan estimates that stored water supplies, CRA supplies and local water resources that would be available in case of a levee breach or other interruption in State Water Project supplies would meet demands in Metropolitan's service area for approximately twelve months. See "METROPOLITAN'S WATER SUPPLY–Storage Capacity and Water in Storage" in this Appendix A. Since the State and federal governments control the Bay-Delta levees, repair of any levee failures would be the responsibility of and controlled by the State and federal governments.

Metropolitan, in cooperation with the State Water Contractors, developed recommendations to DWR for emergency preparedness measures to maintain continuity in export water supplies and water quality during emergency events. These measures include improvements to emergency construction materials stockpiles in the Bay-Delta, improved emergency contracting capabilities, strategic levee improvements and other structural measures of importance to Bay-Delta water export interests, including development of an emergency freshwater pathway to export facilities in a severe earthquake. DWR utilized $12 million in fiscal year 2007-08 for initial stockpiling of rock for emergency levee repairs and development of Bay-Delta land and marine loading facilities and has identified future funding for expanded stockpiles.

***State Water Project-Perris Dam.*** Perris Dam forms Lake Perris, the southernmost terminal reservoir for the State Water Project in Riverside County, with maximum capacity of approximately 130,000 acre-feet of water. Metropolitan uses water from Lake Perris for delivery to customers in Riverside and San Diego counties. Deliveries from the lake are used as a redundant source for the Mills Water Treatment Plant, drought supply from a flexible storage account, and for consumptive use by Metropolitan's customers. DWR reported in July 2005 that seismic studies indicate that DWR's Perris Dam facility could sustain damage from moderate earthquakes along the San Jacinto or San Andreas faults due to potential weaknesses in the dam's foundation. In late 2005, DWR lowered the water level in the reservoir by about 25 feet and reduced the amount of water stored in the reservoir to about 75,000 acre-feet as DWR evaluated alternatives for repair of the dam. In December 2006, DWR completed a study identifying various repair options, began additional geologic exploration along the base of Perris Dam and started preliminary design. DWR's preferred alternative is to repair the dam to restore the reservoir to its historical level. On November 11, 2011, DWR certified the final EIR and filed a Notice of Determination stating its intent to proceed with the preferred alternative. DWR estimates that repairs will cost approximately $141 million to be completed in mid-2017. Under the original allocation of joint costs for this facility, the State would have paid approximately six percent of the repair costs. However, because of the recreational benefit this facility provides to the public, the Legislature has approved a recommendation from DWR that the State assume 32.2 percent of these repair costs. The remaining 67.8 percent of repairs costs will be paid for by the three agencies that use the water stored in Lake Perris: Metropolitan (42.9 percent), DWA (3.0 percent) and CVWD (21.9 percent). DWR recovers the cost of repairs through its annual statement of charges sent to each agency. See "METROPOLITAN EXPENSES–State Water Contract Obligations" in this Appendix A.

**Security Measures**

Metropolitan conducts ground and air patrols of the CRA and monitoring and testing at all treatment plants and along the CRA. Similarly, DWR has in place security measures reasonably designed to protect critical facilities of the State Water Project, including both ground and air patrols of the State Water Project.

Although Metropolitan has constructed redundant systems and other safeguards to ensure its ability to continually deliver water to its customers, and DWR has made similar efforts, a terrorist attack or other security breach against water facilities could materially impair Metropolitan's ability to deliver water to its customers, its operations, and revenues and its ability to pay its obligations.

## CAPITAL INVESTMENT PLAN

### General Description

Metropolitan's current Capital Investment Plan (the "Capital Investment Plan" or "CIP") involves expansion and rehabilitation of existing facilities and construction of new facilities to meet future water demands, ensure system reliability as well as enhance operational efficiency and flexibility, and comply with water quality regulations. Metropolitan's CIP is regularly reviewed and updated. Metropolitan's biennial budget process includes a review of the projected long-term capital needs and the development of a capital expenditure forecast for the ten-year financial forecast, as well as the identification of the capital priorities of Metropolitan over the biennial budget term. Implementation and construction of specific elements of the program are subject to Board approval, and the amount and timing of borrowings will depend upon, among other factors, status of construction activity and water demands within Metropolitan's service area. From time to time, projects that have been undertaken are delayed, redesigned or deferred by Metropolitan for various reasons, and no assurance can be given that a project in the CIP will be completed in accordance with its original schedule or that any project will be completed as currently planned. In addition, from time to time, when circumstances warrant, Metropolitan's Board may approve capital expenditures other than or in addition to those contemplated by the CIP at the time of the then current biennial budget.

### Projection of Capital Investment Plan Expenditures

The table below sets forth the projected CIP expenditures in the adopted biennial budget for fiscal years 2016-17 and 2017-18, including replacement and refurbishment expenditures, by project type for the fiscal years ending June 30, 2017 through 2021. This estimate is updated every two years as a result of the periodic review and adoption of the capital budget by Metropolitan's Board of Directors. See "HISTORICAL AND PROJECTED REVENUES AND EXPENSES" in this Appendix A.

**CAPITAL INVESTMENT PLAN**
**PROJECTION OF EXPENDITURES[1] [2]**
**(Fiscal Years Ended June 30 - Dollars in Thousands)**

| Cost of Service | 2017 | 2018 | 2019 | 2020 | 2021 | Total |
|---|---|---|---|---|---|---|
| Conveyance & Aqueduct | $ 19,772 | $ 32,934 | $ 32,433 | $ 30,396 | $ 29,042 | $ 144,578 |
| Storage | 1,455 | -- | -- | -- | -- | 1,455 |
| Distribution | 50,818 | 80,197 | 95,411 | 107,446 | 126,015 | 459,887 |
| Treatment | 88,345 | 67,691 | 55,746 | 50,292 | 37,678 | 299,753 |
| Administrative and General | 36,649 | 18,846 | 16,325 | 11,398 | 7,229 | 90,448 |
| Hydroelectric | 2,960 | 332 | 84 | 468 | 36 | 3,880 |
| **Total[2]** | $200,000[3] | $200,000 | $200,000 | $200,000 | $200,000 | $1,000,000 |

*Source: Metropolitan.*

(1) Fiscal years 2016-17 and 2017-18 based on the adopted biennial budget for fiscal years 2016-17 and 2017-18. Fiscal years 2018-19 through 2020-21 based on the ten-year financial forecast provided in the adopted biennial budget. Totals are rounded.

(2) Annual totals include replacement and refurbishment expenditures for fiscal years 2016-17 through 2020-21 of $115 million, $159 million, $176 million, $182 million, and $192 million, respectively, for a total of $823 million for fiscal years 2016-17 through 2020-21.

(3) Fiscal year 2016-17 capital expenditures are currently estimated to be approximately $212 million.

The above projections do not include amounts for contingencies, but include escalation at 2.77 percent per year for projects for which formal construction contracts have not been awarded. Additional

capital costs may arise in the future as a result of, among other things, federal and State water quality regulations, project changes and mitigation measures necessary to satisfy environmental and regulatory requirements, and for additional facilities. See "METROPOLITAN'S WATER DELIVERY SYSTEM–Water Treatment" in this Appendix A.

**Capital Investment Plan Financing**

The CIP requires funding from debt financing (see "HISTORICAL AND PROJECTED REVENUES AND EXPENSES" in this Appendix A) as well as from pay-as-you-go funding. The Board has adopted an internal funding objective to fund 60 percent of capital program expenditures from current revenues. The remainder of capital program expenditures will be funded through the issuance from time to time of water revenue bonds, which are payable from Net Operating Revenues. However, as in prior years, pay-as-you-go funding may be reduced or increased by the Board during the fiscal year.

On April 8, 2014, Metropolitan's Board approved a total of $466 million for pay-as-you-go expenditures as part of the biennial budget for fiscal year 2014-15 and fiscal year 2015-16. These pay-as-you-go funds, together with funds available in the Replacement and Refurbishment Fund, were expected to fund $513 million in capital expenditures for fiscal year 2014-15 and fiscal year 2015-16. On October 13, 2015, Metropolitan's Board adopted an ordinance finding that the interests of the district require the use of new revenue bonds in an amount not to exceed $500 million. On December 17, 2015, Metropolitan issued its $208,255,000 Water Revenue Bonds, 2015 Authorization Series A to reimburse certain pay-as-you-go capital expenditures and to fund a portion of fiscal year 2016-17 capital expenditures.

Metropolitan's budget assumptions for the adopted biennial budget for fiscal years 2016-17 and 2017-18 and projections for later years provide for the issuance of approximately $80 million of additional water revenue bonds to fund or to reimburse prior capital expenditures in each of fiscal years 2016-17 through 2020-21. These revenue bonds could be issued either as Senior Revenue Bonds under the Senior Debt Resolutions or as Subordinate Revenue Bonds under the Subordinate Debt Resolutions (each as defined under "METROPOLITAN EXPENSES–Limitations on Additional Revenue Bonds" in this Appendix A). The cost of these projected bond issues are reflected in the financial projections under, "HISTORICAL AND PROJECTED REVENUES AND EXPENSES" in this Appendix A. Metropolitan expects to issue its $80,000,000 Water Revenue Bonds, 2017 Authorization Series A in March 2017 for the purposes of financing a portion of its capital expenditures through fiscal year 2017-18.

**Other Capital Expenses**

On July 14, 2015, Metropolitan's Board approved $264 million to acquire various properties in Riverside and Imperial Counties, with $160 million funded from the Replacement and Refurbishment Fund and the remaining amount from unrestricted reserves.

On March 8, 2016, Metropolitan's Board authorized the General Manager to enter into an agreement to purchase certain property from Delta Wetlands Properties, LLC in Contra Costa, San Joaquin, and Solano Counties (the "Delta Islands"). Although no determination has been made, potential applications for these properties include: (1) tidal wetlands; (2) water quality; (3) studies and research; (4) re-creation of food web; (5) subsidence studies or prevention; (6) habitat restoration; (7) mitigation credits; (8) carbon sequestration; (9) emergency preparedness, including seismic preparation and study; (10) water transfers; and (11) using portions for access or staging of a future Delta fix, like the proposed California Water Fix project. On July 18, 2016, escrow closed and purchase of these properties was completed. On December 21, 2016, Metropolitan issued its $175,000,000 Subordinate Water Revenue Bonds, 2016 Authorization Series A (Taxable) to reimburse itself for the purchase. See "METROPOLITAN EXPENSES–Outstanding Subordinate Revenue Bonds and Subordinate Parity Obligations" in this Appendix A.

**Major Projects of Metropolitan's Capital Investment Plan**

***Oxidation Retrofit Facilities.*** The oxidation retrofit facilities program includes the design and construction of oxidation facilities and appurtenances at all five of Metropolitan's treatment plants. This program is intended to allow Metropolitan to meet drinking water standards for disinfection by-products and reduce taste and odor incidents. The oxidation retrofit improvements have been completed at three treatment plants: the Henry J. Mills Treatment Plant, the Joseph Jensen Treatment Plant and the Robert B. Diemer Treatment Plant. Completion of the improvements at the F.E. Weymouth plant is expected in 2017. Total oxidation program costs at the F.E. Weymouth plant are estimated to be $270.0 million. Oxidation retrofit at the Robert A. Skinner plant was substantially completed in December 2009 and operational in 2010, with additional follow-up work planned for completion in June 2018. The total estimated cost for all prior and projected oxidation retrofit facilities program improvements at the five treatment plants is approximately $1.12 billion, with $1.07 billion spent through September 2016. Budgeted aggregate capital expenditures for improvements remaining to be completed at the F.E. Weymouth and Robert A. Skinner plants for fiscal years 2016-17 and 2017-18 are $25 million.

***F.E. Weymouth Treatment Plant Improvements.*** The F.E. Weymouth Treatment Plant, built in 1938, is Metropolitan's oldest water treatment facility. It has been subsequently expanded several times since its original construction. Metropolitan has completed several upgrades and refurbishment/replacement projects to maintain the plant's reliability and improve its efficiency. These include power systems upgrades, a residual solids dewatering facility, refurbishment/replacement of the mechanical equipment in two of the eight flocculation and settling basins, a new plant maintenance facility, new chemical feed systems and storage tanks, replacement of the plant domestic/fire water system, seismic upgrades to the plant inlet structure and filter buildings, and a new chlorine handling and containment facility. Planned projects over the next several years include refurbishment of the plant's filters and settling basins, seismic retrofits to the administration building, and replacement of the valves used to control filter operation. The cost estimate for all prior and projected improvements at the Weymouth plant, not including the ozone facilities, is approximately $407.1 million, with $243 million spent through September 2016. Budgeted aggregate capital expenditures for improvements at the Weymouth plant for fiscal years 2016-17 and 2017-18 are $31.5 million.

***Robert B. Diemer Treatment Plant Improvements.*** The Robert B. Diemer Treatment Plant, built in in 1963 and subsequently expanded in 1968, is Metropolitan's second oldest water treatment facility. Several upgrades and refurbishment/replacement projects have been completed at the Diemer plant, including power system upgrades, a new residual solids dewatering facility, new vehicle and plant maintenance facilities, new chemical feed systems and storage tanks, a new chlorine handling and containment facility, construction of a roller-compacted concrete slope stabilization system and a new secondary access road. Planned projects over the next several years include refurbishment of the plant's settling basins, seismic retrofits to the filter buildings and administration building, and replacement of the valves used to control filter operation. The current cost estimate for all prior and projected improvements at the Diemer Treatment Plant, not including the ozone facilities, is approximately $381.1 million, with $234.5 million spent through September 2016. Budgeted aggregate capital expenditures for improvements at the Diemer plant for fiscal years 2016-17 and 2017-18 are $42.3 million.

***Colorado River Aqueduct Facilities.*** As previously noted, deliveries through the CRA began in 1941. Through annual inspections and maintenance activities, the performance and reliability of the various components of the CRA are regularly evaluated. Projects under the CRA facilities program are designed to replace or refurbish facilities and components on the CRA system in order to reliably convey water from the Colorado River to Southern California. A variety of projects have been completed over the past 10 years, including, among other things, replacement of high voltage circuit breakers and transformers at the five pumping plant switchyards, refurbishment of operators and power centers on the head gates downstream of the pumping plants, replacement of several miles of deteriorated concrete canal liner, new wastewater systems at the Hinds and Eagle Mountain Pumping Plants, and replacement of the outlet gates and appurtenant electrical, mechanical, and control systems at the Copper Basin Reservoir. Refurbishment or

replacement of many of the electrical system components, including the transformers, circuit breakers and motor control centers, is currently under way. Additionally, many of the mechanical and electrical components at all five pumping plants will be evaluated and replaced or refurbished over the next several years. The currently projected cost estimate for all prior and planned refurbishment or replacement projects is $650.2 million. Costs through September 2016 were $208.2 million. Budgeted aggregate capital expenditures for improvements on the CRA for fiscal years 2016-17 and 2017-18 are $87.9 million.

***Distribution System – Prestressed Concrete Cylinder Pipe.*** Metropolitan's distribution system is comprised of approximately 830 miles of pipelines ranging in diameter from 30 inches to over 200 inches. (See "METROPOLITAN'S WATER DELIVERY SYSTEM" in this Appendix A.) 163 miles of the distribution system is made up of prestressed concrete cylinder pipe ("PCCP"). In response to PCCP failures experienced by several water agencies, Metropolitan initiated the PCCP Assessment Program in December 1996 to evaluate the condition of Metropolitan's PCCP lines and investigate inspection and refurbishment methods. As a result, Metropolitan has identified and made repairs to several sections of PCCP. The costs for these repairs through September 2016 were $90.3 million. Rather than continue to make spot repairs to pipe segments, Metropolitan has initiated a long-term capital program to rehabilitate approximately 100 miles of PCCP in five pipelines. The estimated cost to reline all 100 miles of PCCP is approximately $2.6 billion and is expected to be undertaken over a period of approximately 20 years. Budgeted aggregate capital expenditures for PCCP rehabilitation for fiscal years 2016-17 and 2017-18 are $39.3 million.

***Distribution System – Refurbishments and Improvements.*** In addition to the long-term program to rehabilitate Metropolitan's PCCP lines, several other components of the distribution system are being refurbished and/or improved. Ongoing projects to ensure the reliability of the distribution system, primarily due to age, include multiple replacements or refurbishments of isolation and control valves and gates, lining replacement on the Etiwanda Pipeline and portions of the Orange County Feeder, a new steel liner for the Bernasconi Tunnel, seismic upgrades to the Santa Ana River Bridge, refurbishment to pressure control and hydroelectric power facilities, system improvements to provide drought relief, and various other upgrades totaling approximately $228.2 million through September 2016. The currently projected cost estimate for the prior and planned refurbishment or replacement projects, other than the PCCP relining, is $749.3 million. For fiscal years 2016-17 and 2017-18, budgeted aggregate capital expenditures for improvements on the distribution system, other than PCCP rehabilitation, are $74.2 million.

## METROPOLITAN REVENUES

### General

Until water deliveries began in 1941, Metropolitan's activities were, by necessity, supported entirely through the collection of *ad valorem* property taxes. Since the mid-1980s, water sales revenues have provided approximately 75 to 85 percent of total revenues and *ad valorem* property taxes have accounted for about 10 percent of revenues, declining to seven percent of revenues in fiscal year 2015-16. See "–Revenue Allocation Policy and Tax Revenues." The remaining revenues have been derived principally from the sale of hydroelectric power, interest on investments and additional revenue sources (water standby charges and availability of service charges) beginning in 1992. *Ad valorem* taxes do not constitute a part of Operating Revenues and are not available to make payments with respect to the water revenue bonds issued by Metropolitan.

The basic rate for untreated water service for domestic and municipal uses is $666 per acre-foot at the Tier 1 level, which became effective January 1, 2017. This rate will increase to $695 effective January 1, 2018. See "–Rate Structure" and "–Water Rates." The *ad valorem* tax rate for Metropolitan purposes has gradually been reduced from a peak equivalent rate of 0.1250 percent of full assessed valuation in fiscal year 1945-46 to 0.0035 percent of full assessed valuation for fiscal year 2016-17. The rates charged by Metropolitan represent the cost of Metropolitan wholesale water service to its member agencies, and not the cost of water to the ultimate consumer. Metropolitan does not exercise control over the rates charged by its member agencies or their subagencies to their customers.

**Summary of Revenues by Source**

The following table sets forth Metropolitan's sources of revenues for the five fiscal years ended June 30, 2016. The table provides cash basis information for fiscal year 2012, and modified accrual basis information for fiscal years 2013-2016. All information is unaudited. Audited financial statements for the fiscal years ended June 30, 2016 and June 30, 2015 and unaudited financial statements for the six months ended December 31, 2016 and December 31, 2015 are provided in APPENDIX B–"THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA INDEPENDENT AUDITOR'S REPORT AND BASIC FINANCIAL STATEMENTS FOR FISCAL YEARS ENDED JUNE 30, 2016 AND JUNE 30, 2015 AND BASIC FINANCIAL STATEMENTS FOR THE SIX MONTHS ENDED DECEMBER 31, 2016 AND 2015 (UNAUDITED)."

**SUMMARY OF REVENUES BY SOURCE[1]**
**Fiscal Years Ended June 30**
**(Dollars in Millions)**

| | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|
| Water Sales[2] | $1,062 | $1,283 | $1,485 | $1,383 | $1,166 |
| Net Tax Collections[3] | 90 | 95 | 95 | 104 | 108 |
| Additional Revenue Sources[4] | 167 | 173 | 182 | 199 | 200 |
| Interest on Investments | 18 | (2) | 19 | 16 | 17 |
| Hydroelectric Power Sales | 31 | 25 | 15 | 8 | 7 |
| Other Revenues [5] | 54 | 23 | 19 | 163 | 246 |
| Total Receipts | $1,422 | $1,597 | $1,815 | $1,873 | $1,744 |

*Source: Metropolitan.*

(1) Does not include any proceeds from the sale of bonded indebtedness.
(2) Gross revenues in each year are for sales in the twelve months ended June 30 of such year. Water sales revenues include revenues from water wheeling and exchanges.
(3) *Ad valorem* taxes levied by Metropolitan are applied solely to the payment of outstanding general obligation bonds of Metropolitan and to State Water Contract obligations.
(4) Includes receipts derived from water standby charges, readiness-to-serve, and capacity charges.
(5) Includes miscellaneous revenues and Build America Bonds (BABs) subsidy payment of $13.3 million, $12.7 million, $12.3 million, $12.3 million, and $12.3 million, in fiscal years 2011-12 through 2015-16, respectively. In fiscal years 2014-15 and 2015-16, includes $142 million and $222 million of water conservation and water purchase expenditures, funded from a like amount of funds transferred from the Water Management Fund.

**Revenue Allocation Policy and Tax Revenues**

The Board determines the water revenue requirement for each fiscal year after first projecting the *ad valorem* tax levy for that year. The tax levy for any year is subject to limits imposed by the State Constitution, the Act and Board policy and to the requirement under the State Water Contract that in the event that Metropolitan fails or is unable to raise sufficient funds by other means, Metropolitan must levy upon all property within its boundaries not exempt from taxation a tax or assessment sufficient to provide for all payments under the State Water Contract. See "HISTORICAL AND PROJECTED REVENUES AND EXPENSES" in this Appendix A. From fiscal year 1990-91 through 2012-13, and pursuant to the Act, the tax levy was set to not exceed the amount needed to pay debt service on Metropolitan's general obligation bonds and to satisfy a portion of Metropolitan's State Water Contract obligation. However, Metropolitan has authority to impose a greater tax levy to pay debt service on Metropolitan's general obligation bonds and to satisfy Metropolitan's State Water Contract obligations in full if, following a public hearing, the Board finds that such revenue is essential Metropolitan's fiscal integrity. For each fiscal year since 2013-14, the Board has exercised that authority and voted to suspend the tax limit clause in the Act, maintaining the fiscal year 2012-13 *ad valorem* tax rate for fiscal years 2013-14 through 2016-17. Any deficiency between tax levy receipts and Metropolitan's share of debt service obligations on general obligation bonded debt issued by the State is expected to be paid from Operating Revenues, as defined in the Senior Debt Resolutions (defined herein under "METROPOLITAN EXPENSES–Limitations on Additional Revenue Bonds").

**Water Sales Revenues**

***General; Authority.*** Water rates are established by the Board and are not subject to regulation or approval by the Public Utilities Commission of California or by any other local, State or federal agency. In accordance with the Act, water rates must be uniform for like classes of service. Metropolitan currently provides two classes of water service (1) full service treated and untreated, and (2) wheeling service. See "–Classes of Water Service."

No member agency of Metropolitan is obligated to purchase water from Metropolitan. However, 21 of Metropolitan's 26 member agencies have entered into 10-year voluntary water supply purchase orders ("Purchase Orders") effective through December 31, 2024. See "–Member Agency Purchase Orders." Consumer demand and locally supplied water vary from year to year, resulting in variability in water sales revenues. Metropolitan uses its financial reserves and budgetary tools to manage the financial impact of the variability in revenues due to fluctuations in annual water sales. See "MANAGEMENT'S DISCUSSION OF HISTORICAL AND PROJECTED REVENUES AND EXPENSES" in this Appendix A.

***Payment Procedure.*** Water is delivered to the member agencies on demand and is metered at the point of delivery. Member agencies are billed monthly and a late charge of one percent of the delinquent payment is assessed for a payment that is delinquent for no more than five business days. A late charge of two percent of the amount of the delinquent payment is charged for a payment that is delinquent for more than five business days for each month or portion of a month that the payment remains delinquent. Metropolitan has the authority to suspend service to any member agency delinquent for more than 30 days. Delinquencies have been rare; in such instances late charges have been collected. No service has been suspended because of delinquencies.

***Water Sales.*** The following table sets forth the acre-feet of water sold and water sales (including sales from water wheeling and exchanges) for the five fiscal years ended June 30, 2016. Water sales revenues of Metropolitan for the four fiscal years ended June 30, 2013 through June 30, 2016, respectively, on an accrual basis, are shown in APPENDIX B–"THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA INDEPENDENT AUDITOR'S REPORT AND BASIC FINANCIAL STATEMENTS FOR FISCAL YEARS ENDED JUNE 30, 2016 AND JUNE 30, 2015 AND BASIC FINANCIAL STATEMENTS FOR THE SIX MONTHS ENDED DECEMBER 31, 2016 AND 2015 (UNAUDITED)."

**SUMMARY OF WATER SOLD AND WATER SALES**
**Fiscal Years Ended June 30**

| Year | Acre-Feet[1] Sold | Water Sales[2] (in millions) | Dollars Per Acre-Foot[3] | Average Dollars Per 1,000 Gallons |
|---|---|---|---|---|
| 2012 | 1,676,855 | $1,062.5 | $634 | $1.94 |
| 2013 | 1,856,685 | 1,282.5 | 691 | 2.12 |
| 2014 | 2,043,720 | 1,484.6 | 726 | 2.23 |
| 2015 | 1,905,502 | 1,383.0 | 726 | 2.23 |
| 2016 | 1,623,052 | 1,166.0 | 718 | 2.20 |

*Source: Metropolitan.*

(1) Year ended April 30 for fiscal year 2011-12, water sales recorded on a cash-basis. Beginning fiscal year 2012-13, water sales recorded on an accrual basis, with water sales for the fiscal year ended June 30.

(2) Water Sales in fiscal year 2011-12 are recorded on a cash basis for sales in the twelve months ended April 30 of such year, with rates and charges invoiced in May and payable by the last business day of June of each year. Water sales for fiscal years 2012-13 through 2015-16 are recorded on a modified accrual basis for sales in the twelve months ended June 30 of such year, with rates and charges recorded as revenues in the same months as invoiced. Includes revenues from water wheeling and exchanges.

(3) Gross water sales divided by acre-feet sold. An acre-foot is approximately 326,000 gallons. See table entitled "SUMMARY OF WATER RATES" under "–Water Rates" for a description of water rates and classes of service.

**Principal Customers**

Total water sales accrued for the fiscal year ended June 30, 2016 were 1.62 million acre-feet, generating $1.17 billion in water sales revenues for such period. Metropolitan's ten largest water customers in the year ended June 30, 2016 are shown in the following table, on an accrual basis. The SDCWA has filed litigation challenging Metropolitan's rates. See "–Litigation Challenging Rate Structure."

**TEN LARGEST WATER CUSTOMERS**
**Year Ended June 30, 2016**
**Accrual Basis (Dollars in Millions)**

| Agency | Water Sales Revenues[1] | Percent of Total | Water Sales in Acre-Feet[1] | Percent of Total |
|---|---|---|---|---|
| San Diego County Water Authority | $ 270.9 | 23.2% | 465,568 | 28.7% |
| City of Los Angeles | 224.3 | 19.2 | 332,527 | 20.5 |
| MWD of Orange County | 140.3 | 12.0 | 171,666 | 10.6 |
| West Basin MWD | 100.0 | 8.6 | 107,319 | 6.6 |
| Calleguas MWD | 77.7 | 6.7 | 83,346 | 5.1 |
| Eastern MWD | 53.1 | 4.6 | 62,631 | 3.9 |
| Western MWD | 51.6 | 4.4 | 65,532 | 4.0 |
| Three Valleys MWD | 42.5 | 3.6 | 54,356 | 3.3 |
| Central Basin MWD | 35.5 | 3.0 | 46,745 | 2.9 |
| City of Long Beach | 24.3 | 2.1 | 27,684 | 1.7 |
| **Total** | $1,020.2 | 87.5% | 1,417,374 | 87.3% |
| **Total Water Sales Revenues** | $1,166.0 | **Total Acre-Feet** | 1,623,052 | |

*Source: Metropolitan.*

(1) Includes wheeling and exchange water sales, revenues and deliveries.

**Rate Structure**

The following rates and charges are elements of Metropolitan's rate structure for full service water deliveries:

***Tier 1 and Tier 2 Water Supply Rates.*** The rate structure recovers supply costs through a two-tiered price structure. The Tier 1 Supply Rate supports a regional approach through the uniform, postage stamp rate. The Tier 1 Supply Rate is calculated as the amount of the total supply revenue requirement that is not covered by the Tier 2 Supply Rate divided by the estimated amount of Tier 1 water sales. The Tier 2 Supply Rate is a volumetric rate that reflects Metropolitan's cost of purchasing water transfers north of the Delta. Member agencies are charged the Tier 1 or Tier 2 Water Supply Rate for water purchases, as described under "–Member Agency Purchase Orders."

***System Access Rate.*** The System Access Rate (SAR) recovers the cost of the Conveyance and Distribution System that is used on an average annual basis through a uniform, volumetric rate. The SAR is charged for each acre-foot of water transported by Metropolitan, regardless of the ownership of the water being transported. All users (including member agencies and third-party wheelers) using the Metropolitan system to transport water pay the same SAR for the use of the system conveyance and distribution capacity to meet average annual demands.

***Water Stewardship Rate.*** The Water Stewardship Rate (WSR) provides a dedicated source of funding for conservation and local resources development through a uniform, volumetric rate. The WSR is

charged to each acre-foot of water delivered by Metropolitan, regardless of the water being transported. All users (member agencies and third-party wheelers) benefit from the system capacity made available by investments in Demand Management Programs like Metropolitan's Conservation Credits Program and Local Resources Program. Therefore, all users pay the WSR.

***System Power Rate.*** The System Power Rate (SPR) recovers the cost of energy required to pump water to Southern California through the State Water Project and CRA. The cost of power is recovered through a uniform, volumetric rate. The SPR is applied to all deliveries of Metropolitan water to member agencies. Wheeling parties pay for actual cost (not system average) of power needed to move the water. Member agencies engaging in wheeling transaction of up to one year pay the wheeling rate (consisting of the actual cost of power, SAR, WSR, and an administrative fee). Other wheeling transactions are pursuant to individual contracts.

***Treatment Surcharge.*** The Treatment Surcharge recovers all of the costs of providing treatment capacity and operations through a uniform, volumetric rate per acre-foot of treated water sales. The Treatment Surcharge is charged to all treated water sales.

The amount of each of these rates since January 1, 2012, is shown in the table entitled "SUMMARY OF WATER RATES" under "–Water Rates."

**Member Agency Purchase Orders**

The current rate structure allows member agencies to choose to purchase water from Metropolitan by means of a Purchase Order. Purchase Orders are voluntary agreements that determine the amount of water that a member agency can purchase at the Tier 1 Supply Rate. They allow member agencies to purchase a greater amount of water at the lower Tier 1 Supply Rate than would otherwise be authorized by the Administrative Code. In exchange for the higher Tier 1 Maximum, the member agency commits to purchase a specific amount of water (based on past purchase levels) over the term of the agreement. Such agreements allow member agencies to manage costs and provide Metropolitan with a measure of secure revenue.

In November 2014, the Metropolitan Board approved new Purchase Orders effective January 1, 2015 through December 31, 2024 (the "Purchase Order Term"). Twenty-one of the twenty-six member agencies have Purchase Orders, which commit the member agencies to purchase a minimum amount of supply from Metropolitan (the "Purchase Order Commitment").

The key terms of the Purchase Orders include:

- A ten-year term, effective January 1, 2015 through December 31, 2024;
- A higher Tier 1 limit based on the Base Period Demand, determined by the member agency's choice between (1) the Revised Base Firm Demand, which is the highest fiscal year purchases during the 13-year period of fiscal year 1989-90 through fiscal year 2001-02, or (2) the highest year purchases in the most recent 12-year period of fiscal year 2002-03 through 2013-14. The demand base is unique for each member agency, reflecting its use of Metropolitan's system water over time;
- An overall purchase commitment by the member agency based on the Demand Base period chosen, times ten to reflect the ten-year Purchase Order term. Those agencies choosing the more recent 12-year period may have a higher Tier 1 Maximum and commitment. The commitment is also unique for each member agency;
- The opportunity to reset the Base Period Demand using a five-year rolling average;

- Any obligation to pay the Tier 2 Supply Rate will be calculated over the ten-year period, consistent with the calculation of any Purchase Order commitment obligation; and

- An appeals process for agencies with unmet purchase commitments that will allow each acre-foot of unmet commitment to be reduced by the amount of production from a local resource project that commences operation on or after January 1, 2014.

Member agencies that do not have Purchase Orders in effect are subject to Tier 2 Supply Rates for amounts exceeding 60 percent of their base amount (equal to the member agency's highest fiscal year demand between 1989-90 and 2001-02) annually.

**Other Charges**

The following paragraphs describe the additional charges for the availability of Metropolitan's water:

***Readiness-to-Serve Charge.*** The Readiness-to-Serve Charge ("RTS") recovers the cost of the portion of the system that is available to provide emergency service and available capacity during outages and hydrologic variability. The RTS is a fixed charge that is allocated among the member agencies based on a ten-fiscal year rolling average of firm demands. Water transfers and exchanges are included for purposes of calculating the ten-fiscal-year rolling average. The Standby Charge, described below, will continue to be collected at the request of member agency and applied as a direct offset to the member agency's RTS obligation. The RTS generated $154.0 million in fiscal year 2013-14, $162.0 million in 2014-15, and $155.5 million in 2015-16. Based on the adopted rates and charges, the RTS is projected to generate $144 million in fiscal year 2016-17 and $137.5 million in fiscal year 2017-18.

***Water Standby Charges.*** The Standby Charge is authorized by the State Legislature and has been levied by Metropolitan since fiscal year 1992-93. Metropolitan will continue to levy the Standby Charge only within the service areas of the member agencies that request that the Standby Charge be utilized to help fund a member agency's RTS obligation. See "– Readiness-to-Serve Charge" above. The Standby Charge for each acre or parcel of less than an acre will vary from member agency to member agency, reflecting current rates, which have remained the same since fiscal year 1993-94, and range from $6.94 to $15 for each acre or parcel less than an acre within Metropolitan's service area, subject to specified exempt categories. Standby charges are assessments under the terms of Proposition 218, a State constitutional ballot initiative approved by the voters on November 5, 1996, but Metropolitan's current standby charges are exempt from Proposition 218's procedural requirements. See "–California Ballot Initiatives."

Twenty-two member agencies collect their RTS charges through standby charges. For fiscal years 2013-14, 2014-15, and 2015-16, RTS charges collected by means of such standby charges were $41.7 million, $41.7 million, and $42.8 million, respectively.

***Capacity Charge.*** The Capacity Charge recovers costs incurred to provide peaking capacity within Metropolitan's distribution system. The Capacity Charge provides a price signal to encourage agencies to reduce peak demands on the distribution system and to shift demands that occur during the May 1 through September 30 period into the October 1 through April 30 period. This results in more efficient utilization of Metropolitan's existing infrastructure and deferring capacity expansion costs. Each member agency will pay the Capacity Charge per cubic feet per second based on a three-year trailing maximum peak day demand. Effective January 1, 2014, the Capacity Charge was $8,600 per cubic feet per second. The Capacity Charge was $11,100 per cubic feet per second on January 1, 2015, and $10,900 per cubic feet per second on January 1, 2016, and will be $8,000 per cubic feet per second on January 1, 2017, and $8,700 per cubic feet per second on January 1, 2018. The Capacity Charge is projected to generate $39.7 million in fiscal year 2016-17 and $35.2 million in fiscal year 2017-18.

**Classes of Water Service**

Metropolitan offers two classes of water service:

(1) *Full Service Water* - Full service water service, formerly known as non-interruptible water service, includes water sold to member agencies for domestic and municipal uses; and

*(2) Wheeling Service* - Wheeling Service refers to the use of Metropolitan's facilities, including its rights to use State Water Project facilities, to transport water not owned or controlled by Metropolitan to its member public agencies, in transactions entered into by Metropolitan for a period of up to one year.

The applicable rate components and fixed charges for each class of water service are shown in the chart below.

**Current Services and Rate Components**

| | Rates & Charges That Apply | | | | | |
|---|---|---|---|---|---|---|
| **Service** | **System Access** | **Water Stewardship** | **System Power** | **Tier 1/ Tier 2** | **Readiness to Serve** | **Capacity Charge** |
| Full Service (Treated or Untreated) | Yes | Yes | Yes | Yes | Yes | Yes |
| Wheeling Service | Yes | Yes | No | No | Yes | Yes |

Metropolitan offers two programs that encourage the member agencies to increase groundwater and emergency storage and for which certain Metropolitan charges are inapplicable.

*(1) Conjunctive Use Program.* The Conjunctive Use Program is operated through individual agreements with member and retail agencies for groundwater storage within Metropolitan's service area. Wet-year imported supplies are stored to enhance reliability during dry, drought, and emergency conditions. Metropolitan has the option to call water stored in the groundwater basins for the participating member agency pursuant to its contractual conjunctive use agreement. At the time of the call, the member agency pays the prevailing rate for that water, but the deliveries are excluded from the calculation of the Capacity Charge because Conjunctive Use Program deliveries are made at Metropolitan's Discretion. See "REGIONAL WATER RESOURCES–Local Water Supplies."

*(2) Emergency Storage Program.* The Emergency Storage Program is used for delivering water for emergency storage in surface water reservoirs and storage tanks. Emergency Storage Program purposes include initially filling a newly constructed reservoir or storage tank and replacing water used during an emergency.

The applicable rate components and fixed charges applicable for each such program are shown in the following chart.

**Current Programs and Rate Components**

| | Rates & Charges That Apply | | | | | |
|---|---|---|---|---|---|---|
| **Full Service Program** | **System Access** | **Water Stewardship** | **System Power** | **Tier 1/ Tier 2** | **Readiness to Serve** | **Capacity Charge** |
| Conjunctive Use Program | Yes | Yes | Yes | Yes | Yes | No |
| Emergency Storage Program | Yes | Yes | Yes | No* | No | No |

*Emergency Storage Program pays the Tier 1 Supply Rate; purchases under Emergency Storage program do not count towards a member agency's Tier 1 Maximum.

## Water Rates

The following table sets forth Metropolitan's water rates by category beginning January 1, 2012. See also "MANAGEMENT'S DISCUSSION OF HISTORICAL AND PROJECTED REVENUES AND EXPENSES–Water Sales Revenues" in this Appendix A. In addition to the base rates for untreated water sold in the different classes of service, the columns labeled "Treated" include the surcharge that Metropolitan charges for water treated at its water treatment plants. See "–Rate Structure" and "–Classes of Water Service" above for a description of current rates. See also "–Litigation Challenging Rate Structure" for a description of litigation challenging Metropolitan's water rates.

**SUMMARY OF WATER RATES**
**(Dollars per Acre-Foot)**

| | SUPPLY RATE | | SYSTEM ACCESS RATE | WATER STEWARDSHIP RATE | SYSTEM POWER RATE | TREATMENT SURCHARGE |
|---|---|---|---|---|---|---|
| | Tier 1 | Tier 2 | | | | |
| January 1, 2012 | $164[1] | $290 | $217 | $43 | $136 | $234 |
| January 1, 2013 | $140 | $290 | $223 | $41 | $189 | $254 |
| January 1, 2014 | $148 | $290 | $243 | $41 | $161 | $297 |
| January 1, 2015 | $158 | $290 | $257 | $41 | $126 | $341 |
| January 1, 2016 | $156 | $290 | $259 | $41 | $138 | $348 |
| January 1, 2017* | $201 | $295 | $289 | $52 | $124 | $313 |
| January 1, 2018* | $209 | $295 | $299 | $55 | $132 | $320 |

| | FULL SERVICE TREATED[2] | | FULL SERVICE UNTREATED[3] | | INTERIM AGRICULTURAL PROGRAM | | REPLENISHMENT RATE | |
|---|---|---|---|---|---|---|---|---|
| | Tier 1 | Tier 2 | Tier 1 | Tier 2 | Treated | Untreated | Treated | Untreated |
| January 1, 2012 | $794 | $920 | $560 | $686 | $765 | $537 | $651 | $442 |
| January 1, 2013 | $847 | $997 | $593 | $743 | ** | ** | ** | ** |
| January 1, 2014 | $890 | $1,032 | $593 | $735 | ** | ** | ** | ** |
| January 1, 2015 | $923 | $1,055 | $582 | $714 | ** | ** | ** | ** |
| January 1, 2016 | $942 | $1,076 | $594 | $728 | ** | ** | ** | ** |
| January 1, 2017* | $979 | $1,073 | $666 | $760 | ** | ** | ** | ** |
| January 1, 2018* | $1,015 | $1,101 | $695 | $781 | ** | ** | ** | ** |

*Source: Metropolitan.*

* Rates effective January 1, 2017 and January 1, 2018 were adopted by Metropolitan's Board on April 12, 2016.

** The Interim Agricultural Water Program and Replenishment Service Program were discontinued after 2012. The Interim Agricultural Water Program provided a discounted rate for agricultural water users that, pursuant to the Act, were permitted to receive only surplus water not needed for domestic or municipal purposes. Under the Replenishment Service Program, water was sold at a discounted rate to member agencies, subject to interruption upon notice by Metropolitan. The program allowed Metropolitan to deliver surplus imported water to local groundwater basins and surface storage facilities when supplies were available, with the intent that member agencies could reduce imported water deliveries from Metropolitan during periods of high demand, emergencies or times of shortage.

(1) Includes $58 per acre-foot Delta Supply Surcharge for January 1, 2012.

(2) Full service treated water rates are the sum of the applicable Supply Rate, System Access Rate, Water Stewardship Rate, System Power Rate and Treatment Surcharge.

(3) Full service untreated water rates are the sum of the applicable Supply Rate, System Access Rate, Water Stewardship Rate and System Power Rate.

**Financial Reserve Policy**

Metropolitan's reserve policy currently provides for a minimum unrestricted reserve balance at June 30 of each year that is based on probability studies of the wet periods that affect Metropolitan's water sales. The policy establishes a minimum targeted unrestricted reserve level based on an 18-month revenue shortfall estimate and a target level based on an additional two years revenue shortfall estimate. Funds representing the minimum reserve level are held in the Revenue Remainder Fund, and any funds in excess of the minimum reserve level are held in the Water Rate Stabilization Fund. Metropolitan established the Water Rate Stabilization Fund for the principal purpose of maintaining stable and predictable water rates and charges. If Metropolitan's fixed charge coverage ratio, which measures the total coverage of all fixed obligations (which includes all revenue bond debt service obligations, State Water Contract capital payments paid from current year operations and subordinate obligations) after payment of operating expenditures, is less than 1.2 times, funds above the target reserve level may be utilized for funding of capital expenditures or for the redemption, defeasance or purchase of outstanding bonds or commercial paper, as determined by the Board. If Metropolitan's fixed charge coverage ratio, is at or above 1.2 times, funds above the target may be used for any lawful purpose of Metropolitan, as determined by the Board. See "CAPITAL INVESTMENT PLAN–Capital Investment Plan Financing" in this Appendix A.

At June 30, 2016, unrestricted reserves, which consist of the Water Rate Stabilization Fund and the Revenue Remainder Fund, totaled $475 million on a modified accrual basis. As of June 30, 2016, the minimum reserve requirement was $205 million and the target reserve level was $490 million.

From time to time, Metropolitan's Board approves the use of unrestricted reserves. On May 26, 2015, Metropolitan's Board approved the use of $160 million of unrestricted reserves, above the target reserve level, for conservation incentives. In addition, $50 million from the Water Stewardship Fund and $140 million from the Water Management Fund funded conservation incentives. On July 14, 2015, Metropolitan's Board approved $264 million to acquire various properties in Riverside and Imperial Counties, with $160 million funded from the Replacement and Refurbishment Fund and the remaining amount from unrestricted reserves. On September 22, 2015, Metropolitan's Board approved $44.4 million to pay SNWA to store 150,000 acre-feet of water with Metropolitan. Metropolitan took delivery of this water in 2015. When SNWA requests the return of any of the stored water, SNWA will reimburse Metropolitan for an equivalent proportion of the $44.4 million, based on the amount of water returned plus inflation. See "METROPOLITAN'S WATER SUPPLY–Colorado River Aqueduct – Colorado River Operations: Surplus and Shortage Guidelines – Interim Surplus Guidelines" in this Appendix A.

Due to SDCWA's litigation challenging Metropolitan's rates and pursuant to the exchange agreement between Metropolitan and SDCWA, Metropolitan is required to set aside funds based on the quantities of exchange water that Metropolitan provides to SDCWA and the amount of charges disputed by SDCWA. This amount included disputed payments and interest earned thereon, which is based on the rate earned by Metropolitan's investment portfolio. In April 2016, Metropolitan transferred these funds from unrestricted financial reserves to a new designated fund, the Exchange Agreement Set-Aside Fund. As of December 31, 2016, Metropolitan had set aside $278.7 million in the Exchange Agreement Set-Aside Fund. This amount includes disputed payments and interest earned thereon based on the rate earned by Metropolitan's investment portfolio. The amounts held do not include the statutory prejudgment interest, post-judgment interest, attorneys' fees, or costs awards, none of which the exchange agreement requires to be held. Amounts held pursuant to the exchange agreement will continue to accumulate based on the quantities of exchange water that Metropolitan provides to SDCWA and the payments disputed by SDCWA, until the litigation, including all appeals, is concluded. See "METROPOLITAN'S WATER SUPPLY–Colorado River Aqueduct – Sale of Water by the Imperial Irrigation District to San Diego County Water Authority" and "METROPOLITAN REVENUES–Litigation Challenging Rate Structure" in this Appendix A.

As described below, Metropolitan has executed two $200 million Short-Term Revolving Credit Facilities (as defined below), under which Metropolitan may borrow from time-to-time. Funds drawn under

the Short-Term Revolving Credit Facilities may be used for any lawful purpose. In April 2016, Metropolitan drew $125 million from each Short-Term Revolving Credit Facility (as defined below), for a total of $250 million, and deposited these amounts in Metropolitan's unrestricted financial reserves. An additional draw of approximately $50 million is expected by the end of June 2017, with such amount to be deposited in Metropolitan's unrestricted financial reserves. See "METROPOLITAN EXPENSES–Outstanding Senior Revenue Bonds and Senior Parity Obligations – Senior Parity Obligations – Short-Term Revolving Credit Facilities" in this Appendix A.

Metropolitan projects that its unrestricted reserves as of June 30, 2017 will be approximately $378 million. This amount does not include funds held in the Exchange Agreement Set-Aside Fund. This projection is based on the assumptions set forth in the table entitled "HISTORICAL AND PROJECTED REVENUES AND EXPENSES" under "HISTORICAL AND PROJECTED REVENUES AND EXPENSES" in this Appendix A. In addition, this projection is based on the assumption that Metropolitan's Board will not authorize the use of any additional amounts in the unrestricted reserves.

**California Ballot Initiatives**

Proposition 218, a State ballot initiative known as the "Right to Vote on Taxes Act," was approved by the voters on November 5, 1996 adding Articles XIIIC and XIIID to the California Constitution. Article XIIID provides substantive and procedural requirements on the imposition, extension or increase of any "fee" or "charge" levied by a local government upon a parcel of real property or upon a person as an incident of property ownership. As a wholesaler, Metropolitan serves water to its member agencies, not to persons or properties as an incident of property ownership. Thus, water rates charged by Metropolitan to its member agencies are not property related fees and charges and therefore are exempt from the requirements of Article XIIID. Fees for retail water service by Metropolitan's member agencies or their agencies are subject to the requirements of Article XIIID.

Article XIIID also imposes certain procedures with respect to assessments. Under Article XIIID, "standby charges" are considered "assessments" and must follow the procedures required for "assessments," unless they were in existence on the effective date of Article XIIID. Metropolitan has imposed its water standby charges since 1992 and therefore its current standby charges are exempt from the Article XIIID procedures. Changes to Metropolitan's current standby charges could require notice to property owners and approval by a majority of such owners returning mail-in ballots approving or rejecting any imposition or increase of such standby charge. Twenty-two member agencies have elected to collect all or a portion of their readiness-to-serve charges through standby charges. See "–Other Charges – Readiness-to-Serve Charge" and "– Water Standby Charges" above. Even if Article XIIID is construed to limit the ability of Metropolitan and its member agencies to impose or collect standby charges, the member agencies will continue to be obligated to pay the readiness-to-serve charges.

Article XIIIC makes all taxes general or special taxes and imposes voting requirements for each kind of tax. It also extends the people's initiative power to reduce or repeal previously authorized local taxes, assessments, fees and charges. This extension of the initiative power is not limited by the terms of Article XIIIC to fees imposed after November 6, 1996 or to property-related fees and charges and absent other authority could result in retroactive reduction in existing taxes, assessments or fees and charges.

Proposition 26, a State ballot initiative aimed at restricting regulatory fees and charges, was approved by the California voters on November 2, 2010. Proposition 26 broadens the definition of "tax" in Article XIIIC of the California Constitution to include levies, charges and exactions imposed by local governments, except for charges imposed for benefits or privileges or for services or products granted to the payor (and not provided to those not charged) that do not exceed their reasonable cost; regulatory fees that do not exceed the cost of regulation and are allocated in a fair or reasonable manner; fees for the use of local governmental property; fines and penalties imposed for violations of law; real property development fees; and assessments and property-related fees imposed under Article XIIID of the California Constitution.

Special taxes imposed by a special district such as Metropolitan are subject to approval by two-thirds of the electorate voting on the ballot measure for authorization. Proposition 26 applies to charges imposed or increased by local governments after the date of its approval. Metropolitan believes its water rates and charges are not taxes under Proposition 26. SDCWA's lawsuit challenging the rates adopted by Metropolitan in April 2012, part of which became effective January 1, 2013 and part of which became effective January 1, 2014, alleged that such rates violate Proposition 26. On April 24, 2014, a trial court decision stated such rates, effective in 2013 and 2014, violate Proposition 26. The trial court's rulings, including the decision that specific rates violate certain laws, are on appeal. (See "–Litigation Challenging Rate Structure.")

Propositions 218 and 26 were adopted as measures that qualified for the ballot pursuant to the State's initiative process. From time to time, other initiative measures could be adopted or legislative measures could be approved by the Legislature, which may place limitations on the ability of Metropolitan or its member agencies to increase revenues or to increase appropriations. Such measures may further affect Metropolitan's ability to collect taxes, assessments or fees and charges, which could have an effect on Metropolitan's revenues.

**Preferential Rights**

Section 135 of the Act gives each of Metropolitan's member agencies a preferential entitlement to purchase a portion of the water served by Metropolitan, based upon a ratio of all payments on tax assessments and otherwise, except purchases of water, made to Metropolitan by the member agency compared to total payments made by all member agencies on tax assessments and otherwise since Metropolitan was formed, except purchases of water. Historically, these rights have not been used in allocating Metropolitan's water. The California Court of Appeal has upheld Metropolitan's methodology for calculation of the respective member agencies' preferential rights under Section 135 of the Act. SDCWA's litigation challenging Metropolitan's water rates also challenges Metropolitan's exclusion of payments for exchange water from the calculation of SDCWA's preferential right. On August 28, 2015, the trial court ruled that SDCWA "is entitled to a judicial declaration (a) that Metropolitan's current methodology for calculating San Diego's preferential rights violates Section 135 of the Metropolitan Water District Act; and (b) directing Metropolitan to include San Diego's payments for the transportation of water under the Exchange Agreement in Metropolitan's calculation of San Diego's preferential rights." This ruling is subject to appeal. See "–Litigation Challenging Rate Structure."

**Litigation Challenging Rate Structure**

SDCWA filed *San Diego County Water Authority v. Metropolitan Water District of Southern California, et al.* on June 11, 2010. The complaint alleges that the rates adopted by the Board on April 13, 2010, which became effective January 1, 2011 and January 1, 2012, misallocate certain State Water Contract costs to the System Access Rate and the System Power Rate, and thus to charges for transportation of water, and that this results in an overcharge to SDCWA by at least $24.5 million per year. The complaint alleges that all State Water Project costs should be allocated instead to Metropolitan's Supply Rate, even though under the State Water Contract Metropolitan is billed separately for transportation, power and supply costs. It states additionally that Metropolitan will overcharge SDCWA by another $5.4 million per year by including the Water Stewardship Rate in transportation charges. Eight of Metropolitan's member agencies (the Cities of Glendale, Los Angeles and Torrance, MWDOC and Foothill, Las Virgenes, Three Valleys and West Basin Municipal Water Districts) answered the complaint in support of Metropolitan. IID joined the litigation in support of SDCWA's challenge to Metropolitan's charges for transportation of water, but withdrew and dismissed all claims against Metropolitan with prejudice on October 30, 2013.

The complaint requested a court order invalidating the rates adopted April 13, 2010, and that Metropolitan be mandated to allocate costs associated with the State Water Contract and the Water Stewardship Rate to water supply rates and not to transportation rates. Rates in effect in prior years are not

challenged in this lawsuit. Metropolitan contends that its rates are reasonable, equitably apportioned among its member agencies and lawful, and were adopted under a valid rate structure and cost of service approach developed in a multi-year collaborative process with its member agencies that was adopted in 2001 and has been in place since 2003. Nevertheless, to the extent that a final court ruling invalidates Metropolitan's adopted rates, Metropolitan will be obligated to reconsider and modify rates to comply with any final court rulings related to Metropolitan's rates. While components of the rate structure and costs may change as a result of any final ruling, Metropolitan expects that aggregate rates and charges would still recover Metropolitan's cost of service. As such, revenues would not be affected. If Metropolitan's rates are revised in the manner proposed by SDCWA in the complaint, other member agencies may pay higher rates unless other actions are taken by the Board.

SDCWA filed its First Amended Petition for Writ of Mandate and Complaint on October 27, 2011, adding five new claims to this litigation, two of which were eliminated from the case on January 4, 2012. The three remaining new claims are for breach of the water exchange agreement between Metropolitan and SDCWA (described herein under "METROPOLITAN'S WATER SUPPLY–Colorado River Aqueduct–Sale of Water by the Imperial Irrigation District to San Diego County Water Authority") based on allegedly illegal rates; improper exclusion of SDCWA's payments under this exchange agreement from calculation of SDCWA's preferential rights to purchase Metropolitan supplies (see "–Preferential Rights"); and illegality of the "rate structure integrity" provision in conservation and local resources incentive agreements between Metropolitan and SDCWA. The "rate structure integrity" provision permits the Board to terminate incentives payable under conservation and local resources incentive agreements between Metropolitan and a member agency due to certain actions by the member agency to challenge the rates that are the source of incentive payments. In June 2011, Metropolitan's Board authorized termination of two incentive agreements with SDCWA under the "rate structure integrity" provision in such agreements after SDCWA filed its initial complaint challenging Metropolitan's rates. SDCWA filed a Second Amended Petition for Writ of Mandate and Complaint on April 17, 2012, which contains additional allegations but no new causes of action.

On June 8, 2012, SDCWA filed a new lawsuit challenging the rates adopted by Metropolitan on April 10, 2012 and effective on January 1, 2013 and January 1, 2014. See "–Rate Structure" above and "–Water Rates" for a description of Metropolitan's water rate structure and the rates and charges adopted on April 10, 2012. The complaint contains allegations similar to those in the Second Amended Petition for Writ of Mandate and Complaint and new allegations asserting that Metropolitan's rates, adopted in April 2012, violate Proposition 26. See "–California Ballot Initiatives" for a description of Proposition 26. Metropolitan contends that its rates adopted on April 10, 2012 are reasonable, equitably apportioned among its member agencies and lawful and were adopted under a valid rate structure and cost of service approach. Ten of Metropolitan's member agencies (the eight member agency parties to SDCWA's first lawsuit, Eastern Municipal Water District and Western Municipal Water District of Riverside County) answered the complaint in support of Metropolitan and IID joined the litigation in support of SDCWA. Subsequently, IID dismissed all claims with prejudice in this second case too, and the City of Glendale withdrew from both cases.

SDCWA filed a Third Amended Petition for Writ of Mandate and Complaint on January 23, 2013, to add new allegations that Metropolitan's rates adopted in April 2010 did not meet the requirements of Proposition 26, approved by California voters in November 2010. The court granted Metropolitan's motion to strike allegations relating to Proposition 26 on March 29, 2013, expressly ruling that SDCWA may not allege a violation of Proposition 26 in its challenge to the rates adopted in April 2010. This ruling does not affect SDCWA's separate challenge to Metropolitan's rates adopted in April 2012, which also includes Proposition 26 allegations. On December 4, 2013, the court granted Metropolitan's motion for summary adjudication of the cause of action alleging illegality of the "rate structure integrity" provision in conservation and local resources incentive agreements, dismissing this claim in the first lawsuit.

Trial of the first phase of both lawsuits before the Superior Court of California, County of San Francisco (Case Nos. CPF-10-510830 and CPF-12-512466) concluded January 23, 2014. This phase concerned the challenges to Metropolitan's rates. On April 24, 2014, the trial court issued its "Statement of Decision on Rate Setting Challenges," determining that SDCWA prevailed on two of its claims and that Metropolitan prevailed on the third claim. The trial court found that there was not sufficient evidence in the administrative record to support Metropolitan's inclusion in its transportation rates, and hence in its wheeling rate, of 100 percent of (1) payments it makes to the California Department of Water Resources for the State Water Project, or (2) the costs incurred by Metropolitan for conservation and local water supply development programs recovered through the Water Stewardship Rate. The trial court decision stated that the System Access Rate, System Power Rate, Water Stewardship Rate and wheeling rate violate specified statutes and the common law and such rates effective in 2013 and 2014 violate Proposition 26. The trial court's decision was based on its conclusion that these rates are unfair to wheelers. The trial court found that SDCWA failed to prove its "dry-year peaking" claim that Metropolitan's rates do not adequately account for variations in member agency purchases.

SDCWA's claims asserting breach of the exchange agreement and miscalculation of preferential rights were tried in a second phase of the case which concluded April 30, 2015. On August 28, 2015, the trial court issued a final statement of decision for the second phase. The decision found in favor of SDCWA on both claims and that SDCWA is entitled to contract damages in the amount of $188,295,602 plus interest. On October 9 and 30, 2015, the trial court granted SDCWA's motion for prejudgment interest at the statutory rate of 10 percent on these damages. The prejudgment interest award through entry of judgment is $46,637,180. After entry of judgment, post-judgment interest began accruing at the statutory rate of 7 percent. On November 18, 2015, the court issued the Final Judgment and a Peremptory Writ of Mandate in the 2010 and 2012 SDCWA v. Metropolitan cases. On January 21, 2016, the trial court awarded $320,084 in costs to SDCWA, after deducting amounts based on Metropolitan's motion. On March 24, 2016, the trial court awarded $8,910,354 in attorneys' fees to SDCWA, rejecting its demand for over $17.0 million. Metropolitan filed a Notice of Appeal of the Judgment and Writ in each case, and SDCWA filed a Notice of Cross-Appeal of the court's ruling on the rate structure integrity provision claim and the attorneys' fees order. Appellate briefing by the parties was completed on October 28, 2016. No date for oral argument has been set. Metropolitan is unable to assess at this time the likelihood of success of this litigation, including the appeal, or any future claims.

Due to SDCWA's litigation challenging Metropolitan's rates, and pursuant to the exchange agreement between Metropolitan and SDCWA, as of December 31, 2016, Metropolitan held $278.7 million in a designated fund, the Exchange Agreement Set-Aside Fund. See "–Financial Reserve Policy." This amount includes both SDCWA's disputed payments and interest earned thereon, which is based on the rate earned by Metropolitan's investment portfolio. Amounts held pursuant to the exchange agreement will continue to accumulate based on the quantities of exchange water that Metropolitan provides to SDCWA and the payments disputed by SDCWA, until the litigation, including all appeals, is concluded. The amounts held do not include the statutory prejudgment interest, post-judgment interest, attorneys' fees, or costs awards, none of which the exchange agreement requires to be held.

In May 2014, SDCWA filed a new lawsuit asserting essentially the same rate claims and breach of contract claim in connection with the Board's April 2014 rate adoption. Metropolitan filed its answer on June 30, 2014. On February 9, 2015, pursuant to stipulation by the parties, the San Francisco Superior Court ordered that the case be stayed. The stay may be lifted upon motion by any party. On November 20, 2015, SDCWA filed a motion to partially lift the stay. On December 21, 2015, the trial court decided that motion and the case remains stayed. Metropolitan is unable to assess at this time the likelihood of success of this case, any possible appeal or any future claims.

On April 13, 2016, SDCWA filed a new lawsuit that alleges all rates and charges for 2017 and 2018 adopted by Metropolitan's Board on April 12, 2016 violate the California Constitution, statutes, and common

law. The Petition for Writ of Mandate and Complaint asserts misallocation of costs as alleged in the previous cases listed above and additional claims of over-collection and misallocation of costs and procedural violations, and states SDCWA intends to amend to allege further claims including breach of contract. In a claim letter dated May 2, 2016, SDCWA asserted three breaches of the exchange agreement: the same breach alleged in the previous cases listed above, breach of the set-aside provision noted above, and breach of a provision concerning characterizing exchange water for certain purposes in the same manner as local water of other member agencies. On June 30, 2016, the nine member agencies that are interested parties to the 2010, 2012, and 2014 cases filed answers to also join the 2016 case as interested parties in support of Metropolitan. On October 27, 2016, SDCWA filed a Motion for Leave to File Amended Complaint alleging the same exchange agreement breach alleged in the previous cases listed above and breach of the set-aside provision noted above relating to the manner in which Metropolitan has set aside the amounts. The proposed amended petition/complaint also requests a judicial declaration that, if a judgment is owed to SDCWA under the exchange agreement, SDCWA will not be required to pay any portion of that judgment, and requests a refund to SDCWA of any amount Metropolitan has collected in excess of the reasonable costs of services provided or, alternatively, a reduction in SDCWA's future fees. On September 27, 2016, the case was transferred to San Francisco Superior Court. On November 10, 2016, pursuant to stipulation by the parties, the court ordered that the case be stayed pending final resolution of the appeals of the 2010 and 2012 SDCWA v. Metropolitan cases. Metropolitan is unable to assess at this time the likelihood of success of this case, any possible appeal or any future claims.

**Other Revenue Sources**

***Hydroelectric Power Recovery Revenues.*** Metropolitan has constructed 16 small hydroelectric plants on its distribution system. The plants are located in Los Angeles, Orange, Riverside and San Diego Counties at existing pressure control structures and other locations. The combined generating capacity of these plants is approximately 131 megawatts. The total capital cost of the 16 facilities is approximately $176.1 million. Since 2000, annual energy generation sales revenues have ranged between $7.5 million and nearly $29.6 million. Energy generation sales revenues were $8.5 million in fiscal year 2014-15 and $7.5 million in fiscal year 2015-16. Low State Water Project supplies and reduced demands due to mandatory conservation resulted in diminished flows thorough Metropolitan's pipelines and hydroelectric power plants and decreased revenues.

***Investment Income.*** In fiscal years 2013-14, 2014-15, and 2015-16, Metropolitan's earnings on investments, including adjustments for gains and losses and premiums and discounts, including construction account and trust fund earnings, excluding gains and losses on swap terminations, on an accrual basis (audited) were $21.2 million, $22.3 million, and $19.4 million, respectively.

**Investment of Moneys in Funds and Accounts**

All moneys in any of the funds and accounts established pursuant to Metropolitan's water revenue or general obligation bond resolutions are invested by the Treasurer in accordance with Metropolitan's Statement of Investment Policy. All Metropolitan funds available for investment are currently invested in United States Treasury and agency securities, commercial paper, negotiable certificates of deposit, banker's acceptances, corporate notes, municipal bonds, asset-backed securities, mortgage-backed securities and the California Local Agency Investment Fund ("LAIF"). The LAIF is a voluntary program created by statute as an investment alternative for California's local governments and special districts. LAIF permits such local agencies to participate in an investment portfolio, which invests billions of dollars, using the investment expertise of the State Treasurer's Office.

The Statement of Investment Policy provides that in managing Metropolitan's investments, the primary objective shall be to safeguard the principal of the invested funds. The secondary objective shall be to meet all liquidity requirements and the third objective shall be to achieve a return on the invested funds. Although the Statement of Investment Policy permits investments in some asset-backed securities, the

portfolio does not include any of the special investment vehicles related to sub-prime mortgages. The Statement of Investment Policy allows Metropolitan to exceed the portfolio and single issuer limits for purchases of California local agency securities when purchasing Metropolitan tendered bonds in conjunction with its self-liquidity program. See "METROPOLITAN EXPENSES–Outstanding Senior Revenue Bonds and Senior Parity Obligations – Variable Rate and Swap Obligations" in this Appendix A. Metropolitan's current investments comply with the Statement of Investment Policy.

As of December 31, 2016, the total market value (cash-basis) of all Metropolitan funds was $1.37 billion, including bond reserves of $53.9 million. The market value of Metropolitan's investment portfolio is subject to market fluctuation and volatility and general economic conditions. Over the three years ended December 31, 2016, the market value of the month-end balance of Metropolitan's investment portfolio (excluding bond reserve funds) averaged approximately $1.23 billion. The minimum month-end balance of Metropolitan's investment portfolio (excluding bond reserve funds) during such period was approximately $936.3 million on August 31, 2016. See Footnote 3 to Metropolitan's audited financial statements in Appendix B for additional information on the investment portfolio.

Metropolitan's administrative code requires that (1) the Treasurer provide an annual Statement of Investment Policy for approval by Metropolitan's Board, (2) the Treasurer provide a monthly investment report to the Board and the General Manager showing by fund the description, maturity date, yield, par, cost and current market value of each security, and (3) the General Counsel review as to eligibility the securities invested in by the Treasurer for that month and report his or her determinations to the Board. The Board approved the Statement of Investment Policy for fiscal year 2016-17 on June 14, 2016.

Subject to the provisions of Metropolitan's water revenue or general obligation bond resolutions, obligations purchased by the investment of bond proceeds in the various funds and accounts established pursuant to a bond resolution are deemed at all times to be a part of such funds and accounts and any income realized from investment of amounts on deposit in any fund or account therein will be credited to such fund or account. The Treasurer is required to sell or present for redemption any investments whenever it may be necessary to do so in order to provide moneys to meet required payments or transfers from such funds and accounts. For the purpose of determining at any given time the balance in any such funds, any such investments constituting a part of such funds and accounts will be valued at the then estimated or appraised market value of such investments.

All investments, including those authorized by law from time to time for investments by public agencies, contain certain risks. Such risks include, but are not limited to, a lower rate of return than expected and loss or delayed receipt of principal. The occurrence of these events with respect to amounts held under Metropolitan's water revenue or general obligation revenue bond resolutions, or other amounts held by Metropolitan, could have a material adverse effect on Metropolitan's finances. These risks may be mitigated, but are not eliminated, by limitations imposed on the portfolio management process by Metropolitan's Statement of Investment Policy.

The Statement of Investment Policy requires that investments have a minimum credit rating of "A1/P1/F1" for short-term securities and "A" for longer-term securities at the time of purchase. If immediate liquidation of a security downgraded below these levels is not in the best interests of Metropolitan, the Treasurer or investment manager, in consultation with an ad hoc committee made up of the Chairman of the Board, the Chairman of the Finance and Insurance Committee and the General Manager, and with the concurrence of the General Counsel, may dispose of the security in an orderly and prudent manner considering the circumstances, under terms and conditions approved by a majority of the members of such ad hoc committee. The Treasurer is required to include a description of any securities that have been downgraded below investment grade and the status of their disposition in the Treasurer's monthly report.

The Statement of Investment Policy also limits the amount of securities that can be purchased by category, as well as by issuer, and prohibits investments that can result in zero interest income. Metropolitan's securities are settled on a delivery versus payment basis and are held by an independent third-party custodian. See APPENDIX B–"THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA INDEPENDENT AUDITOR'S REPORT AND BASIC FINANCIAL STATEMENTS FOR FISCAL YEARS ENDED JUNE 30, 2016 AND JUNE 30, 2015 AND BASIC FINANCIAL STATEMENTS FOR THE SIX MONTHS ENDED DECEMBER 31, 2016 AND 2015 (UNAUDITED)" for a description of Metropolitan's investments at September 30, 2016.

Metropolitan retains two outside investment firms to manage the long-term portion of Metropolitan's portfolio. The outside managers are required to adhere to Metropolitan's Statement of Investment Policy. As of December 31, 2016, such managers were managing approximately $342.3 million in investments on behalf of Metropolitan. Metropolitan's Statement of Investment Policy may be changed at any time by the Board (subject to State law provisions relating to authorized investments). There can be no assurance that the State law and/or the Statement of Investment Policy will not be amended in the future to allow for investments that are currently not permitted under State law or the Statement of Investment Policy, or that the objectives of Metropolitan with respect to investments or its investment holdings at any point in time will not change.

## METROPOLITAN EXPENSES

### General

The following table sets forth a summary of Metropolitan's expenses, by major function, for the five years ended June 30, 2016. The table provides cash basis information for fiscal year 2012, and modified accrual basis information for fiscal years 2013-2016. All information is unaudited. Expenses of Metropolitan for the fiscal years ended June 30, 2016 and June 30, 2015, on an accrual basis, are shown in APPENDIX B–"THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA INDEPENDENT AUDITOR'S REPORT AND BASIC FINANCIAL STATEMENTS FOR FISCAL YEARS ENDED JUNE 30, 2016 AND JUNE 30, 2015 AND BASIC FINANCIAL STATEMENTS FOR THE SIX MONTHS ENDED DECEMBER 31, 2016 AND 2015 (UNAUDITED)."

**SUMMARY OF EXPENSES**
**Fiscal Years Ended June 30**
**(Dollars in Millions)**

| | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|
| Operation and Maintenance Costs[1] | $ 425 | $ 456 | $ 512 | $ 697 | $ 799 |
| Total State Water Project[2] | 536 | 480 | 465 | 436 | 512 |
| Total Debt Service | 323 | 339 | 384 | 303 | 332 |
| Construction Disbursements from Revenues[3] | 44 | 55 | 117 | 210 | 273 |
| Other[4] | 3 | 5 | 6 | 7 | 6 |
| Total Disbursements (net of reimbursements) | $1,331 | $1,335 | $1,484 | $1,653 | $1,922 |

*Source: Metropolitan.*

(1) Includes operation and maintenance, debt administration, conservation and local resource programs, CRA power, and water supply expenses. For fiscal years 2014-15 and 2015-16, includes $142 million, and $222 million, respectively, of conservation projects funded from transfers from the Water Management Fund.

(2) Includes both operating and capital expense portions.

(3) At the discretion of the Board, in any given year, Metropolitan may increase or decrease funding available for construction disbursements to be paid from revenues. Includes $160 million for acquiring properties in Riverside and Imperial Counties, funded by $160 million from the Replacement and Refurbishment Fund Reserves. Does not include expenditures of bond proceeds.

(4) Includes operating equipment.

**Revenue Bond Indebtedness and Other Obligations**

As of February 1, 2017, Metropolitan had total outstanding indebtedness, secured by a lien on Net Operating Revenues, of $4.49 billion. This indebtedness is comprised of $4.06 billion water revenue bonds, issued under the Senior Debt Resolutions (defined below), which includes $3.01 billion fixed rate revenue bonds, and $1.04 billion variable rate revenue bonds; $250.0 million Short-Term Revolving Credit Facilities, which pay a variable rate, and are on parity with the senior lien water revenue bonds; $175.0 million subordinate water revenue bonds issued under the Subordinate Debt Resolutions (defined below), which pay a variable rate; and $8.6 million State of California Revolving Fund Loan, on parity with the subordinate water revenue bonds. In addition, Metropolitan has $493.6 million of fixed-payor interest rate swaps which provides a fixed interest rate hedge to an equivalent amount of variable rate debt. Metropolitan's revenue bonds and other revenue obligations are more fully described in this section below.

**Limitations on Additional Revenue Bonds**

Resolution 8329, adopted by Metropolitan's Board on July 9, 1991, as amended and supplemented (collectively with all such supplemental resolutions, the "Senior Debt Resolutions"), provides for the issuance of Metropolitan's senior lien water revenue bonds. The Senior Debt Resolutions establish limitations on the issuance of additional obligations payable from Net Operating Revenues. Under the Senior Debt Resolutions, no additional bonds, notes or other evidences of indebtedness payable out of Operating Revenues may be issued having any priority in payment of principal, redemption premium, if any, or interest over any water revenue bonds authorized by the Senior Debt Resolutions ("Senior Revenue Bonds") or other obligations of Metropolitan having a lien and charge upon, or being payable from, the Net Operating Revenues on parity with such Senior Revenue Bonds ("Senior Parity Obligations"). No additional Senior Revenue Bonds or Senior Parity Obligations may be issued or incurred unless the conditions of the Senior Debt Resolutions have been satisfied.

Resolution 9199, adopted by Metropolitan's Board on March 8, 2016, as amended and supplemented (collectively with all such supplemental resolutions, the "Subordinate Debt Resolutions," and together with the Senior Debt Resolutions, the "Revenue Bond Resolutions"), provides for the issuance of Metropolitan's subordinate water revenue bonds and other obligations secured by a pledge of Net Operating Revenues that is subordinate to the pledge securing Senior Revenue Bonds and Senior Parity Obligations. The Subordinate Debt Resolutions establish limitations on the issuance of additional obligations payable from Net Operating Revenues. Under the Subordinate Debt Resolutions, with the exception of Senior Revenue Bonds and Senior Parity Obligations, no additional bonds, notes or other evidences of indebtedness payable out of Operating Revenues may be issued having any priority in payment of principal, redemption premium, if any, or interest over any subordinate water revenue bonds authorized by the Subordinate Debt Resolutions ("Subordinate Revenue Bonds" and, together with Senior Revenue Bonds, "Revenue Bonds") or other obligations of Metropolitan having a lien and charge upon, or being payable from, the Net Operating Revenues on parity with the Subordinate Revenue Bonds ("Subordinate Parity Obligations"). No additional Subordinate Revenue Bonds or Subordinate Parity Obligations may be issued or incurred unless the conditions of the Subordinate Debt Resolutions have been satisfied.

The laws governing Metropolitan's ability to issue water revenue bonds currently provide two additional limitations on indebtedness that may be incurred by Metropolitan. The Act provides for a limit on general obligation bonds, water revenue bonds and other evidences of indebtedness at 15 percent of the assessed value of all taxable property within Metropolitan's service area. As of February 1, 2017, outstanding general obligation bonds, water revenue bonds and other evidences of indebtedness in the amount of $4.58 billion represented approximately 0.18 percent of the fiscal year 2016-17 taxable assessed valuation of $2,583 billion. The second limitation under the Act specifies that no revenue bonds may be issued, except for the purpose of refunding, unless the amount of net assets of Metropolitan as shown on its balance sheet as of the end of the last fiscal year prior to the issuance of such bonds, equals at least 100 percent of the aggregate amount of revenue bonds outstanding following the issuance of such bonds. The net

assets of Metropolitan at June 30, 2016 were $6.68 billion. The aggregate amount of revenue bonds outstanding as of February 1, 2017 was $4.23 billion. The limitation does not apply to other forms of financing available to Metropolitan. Audited financial statements including the net assets of Metropolitan as of June 30, 2016 and June 30, 2015, respectively, are shown in APPENDIX B–"THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA INDEPENDENT AUDITOR'S REPORT AND BASIC FINANCIAL STATEMENTS FOR FISCAL YEARS ENDED JUNE 30, 2015 AND JUNE 30, 2014 AND BASIC FINANCIAL STATEMENTS FOR THE SIX MONTHS ENDED DECEMBER 31, 2016 AND 2015 (UNAUDITED)."

Metropolitan provides no assurance that the Act's limitations on indebtedness will not be revised or removed by future legislation. Limitations under the Revenue Bond Resolutions respecting the issuance of additional obligations payable from Net Operating Revenues on parity with the Senior Revenue Bonds and Subordinate Revenue Bonds of Metropolitan will remain in effect so long as any Senior Revenue Bonds and Subordinate Revenue Bonds authorized pursuant to the Revenue Bond Resolutions are outstanding, provided however, that the Revenue Bond Resolutions are subject to amendment and supplement in accordance with their terms.

**Variable Rate Exposure Policy**

As of February 1, 2017, Metropolitan had outstanding $1.30 billion of variable rate obligations issued under the Senior Debt Resolutions, including variable rate Senior Revenue Bonds (described under "–Outstanding Senior Revenue Bonds and Senior Parity Obligations– Variable Rate and Swap Obligations") and Senior Parity Obligations incurred pursuant to Short-Term Revolving Credit Facilities (described under "–Outstanding Senior Revenue Bonds and Senior Parity Obligations–Senior Parity Obligations–Short-Term Revolving Credit Facilities" below). In addition, as of February 1, 2017, all of Metropolitan's $175 million of outstanding Subordinate Revenue Bonds issued under the Subordinate Debt Resolutions were variable rate obligations (described under "–Outstanding Subordinate Revenue Bonds and Subordinate Parity Obligations–Subordinate Revenue Bonds" below.

As of February 1, 2017, of Metropolitan's $1.47 billion of variable rate obligations, $493.6 million of such variable rate demand obligations are treated by Metropolitan as fixed rate debt, by virtue of interest rate swap agreements (described under "–Outstanding Senior Revenue Bonds and Senior Parity Obligations–Variable Rate and Swap Obligations–Interest Rate Swap Transactions"), for the purpose of calculating debt service requirements. The remaining $974.7 million of variable rate obligations represent approximately 21.7 percent of total outstanding water revenue secured indebtedness (including Senior Revenue Bonds and Senior Parity Debt and Subordinate Revenue Bonds and Subordinate Debt), as of February 1, 2017.

Metropolitan's variable rate exposure policy requires that variable rate debt be managed to limit net interest cost increases within a fiscal year as a result of interest rate changes to no more than $5 million. In addition, the maximum amount of variable interest rate exposure (excluding variable rate bonds associated with interest rate swap agreements) is limited to 40 percent of total outstanding water revenue bond debt. Variable rate debt capacity will be reevaluated as interest rates change and managed within these parameters.

**Outstanding Senior Revenue Bonds and Senior Parity Obligations**

**Senior Revenue Bonds**

The water revenue bonds issued under the Senior Debt Resolutions outstanding as of February 1, 2017, are set forth below:

| Name of Issue | Principal Outstanding |
|---|---|
| Water Revenue Refunding Bonds, 1993 Series A | $ 70,340,000 |
| Water Revenue Bonds, 2000 Authorization, Series B-3(1) | 88,800,000 |
| Water Revenue Bonds, 2006 Authorization, Series A | 302,245,000 |
| Water Revenue Refunding Bonds, 2008 Series B | 119,830,000 |
| Water Revenue Refunding Bonds, 2008 Series C | 27,255,000 |
| Water Revenue Bonds, 2008 Authorization, Series A | 174,530,000 |
| Water Revenue Refunding Bonds, 2009 Series A-2(1) | 104,180,000 |
| Water Revenue Refunding Bonds, 2009 Series B | 106,690,000 |
| Water Revenue Refunding Bonds, 2009 Series C | 91,165,000 |
| Water Revenue Bonds, 2008 Authorization, Series B | 10,360,000 |
| Water Revenue Bonds, 2008 Authorization, Series C(2) | 78,385,000 |
| Water Revenue Bonds, 2008 Authorization, Series D(2) | 250,000,000 |
| Water Revenue Refunding Bonds, 2009 Series D | 50,005,000 |
| Water Revenue Refunding Bonds, 2009 Series E | 12,715,000 |
| Water Revenue Bonds, 2010 Authorization, Series A(2) | 250,000,000 |
| Water Revenue Refunding Bonds, 2010 Series B | 74,325,000 |
| Water Revenue Refunding Bonds, 2011 Series A-1(1) | 64,305,000 |
| Water Revenue Refunding Bonds, 2011 Series A-2(1) | 49,920,000 |
| Water Revenue Refunding Bonds, 2011 Series A-3(1) | 64,300,000 |
| Water Revenue Refunding Bonds, 2011 Series A-4(1) | 49,920,000 |
| Water Revenue Refunding Bonds, 2011 Series B | 5,080,000 |
| Water Revenue Refunding Bonds, 2011 Series C | 147,435,000 |
| Water Revenue Refunding Bonds, 2012 Series A | 181,180,000 |
| Water Revenue Refunding Bonds, 2012 Series B-1 and B-2(1) | 98,585,000 |
| Water Revenue Refunding Bonds, 2012 Series C | 175,635,000 |
| Water Revenue Refunding Bonds, 2012 Series F | 59,335,000 |
| Water Revenue Refunding Bonds, 2012 Series G | 111,890,000 |
| Special Variable Rate Water Revenue Refunding Bonds, 2013 Series D(1) | 87,445,000 |
| Special Variable Rate Water Revenue Refunding Bonds, 2013 Series E(1) | 104,820,000 |
| Water Revenue Refunding Bonds, 2014 Series A | 95,935,000 |
| Water Revenue Refunding Bonds, 2014 Series B | 10,575,000 |
| Water Revenue Refunding Bonds, 2014 Series C-1–C-3 | 30,335,000 |
| Special Variable Rate Water Revenue Refunding Bonds, 2014 Series D(1) | 38,465,000 |
| Water Revenue Refunding Bonds, 2014 Series E | 86,060,000 |
| Water Revenue Refunding Bonds, 2014 Series G-2–G-5 | 43,275,000 |
| Special Variable Rate Water Revenue Refunding Bonds, 2015 Series A-1 and A-2(1) | 188,900,000 |
| Water Revenue Bonds, 2015 Authorization, Series A | 208,255,000 |
| Water Revenue Refunding Bonds, 2016 Series A | 239,455,000 |
| Special Variable Rate Water Revenue Refunding Bonds, 2016 Series B-1 and B-2(1) | 103,670,000 |
| **Total** | **$4,055,600,000** |

*Source: Metropolitan.*

(1) Outstanding variable rate obligation.

(2) Designated as "Build America Bonds" pursuant to the American Recovery and Reinvestment Act of 2009.

## Variable Rate and Swap Obligations

As of February 1, 2017, Metropolitan had outstanding $1.30 billion of variable rate obligations issued under the Senior Debt Resolutions, including variable rate Senior Revenue Bonds (described under this caption "–Variable Rate and Swap Obligations") and Senior Parity Obligations incurred pursuant to Short-Term Revolving Credit Facilities (described under "–Short-Term Revolving Credit Facilities" below).

The outstanding variable rate Senior Revenue Bonds include bonds bearing interest in the Index Mode or Flexible Index Mode (the "Index Tender Bonds"), special variable rate bonds initially designated as self-liquidity bonds (the "Self-Liquidity Bonds") and variable rate demand obligations supported by standby bond purchase agreements between Metropolitan and various liquidity providers.

***Index Tender Bonds.*** The Index Tender Bonds have substantially similar terms and conditions; however, the mandatory tender dates and related tender periods for the Index Tender Bonds may differ. The

Index Tender Bonds bear interest at a rate that fluctuates weekly based on the SIFMA Municipal Swap Index published weekly by Municipal Market Data plus a spread. The Index Tender Bonds outstanding as of February 1, 2017, are summarized in the following table:

**Index Tender Bonds**

| Series | Date of Issuance | Original Principal Amount Issued | Next Scheduled Mandatory Tender Date | Maturity Date |
|---|---|---|---|---|
| 2009 A-2 | May 20, 2009 | $104,180,000 | July 10, 2017 | July 1, 2030 |
| 2011 A-1 | June 2, 2011 | 64,305,000 | July 10, 2017 | July 1, 2036 |
| 2011 A-2 | June 2, 2011 | 49,920,000 | March 27, 2018 | July 1, 2036 |
| 2011 A-3 | June 2, 2011 | 64,300,000 | July 10, 2017 | July 1, 2036 |
| 2011 A-4 | June 2, 2011 | 49,920,000 | March 27, 2018 | July 1, 2036 |
| 2012 B-1 | April 27, 2012 | 49,295,000 | March 27, 2018 | July 1, 2027 |
| 2012 B-2 | April 27, 2012 | 49,290,000 | March 27, 2018 | July 1, 2027 |
| 2013 E[1] | July 2, 2013 | 104,820,000 | June 5, 2017 | July 1, 2030 |
| **Total** | | **$536,030,000** | | |

*Source: Metropolitan.*

(1) Flexible Index Mode Bonds. The terms and conditions of Flexible Index Mode Bonds are substantially similar to Index Mode Bonds except that each tender period may not exceed 270 days.

The Index Tender Bonds are subject to mandatory tender under certain circumstances, including on certain scheduled mandatory tender dates (unless earlier remarketed or otherwise retired). Metropolitan anticipates that it will pay the purchase price of tendered Index Tender Bonds from the proceeds of remarketing such Index Tender Bonds or from other available funds. Metropolitan's obligation to pay the purchase price of any tendered Index Tender Bonds is an unsecured, special limited obligation of Metropolitan payable from Net Operating Revenues. Purchase price payments of Index Tender Bonds are subordinate to both the Senior Revenue Bonds and Senior Parity Obligations and to the Subordinate Revenue Bonds and Subordinate Parity Obligations. Metropolitan has not secured any liquidity facility or letter of credit to support the payment of the purchase price of Index Tender Bonds in connection with a scheduled mandatory tender. If the purchase price of the Index Tender Bonds of any Series is not paid from the proceeds of remarketing or other funds following a scheduled mandatory tender, such Index Tender Bonds then will bear interest at a default rate of up to 12 percent per annum until purchased by Metropolitan or redeemed. Failure to pay the purchase price of a series of Index Tender Bonds on a scheduled mandatory tender date is a default under the related paying agent agreement, upon the occurrence and continuance of which a majority in aggregate principal amount of the owners of such series of Index Tender Bonds may elect a bondholders' committee to exercise rights and powers of such owners under such paying agent agreement. Failure to pay the purchase price of a series of Index Tender Bonds on a scheduled mandatory tender date is not a default under the Senior Debt Resolutions. If the purchase price of the Index Tender Bonds of any series is not paid on a scheduled mandatory tender date, such Index Tender Bonds will also be subject to special mandatory redemption, in part, 18, 36 and 54 months following the purchase default. Any such special mandatory redemption payment will constitute an obligation payable on parity with the Senior Revenue Bonds and Senior Parity Obligations and senior to the Subordinate Revenue Bonds and Subordinate Parity Obligations.

***Self-Liquidity Bonds.*** As of February 1, 2017, Metropolitan had $314.8 million of outstanding Self-Liquidity Bonds issued under the Senior Debt Resolutions. The Self-Liquidity Bonds are subject to optional tender upon seven days' notice by the owners thereof and mandatory tender upon specified events. Metropolitan is irrevocably committed to purchase all Self-Liquidity Bonds tendered pursuant to any optional or mandatory tender to the extent that remarketing proceeds are insufficient therefor and no standby bond purchase agreement or other liquidity facility is in effect. Metropolitan's obligation to pay the purchase

price of any tendered Self-Liquidity Bonds is an unsecured, special limited obligation of Metropolitan payable from Net Operating Revenues. Purchase price payments of Self-Liquidity Bonds are subordinate to both the Senior Revenue Bonds and Senior Parity Obligations and to the Subordinate Revenue Bonds and Subordinate Parity Obligations. In addition, Metropolitan's investment policy permits it to purchase tendered Self-Liquidity Bonds as an investment for its investment portfolio (other than from amounts in its investment portfolio consisting of bond reserve funds). Thus, while Metropolitan is only obligated to purchase tendered Self-Liquidity Bonds from Net Operating Revenues, it may use the cash and investments in its investment portfolio (other than amounts in its investment portfolio consisting of bond reserve funds and amounts posted as collateral with interest rate swap counterparties as described below) to purchase tendered Self-Liquidity Bonds. Metropolitan has not secured any liquidity facility or letter of credit to pay the purchase price of any tendered Self-Liquidity Bonds; however, Metropolitan has entered into a Revolving Credit Agreement (as described below) pursuant to which it may make borrowings for the purpose of paying the purchase price of Self-Liquidity Bonds. See "–Senior Parity Obligations – Wells Fargo Revolving Credit Agreement." Failure to pay the purchase price of Self-Liquidity Bonds upon optional or mandatory tender is not a default under the related paying agent agreement or a default under the Senior Debt Resolutions.

The following table lists the outstanding Self-Liquidity Bonds as of February 1, 2017.

**Self-Liquidity Bonds**

| Name of Issue | Principal Outstanding |
|---|---|
| Special Variable Rate Water Revenue Refunding Bonds, 2013 Series D | $ 87,445,000 |
| Special Variable Rate Water Revenue Refunding Bonds, 2014 Series D | 38,465,000 |
| Special Variable Rate Water Revenue Refunding Bonds, 2015 Series A-1 and A-2 | 188,900,000 |
| Total | $314,810,000 |

*Source: Metropolitan.*

***Liquidity Supported Bonds.*** The interest rates for Metropolitan's other variable rate demand obligations issued under the Senior Debt Resolutions, totaling $192.5 million as of February 1, 2017, are reset on a daily basis. Such variable rate demand obligations are supported by Standby Bond Purchase Agreements between Metropolitan and liquidity providers that provide for purchase of variable rate bonds by the applicable liquidity provider upon tender of such variable rate bonds and a failed remarketing. Metropolitan has secured its obligation to repay principal and interest advanced under the Standby Bond Purchase Agreements as Senior Parity Obligations. A decline in the creditworthiness of a liquidity provider will likely result in an increase in the interest rate of the applicable variable rate bonds, as well as an increase in the risk of a failed remarketing of such tendered variable rate bonds. Variable rate bonds purchased by a liquidity provider bear interest at a significantly higher interest rate and Metropolitan's obligation to reimburse the liquidity provider may convert the term of the variable rate bonds purchased by the liquidity provider into a term loan amortizable under the terms of the current liquidity facilities over a period of up to three years, depending on the applicable liquidity facility.

The following table lists the liquidity providers, the expiration date of each facility and the principal amount of outstanding variable rate demand obligations covered under each facility as of February 1, 2017.

**Liquidity Facilities and Expiration Dates**

| Liquidity Provider | Bond Issue | Principal Outstanding | Facility Expiration |
|---|---|---|---|
| Wells Fargo Bank, N.A. | 2000 Authorization Series B-3 | $ 88,800,000 | April 2017[1] |
| Landesbank Hessen-Thuringen Girozentrale (Helaba) | 2016 Series B-1 and Series B-2 | $103,670,000 | September 2019 |
| **Total** | | $192,470,000 | |

*Source: Metropolitan.*

(1) Metropolitan expects to replace such liquidity facility prior to its expiration date.

***Interest Rate Swap Transactions***. By resolution adopted on September 11, 2001, Metropolitan's Board authorized the execution of interest rate swap transactions and related agreements in accordance with a master swap policy, which was subsequently amended by resolutions adopted on July 14, 2009 and May 11, 2010. Metropolitan may execute interest rate swaps if the transaction can be expected to reduce exposure to changes in interest rates on a particular financial transaction or in the management of interest rate risk derived from Metropolitan's overall asset/liability balance, result in a lower net cost of borrowing or achieve a higher net rate of return on investments made in connection with or incidental to the issuance, incurring or carrying of Metropolitan's obligations or investments, or manage variable interest rate exposure consistent with prudent debt practices and Board-approved guidelines. The Chief Financial Officer reports to the Finance and Insurance Committee of Metropolitan's Board each quarter on outstanding swap transactions, including notional amounts outstanding, counterparty exposures and termination values based on then-existing market conditions.

Metropolitan currently has one type of interest rate swap, referred to in the table below as "Fixed Payor Swaps." Under this type of swap, Metropolitan receives payments that are calculated by reference to a floating interest rate and makes payments that are calculated by reference to a fixed interest rate.

Metropolitan's obligations to make regularly scheduled net payments under the terms of the interest rate swap agreements are payable on a parity with the Senior Parity Obligations. Termination payments under the 2002A and 2002B interest rate swap agreements would be payable on a parity with the Senior Parity Obligations. Termination payments under all other interest rate swap agreements would be on parity with the Subordinate Parity Obligations.

The following swap transactions were outstanding as of February 1, 2017:

**FIXED PAYOR SWAPS:**

| Designation | Notional Amount Outstanding | Swap Counterparty | Fixed Payor Rate | MWD Receives | Maturity Date |
|---|---|---|---|---|---|
| 2002 A | $75,838,400 | Morgan Stanley Capital Services, Inc. | 3.300% | 57.74% of one-month LIBOR | 7/1/2025 |
| 2002 B | 28,371,600 | JPMorgan Chase Bank | 3.300 | 57.74% of one-month LIBOR | 7/1/2025 |
| 2003 | 158,597,500 | Wells Fargo Bank | 3.257 | 61.20% of one-month LIBOR | 7/1/2030 |
| 2003 | 158,597,500 | JPMorgan Chase Bank | 3.257 | 61.20% of one-month LIBOR | 7/1/2030 |
| 2004 C | 7,760,500 | Morgan Stanley Capital Services, Inc. | 2.980 | 61.55% of one-month LIBOR | 10/1/2029 |
| 2004 C | 6,349,500 | Citigroup Financial Products, Inc. | 2.980 | 61.55% of one-month LIBOR | 10/1/2029 |
| 2005 | 29,057,500 | JPMorgan Chase Bank | 3.360 | 70% of 3-month LIBOR | 7/1/2030 |
| 2005 | 29,057,500 | Citigroup Financial Products, Inc. | 3.360 | 70% of 3-month LIBOR | 7/1/2030 |
| Total | $493,630,000 | | | | |

*Source: Metropolitan.*

These interest rate swap agreements entail risk to Metropolitan. The counterparty may fail or be unable to perform, interest rates may vary from assumptions, Metropolitan may be required to post collateral in favor of its counterparties and Metropolitan may be required to make significant payments in the event of an early termination of an interest rate swap. Metropolitan believes that if such an event were to occur, it would not have a material adverse impact on its financial position. Metropolitan seeks to manage counterparty risk by diversifying its swap counterparties, limiting exposure to any one counterparty, requiring collateralization or other credit enhancement to secure swap payment obligations, and by requiring minimum credit rating levels. Initially swap counterparties must be rated at least "Aa3" or "AA-", or equivalent by any two of the nationally recognized credit rating agencies; or use a "AAA" subsidiary as rated by at least one nationally recognized credit rating agency. Should the credit rating of an existing swap counterparty drop below the required levels, Metropolitan may enter into additional swaps if those swaps are "offsetting" and risk-reducing swaps. Each counterparty is initially required to have minimum capitalization of at least $150 million. See Note 5(f) in APPENDIX B–"THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA INDEPENDENT AUDITOR'S REPORT AND BASIC FINANCIAL STATEMENTS FOR FISCAL YEARS ENDED JUNE 30, 2016 AND JUNE 30, 2015 AND BASIC FINANCIAL STATEMENTS FOR THE SIX MONTHS ENDED DECEMBER 31, 2016 AND 2015 (UNAUDITED)."

Early termination of an interest rate swap agreement could occur due to a default by either party or the occurrence of a termination event. As of December 31, 2016, Metropolitan would have been required to pay to its counterparties termination payments if some of its swaps were terminated on that date. Metropolitan's net exposure to its counterparties for all such termination payments on that date was approximately $75.3 million. Metropolitan does not presently anticipate early termination of any of its interest rate swap agreements due to default by either party or the occurrence of a termination event. However, effective June 28, 2012, Metropolitan exercised optional early termination provisions to terminate all or a portion of certain interest rate swap agreements totaling a notional amount of $322 million. Effective February 12, 2014, Metropolitan exercised optional early termination provisions to terminate a portion of certain interest rate swap agreements, totaling a notional amount of $147 million. Effective July 29, 2014,

Metropolitan optionally terminated portions of certain interest rate swap agreements totaling a notional amount of $163 million.

Metropolitan is required to post collateral in favor of a counterparty to the extent that Metropolitan's total exposure for termination payments to that counterparty exceeds the threshold specified in the applicable swap agreement. Conversely, the counterparties are required to release collateral to Metropolitan or post collateral for the benefit of Metropolitan as market conditions become favorable to Metropolitan. As of December 31, 2016, Metropolitan had no collateral posted with any counterparty. The highest, month-end, amount of collateral posted was $36.8 million, on June 30, 2012, which was based on an outstanding swap notional amount of $1.4 billion. The amount of required collateral varies from time to time due primarily to interest rate movements and can change significantly over a short period of time. See "METROPOLITAN REVENUES–Financial Reserve Policy" in this Appendix A. In the future, Metropolitan may be required to post additional collateral, or may be entitled to a reduction or return of the required collateral amount. Collateral deposited by Metropolitan is held by the counterparties; a bankruptcy of any counterparty holding collateral posted by Metropolitan could adversely affect the return of the collateral to Metropolitan. Moreover, posting collateral limits Metropolitan's liquidity. If collateral requirements increase significantly, Metropolitan's liquidity may be materially adversely affected. See "METROPOLITAN REVENUES–Financial Reserve Policy" in this Appendix A.

**Term Mode Bonds**

As of February 1, 2017, Metropolitan had outstanding $73.6 million of Senior Revenue Bonds bearing interest in a term mode, comprised of $30.3 million of 2014 Series C Bonds in three series, and $43.3 million of 2014 Series G in four series (collectively, the "Term Mode Bonds"). The Term Mode Bonds initially bear interest at a fixed rate for a specified period from their date of issuance, after which there shall be determined a new interest mode for each series (which may be another term mode, a daily mode, a weekly mode, a short-term mode or an index mode) or the Term Mode Bonds may be converted to bear fixed interest rates through the maturity date thereof. The owners of the Term Mode Bonds of a series must tender for purchase, and Metropolitan must purchase, all of the Term Mode Bonds of such series on the specified scheduled mandatory tender date of each term period for such series. The Term Mode Bonds outstanding as of February 1, 2017, are summarized in the following table:

**Term Mode Bonds**

| Series | Original Principal Amount Issued | Next Scheduled Mandatory Tender Date |
|---|---|---|
| 2014 C-1 | $13,505,000 | October 1, 2019 |
| 2014 C-2 | 14,020,000 | October 1, 2020 |
| 2014 C-3 | 2,810,000 | October 1, 2021 |
| 2014 G-2 | 14,300,000 | October 1, 2017 |
| 2011 G-3 | 11,165,000 | October 1, 2018 |
| 2012 G-4 | 11,605,000 | October 1, 2019 |
| 2012 G-5 | 6,205,000 | October 1, 2020 |
| **Total** | **$73,610,000** | |

*Source: Metropolitan.*

Metropolitan will pay the principal of, and interest on, the Term Mode Bonds on parity with its other Senior Revenue Bonds. Metropolitan anticipates that it will pay the purchase price of tendered Term Mode Bonds from the proceeds of remarketing such Term Mode Bonds or from other available funds. Metropolitan's obligation to pay the purchase price of any tendered Term Mode Bonds is an unsecured, special limited obligation of Metropolitan payable from Net Operating Revenues. Purchase price payments of Term Mode Bonds are subordinate to both the Senior Revenue Bonds and Senior Parity Obligations and to

the Subordinate Revenue Bonds and Subordinate Parity Obligations. Metropolitan has not secured any liquidity facility or letter of credit to support the payment of the purchase price of Term Mode Bonds in connection with any scheduled mandatory tender. If the purchase price of the Term Mode Bonds of any series is not paid from the proceeds of remarketing or other funds following a scheduled mandatory tender, such Term Mode Bonds will then bear interest at a default rate of up to 12 percent per annum until purchased by Metropolitan or redeemed. Failure to pay the purchase price of a series of Term Mode Bonds on a scheduled mandatory tender date is a default under the related paying agent agreement, upon the occurrence and continuance of which a majority in aggregate principal amount of the owners of such series of Term Mode Bonds may elect a bondholders' committee to exercise rights and powers of such owners under such paying agent agreement. Failure to pay the purchase price of a series of Term Mode Bonds on a scheduled mandatory tender date is not a default under the Senior Debt Resolutions. If the purchase price of the Term Mode Bonds of any series is not paid on a scheduled mandatory tender date, such Term Mode Bonds will also be subject to special mandatory redemption, in part, 18, 36 and 54 months following the purchase default. Any such special mandatory redemption payment will constitute an obligation payable on parity with the Senior Revenue Bonds and Senior Parity Obligations.

**Build America Bonds**

Metropolitan previously issued and designated three series of Senior Revenue Bonds in the aggregate principal amount of $578,385,000 as "Build America Bonds" under the provisions of the American Recovery and Reinvestment Act of 2009 (the "Build America Bonds"). Metropolitan currently expects to receive cash subsidies from the United States Treasury (the "Interest Subsidy Payments") equal to 35 percent of the interest payable on all such outstanding Build America Bonds less any federal budget sequestration offsets as described in the following paragraph. The Interest Subsidy Payments in connection with the Build America Bonds do not constitute Operating Revenues under the Senior Debt Resolutions or the Subordinate Debt Resolutions. Such Interest Subsidy Payments will constitute Additional Revenues, which Metropolitan may take into consideration when establishing its rates and charges and will be available to Metropolitan to pay principal of and interest on Metropolitan's Bonds.

The Budget Control Act of 2011 (the "Budget Control Act") provided for increases in the federal debt limit and established procedures designed to reduce the federal budget deficit. The Budget Control Act provided that a failure to reduce the deficit would result in sequestration, which are automatic, generally across-the-board, spending reductions. These reductions began on March 1, 2013 pursuant to an executive order that reduced budgetary authority for expenditures subject to sequestration, including subsidies for Build America Bonds. Pursuant to this executive order, the approximately $6.64 million Interest Subsidy Payment that Metropolitan was to receive on or about July 1, 2013 was reduced by 8.7 percent, or $578,000, to $6.06 million. Interest Subsidy Payments processed in the federal fiscal year ended September 30, 2014 were reduced by the federal fiscal year 2014 sequestration rate of 7.2 percent and Interest Subsidy Payments processed in the federal fiscal year ended September 30, 2015 were reduced by the federal fiscal year 2015 sequestration rate of 7.3 percent. Interest Subsidy Payments processed in the federal fiscal year ended September 30, 2016 were reduced by the federal fiscal year 2016 sequestration rate of 6.8 percent, and Interest Subsidy Payments processed on or after October 1, 2016 and on or before September 30, 2017 are anticipated to be reduced by the federal fiscal year 2017 sequestration rate of 6.9 percent. The sequestration reduction rate will be applied unless and until a law is enacted that cancels or otherwise impacts the sequester, at which time the sequestration reduction rate is subject to change. Metropolitan can offer no assurances as to future subsidy payments and expects that once it receives less than any full 35 percent subsidy payment, the United States Treasury will not thereafter reimburse Metropolitan for payments not made.

**Senior Parity Obligations**

***Short-Term Revolving Credit Facilities.*** In April 2016, Metropolitan entered into a noteholder's agreement with RBC Municipal Products, LLC ("RBC") for the purchase by RBC and sale by Metropolitan of Metropolitan's Index Notes, Series 2016 ("RBC Facility"). Also in April 2016, Metropolitan entered into

a note purchase and continuing covenant agreement with U.S. Bank National Association ("US Bank"), for the purchase by US Bank and sale by Metropolitan of Metropolitan's Flexible Rate Revolving Notes, Series 2016 ("US Bank Facility," and together with the RBC Facility, the "Short-Term Revolving Credit Facilities"). Metropolitan is permitted to sell up to $200 million of notes (including, subject to certain terms and conditions, notes to refund maturing notes) under each of the Short-Term Revolving Credit Facilities during the term of the respective bank's commitment to purchase notes thereunder, which currently extends to April 5, 2019, for an aggregate amount of available borrowings of $400 million. Metropolitan may borrow, pay down and re-borrow amounts under each of the Short-Term Revolving Credit Facilities. Currently, Metropolitan has sold approximately $250 million of notes under the Short-Term Revolving Credit Facilities ($125 million under the RBC Facility and approximately $125 million under the US Bank Facility). Of that amount, Metropolitan has deposited $250 million in its unrestricted financial reserves. See "METROPOLITAN REVENUES–Financial Reserve Policy" in this Appendix A. An additional draw of approximately $50 million is expected by the end of June 2017. Subject to the satisfaction of certain terms and conditions, unpaid principal remaining outstanding at the April 5, 2019 commitment end date may be amortizable over a period of approximately one to three years, depending on the applicable facility.

Each of the Short-Term Revolving Credit Facilities bears interest at a variable rate of interest. The US Bank Facility bears interest at a spread to one-month London interbank offering rate ("LIBOR") for taxable borrowings or to 70 percent of one-month LIBOR for tax-exempt borrowings, while the RBC Facility bears interest at a spread to one-month LIBOR for taxable borrowings or to the SIFMA Municipal Swap Index for tax-exempt borrowings. Under the Short-Term Revolving Credit Facilities, upon a failure by Metropolitan to perform or observe its covenants, a default in other specified indebtedness of Metropolitan, or other specified events of default, each bank could terminate its commitments and declare all amounts then outstanding to be immediately due and payable. Metropolitan has secured its obligation to pay principal and interest under the Short-Term Credit Facilities as Senior Parity Obligations.

In the Short-Term Revolving Credit Facilities agreements, Metropolitan designated the principal and interest payable as Excluded Principal Payments under the Senior Debt Resolutions and thus, for purposes of calculating Maximum Annual Debt Service, included the amount of principal and interest due and payable under the Short-Term Revolving Credit Facilities on a schedule of Assumed Debt Service. This schedule of Assumed Debt Service assumes that Metropolitan will pay the principal under the Short-Term Revolving Credit Facilities over a period of 30 years at a fixed interest rate of approximately 3.3 percent.

***Wells Fargo Revolving Credit Agreement.*** On July 1, 2015, Metropolitan executed a revolving credit agreement with Wells Fargo Bank, N.A. (the "Wells Fargo Revolving Credit Agreement"). Under the terms and conditions of the Wells Fargo Revolving Credit Agreement, Metropolitan will be able to borrow up to $180 million for purposes of paying the purchase price of any Self-Liquidity Bonds. The scheduled expiration date of the Wells Fargo Revolving Credit Agreement is July 1, 2018. On November 4, 2015, Wells Fargo Bank assigned $100 million of its share of the Wells Fargo Revolving Credit Agreement to the Industrial and Commercial Bank of China ("ICBC"). Wells Fargo will retain the remaining $80 million commitment. ICBC assumed all of Wells Fargo's obligations with respect to its $100 million share under the Wells Fargo Revolving Credit Agreement.

Under the Wells Fargo Revolving Credit Agreement, a failure by Metropolitan to perform or observe certain covenants could result in a termination of Wells Fargo Bank and ICBC's commitments and entitle them to declare all amounts then outstanding to be immediately due and payable. Metropolitan has secured its obligation to pay principal and interest under the Wells Fargo Revolving Credit Agreement as Senior Parity Obligations. Metropolitan has no obligation to make borrowings under, maintain, or renew the Wells Fargo Revolving Credit Agreement. See "–Limitations on Additional Revenue Bonds" above.

In the Wells Fargo Revolving Credit Agreement, Metropolitan designated the principal and interest payable as Excluded Principal Payments under the Senior Debt Resolutions and thus, for purposes of calculating Maximum Annual Debt Service, included the amount of principal and interest due and payable

under the Revolving Credit Agreements on a schedule of Assumed Debt Service. This schedule of Assumed Debt Service assumes that Metropolitan will pay the principal under the Revolving Credit Agreements over a period of 30 years at a fixed interest rate of 3.75 percent. Pursuant to the terms of the Senior Debt Resolutions, while the Wells Fargo Revolving Credit Agreement is in force and effect, when Metropolitan calculates its covenant relating to the creation or incurrence of additional indebtedness, it will add an amount to its Net Operating Revenues relating to an assumed annual debt service payment that Metropolitan would receive if it were to use the proceeds of the Wells Fargo Revolving Credit Agreement to purchase Self-Liquidity Bonds.

**Outstanding Subordinate Revenue Bonds and Subordinate Parity Obligations**

**Subordinate Revenue Bonds**

In December 2016, Metropolitan entered into a Continuing Covenant Agreement with Bank of America, N.A. ("BANA", and the "2016 BANA Agreement"), for the purchase by BANA and sale by Metropolitan of Metropolitan's $175 million Subordinate Water Revenue Bonds, 2016 Authorization Series A (the "Subordinate 2016 Series A Bonds"), which is the first series of bonds issued under the Subordinate Debt Resolutions. Proceeds were used to reimburse Metropolitan for the purchase of the Delta Islands in the San Francisco Bay\Sacramento-San Joaquin River Delta that was funded from Metropolitan's reserves in July 2016. See "CAPITAL INVESTMENT PLAN–Other Capital Expenses" and "METROPOLITAN REVENUES–Financial Reserve Policy" in this Appendix A.

The Subordinate 2016 Series A Bonds bears interest at a variable rate of interest, at a spread to one-month LIBOR. Under the 2016 BANA Agreement, upon a failure by Metropolitan to perform or observe its covenants, a default in other specified indebtedness of Metropolitan, or other specified events of default, BANA could terminate its commitments and declare all amounts then outstanding to be immediately due and payable. Metropolitan has secured its obligation to pay principal and interest under the 2016 BANA Agreement as a Subordinate Parity Obligation. The Subordinate 2016 Series A Bonds are Index Tender Bonds and are subject to mandatory tender for purchase on the scheduled mandatory tender date of December 21, 2018, or, if directed by BANA upon the occurrence and continuance of an event of default under the 2016 BANA Agreement, five business days after receipt of such direction. On or before the scheduled mandatory tender date, Metropolitan may request an extension of the 2016 BANA Agreement for another tender period or may request BANA to purchase the Subordinate 2016 Series A Bonds in another interest rate mode, or Metropolitan may seek to remarket the 2016 Series A Bonds to another bank or in the public debt markets. In the event the 2016 BANA Agreement is not extended, Metropolitan is obligated under the 2016 BANA Agreement to cause unremarketed Subordinate 2016 Series A Bonds to be redeemed five business days after the scheduled mandatory tender date in the event the purchase price of the Subordinate 2016 Series A Bonds is not paid from the proceeds of a remarketing or other funds on the scheduled mandatory tender date. A failure to pay the purchase price of the Subordinate 2016 Series A Bonds upon a mandatory tender would constitute a default under the Subordinate Debt Resolutions if not remedied within five business days.

The water revenue bonds issued under the Subordinate Debt Resolutions outstanding as of February 1, 2017, are set forth below:

| Name of Issue | Principal Outstanding |
|---|---|
| Subordinate Water Revenue Bonds, 2016 Authorization Series A[1] | $175,000,000 |

*Source: Metropolitan.*

(1) Outstanding variable rate obligation.

**Subordinate Parity Obligations**

In 2003, Metropolitan obtained a $20 million California Safe Drinking Water Revolving Fund Loan in 2003 at an interest rate of 2.39 percent per annum to reimburse construction costs for oxidation retrofit facilities at the Henry J. Mills Treatment Plant in Riverside County. The loan payment obligation is subordinate to the Senior Revenue Bonds and Senior Obligations and on parity with the Subordinate Revenue Bonds. As of February 1, 2017, the principal balance outstanding was $8.6 million.

**Other Junior Obligations**

Metropolitan currently is authorized to issue up to $400,000,000 of Commercial Paper Notes payable from Net Operating Revenues on a basis subordinate to both the Senior Revenue Bonds and Senior Parity Obligations and to the Subordinate Revenue Bonds and Subordinate Parity Obligations. Although no Commercial Paper Notes are currently outstanding, the authorization remains in full force and effect and Metropolitan may issue Commercial Paper Notes from time to time.

**General Obligation Bonds**

As of February 1, 2017, $92,865,000 aggregate principal amount of general obligation bonds payable from *ad valorem* property taxes were outstanding. See "METROPOLITAN REVENUES–General" and "–Revenue Allocation Policy and Tax Revenues" in this Appendix A. Metropolitan's revenue bonds are not payable from the levy of *ad valorem* property taxes.

| General Obligation Bonds | Amount Issued[1] | Principal Outstanding |
|---|---|---|
| Waterworks General Obligation Refunding Bonds, 2009 Series A | $45,515,000 | $30,745,000 |
| Waterworks General Obligation Refunding Bonds, 2010 Series A | 39,485,000 | 23,065,000 |
| Waterworks General Obligation Refunding Bonds, 2014 Series A | 49,645,000 | 39,055,000 |
| Total | $134,645,000 | $92,865,000 |

*Source: Metropolitan.*

(1) Voters authorized Metropolitan to issue $850,000,000 of Waterworks General Obligation Bonds, Election 1966, in multiple series, in a special election held on June 7, 1966. This authorization has been fully utilized. This table lists bonds that refunded such Waterworks General Obligation Bonds, Election 1966.

**State Water Contract Obligations**

***General.*** As described herein, in 1960, Metropolitan entered into its State Water Contract with DWR to receive water from the State Water Project. All expenditures for capital and operations, maintenance, power and replacement costs associated with the State Water Project facilities used for water delivery are paid for by the 29 Contractors that have executed State Water Contracts with DWR, including Metropolitan. Contractors are obligated to pay allocable portions of the cost of construction of the system and ongoing operating and maintenance costs through at least 2035, regardless of quantities of water available from the project. Other payments are based on deliveries requested and actual deliveries received, costs of power required for actual deliveries of water, and offsets for credits received. In exchange, Contractors have the right to participate in the system, with an entitlement to water service from the State Water Project and the right to use the portion of the State Water Project conveyance system necessary to deliver water to them at no additional cost as long as capacity exists. Metropolitan's State Water Contract accounts for nearly one-half of the total entitlement for State Water Project water contracted for by all Contractors.

DWR and other State Water Project Contractors, including Metropolitan, have reached an Agreement in Principle to extend their State Water Contracts to 2085 and to make certain changes related to the financial management of the State Water Project in the future. See "METROPOLITAN'S WATER SUPPLY–State Water Project" in this Appendix A.

Metropolitan's payment obligation for the State Water Project for the fiscal year ended June 30, 2016 was $511 million, which amount reflects prior year's credits of $61.6 million. For the fiscal year ended June 30, 2016, Metropolitan's payment obligations under the State Water Contract were approximately 27 percent of Metropolitan's total annual expenses. A portion of Metropolitan's annual property tax levy is for payment of State Water Contract obligations, as described above under "METROPOLITAN REVENUES–General" in this Appendix A. See Note 9(a) to Metropolitan's audited financial statements in Appendix B for an estimate of Metropolitan's payment obligations under the State Water Contract. Also see "–Power Sources and Costs" below for a description of current and future costs for electric power required to operate State Water Project pumping systems and a description of litigation involving the federal relicensing of the Hyatt-Thermalito hydroelectric generating facilities at Lake Oroville.

The State Water Contract requires that in the event that Metropolitan fails or is unable to raise sufficient funds by other means, Metropolitan must levy upon all property within its boundaries not exempt from taxation a tax or assessment sufficient to provide for all payments under the State Water Contract. Currently, a portion of the capital costs under the State Water Contract are paid from *ad valorem* taxes levied by Metropolitan. In the opinion of Metropolitan's General Counsel, a tax increase to provide for additional payments under the State Water Contract would be within the exemption permitted under Article XIIIA of the State Constitution as a tax to pay pre-1978 voter approved indebtedness.

Metropolitan capitalizes its share of the State Water Project capital costs as participation rights in State Water Project facilities as such costs are costs paid in exchange for participation in the system, regardless of whether there is water available to be delivered. Unamortized participation rights essentially represent a prepayment for future costs as Metropolitan will likely continue to participate in the system at least through 2035. Metropolitan's share of system operating and maintenance costs are annually expensed.

DWR and various subsets of the State Water Contractors have entered into amendments to the State Water Contract related to the financing of certain State Water Project facilities. The amendments establish procedures to provide for the payment of construction costs financed by DWR bonds by establishing separate subcategories of charges to produces the revenues required to pay all of the annual financing costs (including coverage on the allocable bonds) relating to the financed project. If any affected Contractor defaults on payment under certain of such amendments, the shortfall may be collected from the non-defaulting affected Contractors, subject to certain limitations.

These amendments represent additional long-term obligations of Metropolitan, as described below.

***Devil Canyon-Castaic Contract.*** On June 23, 1972, Metropolitan and five other southern California public agencies entered into a contract (the "Devil Canyon-Castaic Contract") with DWR for the financing and construction of the Devil Canyon and Castaic power recovery facilities, located on the aqueduct system of the State Water Project. Under this contract, DWR agreed to build the Devil Canyon and Castaic facilities, using the proceeds of revenue bonds issued by DWR under the State Central Valley Project Act. DWR also agreed to use and apply the power made available by the construction and operation of such facilities to deliver water to Metropolitan and the other contracting agencies. Metropolitan, in turn, agreed to pay to DWR 88 percent of the debt service on the revenue bonds issued by DWR. For calendar year 2016, this represented a payment of $7.8 million. In addition, Metropolitan agreed to pay 78.5 percent of the operation and maintenance expenses of the Devil Canyon facilities and 96 percent of the operation and maintenance expenses of the Castaic facilities. Metropolitan's obligations under the Devil Canyon-Castaic Contract continue until the bonds are fully retired in 2022 even if DWR is unable to operate the facilities or deliver power from these facilities.

***Off-Aqueduct Power Facilities.*** In addition to system "on-aqueduct" power facilities costs, DWR has, either on its own or by joint venture, financed certain off-aqueduct power facilities. The power generated is utilized by the system for water transportation and other State Water Project purposes. Power

generated in excess of system needs is marketed to various utilities and the California Independent System Operator. Metropolitan is entitled to a proportionate share of the revenues resulting from sales of excess power. By virtue of a 1982 amendment to the State Water Contract and the other water supply contracts, Metropolitan and the other water contractors are responsible for paying the capital and operating costs of the off-aqueduct power facilities regardless of the amount of power generated. Other costs of Metropolitan in relation to the State Water Project and the State Water Contract may increase as a result of restructuring of California's electric utility industry and new Federal Energy Regulatory Commission ("FERC") regulations.

***East Branch Enlargement Amendment.*** In 1986, Metropolitan's State Water Contract and the water supply contracts of certain other State Water Project Contractors were amended for the purpose, among others, of financing the enlargement of the East Branch of the California Aqueduct. Under the amendment, enlargement of the East Branch can be initiated either at Metropolitan's request or by DWR finding that enlargement is needed to meet demands.

The amendment establishes a separate subcategory of the Transportation Charge under the State Water Contract for the East Branch Enlargement and provides for the payment of costs associated with financing and operating the East Branch Enlargement. Under the amendment, the annual financing costs for such facilities financed by bonds issued by DWR are allocated among the participating contractors based upon the delivery capacity increase allocable to each participating contractor. Such costs include, but are not limited to, debt service, including coverage requirements, deposits to reserves, and certain operation and maintenance expenses, less any credits, interest earnings or other moneys received by DWR in connection with this facility.

If any participating contractor defaults on payment of its allocable charges under the amendment, among other things, the non-defaulting participating contractors may assume responsibility for such charges and receive delivery capability that would otherwise be available to the defaulting participating contractor in proportion to the non-defaulting contractor's participation in the East Branch Enlargement. If participating contractors fail to cure the default, Metropolitan will, in exchange for the delivery capability that would otherwise be available to the defaulting participating contractor, assume responsibility for the capital charges of the defaulting participating contractor.

***Water System Revenue Bond Amendment.*** In 1987, the State Water Contract and other water supply contracts were amended for the purpose of financing State Water Project facilities through revenue bonds. This amendment establishes a separate subcategory of the Delta Water Charge and the Transportation Charge for projects financed with DWR water system revenue bonds. This subcategory of charge provides the revenues required to pay the annual financing costs of the bonds and consists of two elements. The first element is an annual charge for repayment of capital costs of certain revenue bond financed water system facilities under the existing water supply contract procedures. The second element is a water system revenue bond surcharge to pay the difference between the total annual charges under the first element and the annual financing costs, including coverage and reserves, of DWR's water system revenue bonds.

If any contractor defaults on payment of its allocable charges under this amendment, DWR is required to allocate a portion of the default to each of the nondefaulting contractors, subject to certain limitations, including a provision that no nondefaulting contractor may be charged more than 125 percent of the amount of its annual payment in the absence of any such default. Under certain circumstances, the nondefaulting contractors would be entitled to receive an allocation of the water supply of the defaulting contractor.

The following table sets forth Metropolitan's projected costs of State Water Project water based upon DWR's Annual Billing to Metropolitan for calendar year 2017 and, for fiscal year 2016-17, preliminary financial results through December 30, 2016. For all other years the projections are based on Metropolitan's adopted biennial budget for fiscal years 2016-17 and 2017-18 and the ten-year financial forecast included in

the adopted budget. See "METROPOLITAN'S WATER SUPPLY–State Water Project – Bay-Delta Proceedings Affecting State Water Project – Bay-Delta Planning Activities" in this Appendix A.

**PROJECTED COSTS OF METROPOLITAN FOR STATE WATER PROJECT WATER[1]**
**(Dollars in Millions)**

| Year Ending June 30 | Capital Costs | Minimum OMP&R[2] | Power Costs[3] | Refunds & Credits | Total[4] |
|---|---|---|---|---|---|
| 2017 | $173.4 | $225.0 | $150.0 | $(46.4) | $502.0 |
| 2018 | 184.2 | 294.7 | 158.4 | (37.9) | 599.4 |
| 2019 | 195.3 | 315.9 | 170.4 | (36.1) | 645.5 |
| 2020 | 212.1 | 340.5 | 191.1 | (35.0) | 708.7 |
| 2021 | 236.3 | 264.8 | 212.1 | (34.7) | 778.6 |

*Source: Metropolitan.*

(1) Projections are based upon DWR's Annual Billing to Metropolitan for 2017 and attachments (dated July 1, 2015) and, for fiscal year 2016-17, preliminary financial results through December 31, 2016. For other years, the projections are based on Metropolitan's adopted biennial budget for fiscal years 2016-17 and 2017-18, and the ten-year financial forecast included in the adopted budget. All costs are adjusted from calendar year to fiscal year periods ending June 30. The total charges shown above differ from those shown in Note 9 of Metropolitan's audited financial statements for the fiscal year ended June 30, 2016 and June 30, 2015, in Appendix B, due to the inclusion of allowances for inflation and anticipated construction of additional State Water Project facilities. See "METROPOLITAN EXPENSES–Power Sources and Costs – State Water Project" in this Appendix A.

(2) Minimum Operations, Maintenance, Power and Replacement ("OMP&R") represents costs which are fixed and do not vary with the amount of water delivered.

(3) Assumptions for water deliveries through the California Aqueduct (not including SBVMWD and DWA/CVWD transfers and exchanges) into Metropolitan's service area and to storage programs are as follows: 0.75 million acre-feet for fiscal year 2016-17, 0.77 million acre-feet for fiscal year 2017-18, 0.82 million acre-feet for fiscal year 2018-19, 0.88 million acre-feet for fiscal year 2019-20, and 0.93 million acre-feet for fiscal year 2020-21. Availability of State Water Project supplies vary and deliveries may include transfers and storage. All deliveries are within maximum contract amount and are based upon availability, as determined by hydrology, water quality and wildlife conditions. See "METROPOLITAN'S WATER SUPPLY–State Water Project" and "–Endangered Species Act and Other Environmental Considerations" in this Appendix A.

(4) Annual totals include California WaterFix related costs for the fiscal years ended June 30, 2017 through June 30, 2021 of $-0- in fiscal year 2016-17 and fiscal year 2017-18, $20 million in fiscal year 2018-19, $38 million in fiscal year 2019-20, and $63 million in fiscal year 2020-21. Projected California WaterFix costs are reflected in the ten-year financial forecast provided in the biennial budget for fiscal years 2016-17 and 2017-18 that was approved by Metropolitan's Board on April 12, 2016.

### Other Long-Term Commitments

Metropolitan also has various ongoing fixed annual obligations under its contract with the United States Department of Energy for power from the Hoover Power Plant. Under the terms of the Hoover Power Plant contract, Metropolitan purchases energy to pump water through the CRA. In fiscal year 2015-16 Metropolitan paid approximately $15.7 million under this contract. Payments made under the Hoover Power Plant contract are treated as operation and maintenance expenses. On March 12, 2014, Metropolitan and the other Hoover Contractors funded the defeasance of $124 million of bonds issued by the U.S. Treasury Department for facilities related to the Hoover Dam and Power Plant. Following this repayment, Metropolitan expects to reduce its annual payment for Hoover power by approximately $2.3 million.

### Power Sources and Costs

Current and future costs for electric power required for operating the pumping systems of the CRA and the State Water Project are a substantial part of Metropolitan's overall expenses. Expenses for electric power for the CRA (not including credits from power sales and related revenues) for the fiscal years 2014-15 and 2015-16 were approximately $39.2 million, and $35.5 million, respectively. Expenses for electric power

and transmission service for the State Water Project for fiscal years 2014-15 and 2015-16 were approximately $140.8 million and $125.4 million, respectively. Given the continuing uncertainty surrounding the electricity markets in California and in the electric industry in general, Metropolitan is unable to give any assurance with respect to the magnitude of future power costs.

***Colorado River Aqueduct.*** Generally, 55 to 70 percent of the annual power requirements for pumping at full capacity (1.25 million acre-feet of Colorado River water) in Metropolitan's CRA are secured through long-term contracts with the United States Department of Energy for energy generated from facilities located on the Colorado River (Hoover Power Plant and Parker Power Plant) and Southern California Edison ("Edison"). These contracts provide Metropolitan with reliable and economical power resources to pump Colorado River water to Metropolitan's service area.

The Hoover Power Allocation Act of 2011 (H.R. 470) requires the Western Area Power Administration (Western) to renew existing contracts for electric energy generated at the Hoover Power Plant for an additional 50 years through September 2067. The contractors will retain 95 percent of their existing power rights. Metropolitan and Western have completed negotiations and have executed the new contract.

As provided for under the Hoover Power Allocation Act of 2011 (H.R. 470), Metropolitan has executed a 50-year agreement with the Western Area Power Administration for the continued purchase of electric energy generated at the Hoover Power Plant through September 2067. Under the successor agreement (which will replace Metropolitan's existing Hoover contract expiring in 2017), Metropolitan will retain 95 percent of its existing power rights.

The remaining approximately 30 to 45 percent of annual pumping power requirements for full capacity pumping on the CRA is obtained through energy purchases from municipal and investor-owned utilities or power marketers. Gross diversions of water from Lake Havasu for the fiscal years ended June 30, 2015 and June 30, 2016 were approximately 1.2 million acre-feet and 1.1 million acre-feet, respectively, including Metropolitan's basic apportionment of Colorado River water and supplies from water transfer and storage programs.

The Metropolitan-Edison 1987 Service and Interchange Agreement includes provisions for the sharing of the benefits realized by the integrated operation of Edison's and Metropolitan's electric systems. Under this agreement, with a prior year pumping operation of 1 million acre-feet, Edison provides Metropolitan additional energy (benefit energy) sufficient to pump approximately 140,000 acre-feet annually. As the amount of pumping is increased, the amount of benefit energy provided by Edison is reduced.

Depending on pumping conditions, Metropolitan can require additional energy in excess of the base resources available to Metropolitan from the Hoover Power Plant, the Parker Power Plant, and Edison benefit energy. Metropolitan is a member of the Western Systems Power Pool ("WSPP"), and utilizes its industry standard form contract to make wholesale power purchases at market cost. Metropolitan also purchases California market-priced power through its agreement with Edison. In fiscal years 2014-15 and 2015-16, Metropolitan purchased approximately 710,000 and 690,000 megawatt-hours, respectively, of additional energy.

The Metropolitan-Edison 1987 Service and Interchange Agreement will expire on September 30, 2017. Metropolitan is negotiating with several parties on successor agreements. In particular, Metropolitan will no longer receive benefit energy from Edison. Metropolitan anticipates market power purchases will replace benefit energy and has reflected the additional costs in the CRA power cost projections for fiscal year 2017-18 and the ten-year financial forecast.

***State Water Project.*** The State Water Project's power requirements are met from a diverse mix of resources, including State-owned hydroelectric generating facilities. DWR has long-term contracts with Metropolitan (hydropower), Kern River Conservation District (hydropower), Northern California Power Agency (natural gas generation), Alameda Municipal Power (geothermal and landfill gas), Sun Power Corporation (solar) and Dominion Solar Holdings (solar). The remainder of its power needs is met by short-term purchases. Metropolitan pays approximately 70 percent of State Water Project power costs.

DWR is seeking renewal of the license issued by FERC for the State Water Project's Hyatt-Thermalito hydroelectric generating facilities at Lake Oroville. A Settlement Agreement containing recommended conditions for the new license was submitted to FERC in March 2006. That agreement was signed by over 50 stakeholders, including Metropolitan and other State Water Contractors. With only a few minor modifications, FERC staff recommended that the Settlement Agreement be adopted as the condition for the new license. DWR issued a Final EIR for the relicensing project on July 22, 2008. On August 21, 2008, Butte County and Plumas County filed separate lawsuits against DWR challenging the adequacy of the Final EIR. This lawsuit also named all of the signatories to the Settlement Agreement as "real parties in interest," since they could be adversely affected by this litigation. On May 16, 2012, the trial court found that the EIR prepared in conjunction with the relicensing was adequate and dismissed the lawsuit against DWR. On August 7, 2012, Butte and Plumas Counties filed a notice of appeal. Briefing on the appeal was completed in May 2013. Supplemental briefing was completed in the fall of 2016. No date has been set for oral argument. Regulatory permits and authorizations are also required before the new license can take effect. In December 2016, the National Marine Fisheries Service issued a biological opinion setting forth the terms and conditions under which the relicensing project must operate in order to avoid adverse impacts to threatened and endangered species. This was the last major regulatory hurdle prior to FERC issuing a new license. Metropolitan anticipates that FERC will issue the new license in 2017. However, FERC has issued one-year renewals of the existing license since its initial expiration date on January 31, 2007, and is expected to issue successive one-year renewals until a new license is obtained.

DWR receives transmission service from the California Independent System Operator ("CAISO"), a nonprofit public benefit corporation formed in 1996 pursuant to legislation that restructured and deregulated the electric utility industry in California. The transmission service providers participating in the CAISO may seek increased transmission rates, subject to the approval of FERC. DWR has the right to contest any such proposed increase. DWR may be subject to increases in the cost of transmission service as new electric grid facilities are constructed.

**Defined Benefit Pension Plan and Other Post-Employment Benefits**

Metropolitan is a member of the California Public Employees' Retirement System ("PERS"), a multiple-employer pension system that provides a contributory defined-benefit pension for substantially all Metropolitan employees. PERS provides retirement and disability benefits, annual cost-of-living adjustments and death benefits to plan members and beneficiaries. PERS acts as a common investment and administrative agent for participating public entities within the State. PERS is a contributory plan deriving funds from employee contributions as well as from employer contributions and earnings from investments. A menu of benefit provisions is established by State statutes within the Public Employees' Retirement Law. Metropolitan selects optional benefit provisions from the benefit menu by contract with PERS.

Metropolitan makes contributions to PERS based on actuarially determined employer contribution rates. The actuarial methods and assumptions used are those adopted by the PERS Board of Administration. Employees are required to contribute seven percent of their earnings (excluding overtime pay) to PERS. Pursuant to the current memoranda of understanding, Metropolitan contributes the requisite seven percent contribution for all employees represented by the Management and Professional Employees Association, the Association of Confidential Employees, Supervisors and Professional Personnel Association and AFSCME Local 1902 and who were hired prior to January 1, 2012. Employees in all four bargaining

units who were hired on or after January 1, 2012, pay the full seven percent employee contribution to PERS. Metropolitan contributes the entire seven percent on behalf of unrepresented employees. Employees hired on or after January 1, 2013 and who are "new" PERS members as defined by Public Employees' Pension Reform Act of 2013 pay a member contribution of 6.75 and 6.00 percent in fiscal years 2016-17 and 2017-18, respectively. In addition, Metropolitan is required to contribute the actuarially determined remaining amounts necessary to fund the benefits for its members.

The contribution requirements of the plan members are established by State statute and the employer contribution rate is established and may be amended by PERS. The fiscal year 2015-16 contribution is based on the June 30, 2013 valuation report, the fiscal year 2016-17 contribution is based on the June 30, 2014 valuation report, and the fiscal year 2017-18 contribution is based on the June 30, 2015 valuation report. The PERS' projected investment return (the discount rate) for each of these fiscal years is 7.5 percent.

For fiscal year 2015-16, Metropolitan contributed 19.74 percent of annual covered payroll. The fiscal year 2015-16 annual pension cost was $50.8 million, of which $12.4 million was for Metropolitan's pick-up of the employees' seven percent share. For fiscal years 2016-17 and 2017-18, Metropolitan is required to contribute 20.75 and 22.89 percent of annual covered payroll, respectively, in addition to member contributions paid by Metropolitan.

Metropolitan's required contributions to PERS fluctuate each year and include a normal cost component and a component equal to an amortized amount of the unfunded liability. Many assumptions are used to estimate the ultimate liability of pensions and the contributions that will be required to meet those obligations. The PERS Board of Administration has adjusted and may in the future further adjust certain assumptions used in the PERS actuarial valuations, which adjustments may increase Metropolitan's required contributions to PERS in future years. Accordingly, Metropolitan cannot provide any assurances that its required contributions to PERS in future years will not significantly increase (or otherwise vary) from any past or current projected levels of contributions.

On April 17, 2013, the PERS Board of Administration approved changes to the amortization and rate smoothing policies to spread all gains and losses over a fixed 30-year period from a rolling 30-year period, and to recognize increases or decreases in investment returns over a 5-year period versus a 15-year period beginning with the June 30, 2013 valuations. In addition, PERS no longer uses an actuarial valuation of assets and instead uses the market value of assets to determine contribution rates per PERS direct smoothing policy. These changes will result in higher employer contribution rates in the near term but lower rates in the long term. The new policies are effective for determining contribution requirements beginning fiscal year 2015-16. On December 21, 2016 the PERS Board of Administration approved lowering the discount rate to 7.00 percent over a three year period. As a result, the discount rate for fiscal year 2018-19 will be 7.375 percent, for fiscal year 2019-20 it will be 7.25 percent, and for fiscal year 2020-21 it will be 7.00 percent. PERS has estimated that with a reduction in the rate of return to 7.00 percent, most employers could expect a 1 to 3 percent increase in the normal cost for miscellaneous plans. As a result, required contributions of employers, including Metropolitan, toward unfunded accrued liabilities, and as a percentage of payroll for normal costs, are expected to increase. The following table shows the funding progress of Metropolitan's pension plan.

The following table shows the funding progress of Metropolitan's pension plan.

**Metropolitan Pension Plan Assets**
**(dollars in billions)**

| | | | | Funded (Unfunded) | | Funded Ratios | |
|---|---|---|---|---|---|---|---|
| **Valuation Date** | **Accrued Liability** | **Actuarial Value of Assets** | **Market Value of Assets** | **Actuarial Value** | **Market Value** | **Actuarial Value** | **Market Value** |
| 6/30/15 | $2.060 | N/A | $1.556 | N/A | $(0.504) | N/A | 75.5% |
| 6/30/14 | $1.983 | N/A | $1.560 | N/A | $(0.423) | N/A | 78.7% |
| 6/30/13 | $1.805 | N/A | $1.356 | N/A | ($0.449) | N/A | 75.1% |
| 6/30/12 | $1.731 | $1.471 | $1.227 | ($0.260) | ($0.504) | 85.0% | 70.9% |
| 6/30/11 | $1.674 | $1.416 | $1.257 | ($0.258) | ($0.417) | 84.5% | 75.1% |
| 6/30/10 | $1.563 | $1.351 | $1.059 | ($0.212) | ($0.504) | 86.4% | 67.7% |
| 6/30/09 | $1.478 | $1.287 | $0.940 | ($0.191) | ($0.538) | 87.1% | 63.6% |

*Source: California Public Employees' Retirement System.*

Effective July 1, 2014, Metropolitan implemented Governmental Accounting Standards Board Statement No. 68, *Accounting and Financial Reporting for Pensions – an amendment of GASB Statement No. 27* (GASB 68), affecting the reporting of pension liabilities for accounting purposes. Under GASB 68, Metropolitan is required to report the Net Pension Liability (*i.e.*, the difference between the Total Pension Liability and the Pension Plan's Net Position or market value of assets) in its financial statements.

For Metropolitan's fiscal year ended June 30, 2016 financial statements, the Net Pension Liability reported for the Miscellaneous Plan was $479.6 million (an increase of $72.8 million over the prior year), representing a Total Pension Liability as of such date of $2,038.6 million (an increase of $69.2 million over the prior year) less the Plan Fiduciary Net Position as of such date of $1,559.0 million (a decrease of $3.5 million over the prior year). For fiscal year 2016, the Miscellaneous Plan Net Pension Liability as a percentage of covered-employee payroll was 231.10 percent and the Plan Net Position as a percentage of the Total Pension Liability was 76.48 percent. The Net Pension Liability for Metropolitan's Miscellaneous Plan for the year ended June 30, 2016 was measured as of June 30, 2015, and the Total Pension Liability used to calculate the Net Pension Liability was determined by an annual actuarial valuation as of that date.

For the fiscal year ended June 30, 2015 financial statements, Metropolitan reported a Net Pension Liability of $406.8 million (a decrease of $118.1 million over the prior year), representing a Total Pension Liability as of such date of $1,969.3 million (an increase of $86.3 million over the prior year) less the Plan Fiduciary Net Position as of such date of $1,562.5 million (an increase of $204.4 million over the prior year). For fiscal year 2015, the Miscellaneous Plan Net Pension Liability as a percentage of covered-employee payroll was 200.53 percent and the Plan Net Position as a percentage of the Total Pension Liability was 79.34 percent. The Net Pension Liability for Metropolitan's Miscellaneous Plan for the year ended June 30, 2015 was measured as of June 30, 2014, and the Total Pension Liability used to calculate the Net Pension Liability was determined by an annual actuarial valuation as of that date.

For more information on the plan, see APPENDIX B–"THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA INDEPENDENT AUDITOR'S REPORT AND BASIC

FINANCIAL STATEMENTS FOR FISCAL YEARS ENDED JUNE 30, 2016 AND JUNE 30, 2015 AND BASIC FINANCIAL STATEMENTS FOR THE SIX MONTHS ENDED DECEMBER 31, 2016 AND 2015 (UNAUDITED)."

Metropolitan currently provides post-employment medical insurance to retirees and pays the post-employment medical insurance premiums to PERS. On January 1, 2012, Metropolitan implemented a longer vesting schedule for retiree medical benefits, which applies to all new employees hired on or after January 1, 2012. Payments for this benefit were $23.1 million in fiscal year 2015-16. Under Governmental Accounting Standards Board Statement No. 45, Accounting and Financial Reporting by Employers for Post-employment Benefits Other Than Pensions, Metropolitan is required to account for and report the outstanding obligations and commitments related to such benefits, commonly referred to as other post-employment benefits (OPEB), on an accrual basis.

The actuarial valuation dated June 30, 2015, was released in June of 2016. This valuation indicates that the Annual Required Contribution (ARC) in fiscal years 2016-17 and 2017-18 will be $29.3 million and $30.1 million, respectively. The ARC was based on the entry-age normal actuarial cost method with contributions determined as a level percent of pay. The actuarial assumptions included (a) a 7.25 percent investment rate of return, (b) a general inflation component of 3.0 percent and (c) increases to basic medical premiums of 7.0 percent for non-Medicare plans for 2017, grading down to 5.0 percent for 2021 and thereafter. As of June 30, 2015, the date of the OPEB actuarial report, the unfunded actuarial accrued liability was estimated to be $258.8 million. The unfunded actuarial accrued liability is amortized over a fixed 30-year period starting with fiscal year 2007-08 and ending in 2037. Changes to assumptions, actuarial gains and losses, and plan changes are amortized over a fixed 15-year period.

In September 2013, Metropolitan's Board established an irrevocable OPEB trust fund with an initial deposit of $40.0 million. During fiscal year 2013-14, the Board approved funding of an additional $100.0 million which was deposited into the irrevocable OPEB trust fund. As part of its biennial budget process, the Board approved the full funding of the ARC for fiscal years 2016-17 and 2017-18.

Governmental Accounting Standards Board Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other than Pensions*, was issued in June 2015, relating to accounting and financial reporting by state and local governments for OPEB. This statement establishes standards for measuring and recognizing liabilities, deferred outflows and deferred inflows of resources, and expenses. For defined benefit OPEB, this statement identifies the methods and assumptions that should be used to project benefit payments, discount projected benefit payments to their actuarial present value, and attribute that present value to periods of employee service. Note disclosure and required supplementary information requirements about OPEB also are addressed. This statement is effective for Metropolitan for 2018. Major changes would be: (i) the inclusion of net OPEB liabilities on Metropolitan's Statement of Net Position (they are currently included as notes to Metropolitan's financial statements); and (ii) more variable OPEB expense as it will now be based on the net OPEB liability change between reporting dates, with some sources of change recognized immediately and others spread over years, instead of being based on actual contributions.

## HISTORICAL AND PROJECTED REVENUES AND EXPENSES

The "Historical and Projected Revenues and Expenses" table below provides a summary of revenues and expenses of Metropolitan prepared on a modified accrual basis. This is consistent with the adopted biennial budget for fiscal years 2016-17 and 2017-18. The table does not reflect the accrual basis of accounting, which is used to prepare Metropolitan's annual audited financial statements. The modified accrual basis of accounting varies from the accrual basis of accounting in the following respects: depreciation and amortization will not be recorded and payments of debt service will be recorded when due and payable. Under the modified accrual basis of accounting, revenues are recognized in the fiscal year in which they are

earned and expenses are recognized when incurred. Thus water sales revenues are recognized in the month the water is sold and expenses are recognized when goods have been received and services have been rendered. The change to modified accrual accounting is for budgeting purposes and Metropolitan will continue to calculate compliance with its rate covenant, limitations on additional bonds and other financial covenants in the Resolutions in accordance with their terms.

The projections are based on assumptions concerning future events and circumstances that may impact revenues and expenses and represent management's best estimates of results at this time. See footnotes to the table below entitled "HISTORICAL AND PROJECTED REVENUES AND EXPENSES" and "MANAGEMENT'S DISCUSSION OF HISTORICAL AND PROJECTED REVENUES AND EXPENSES" for relevant assumptions, including projected water sales and average annual increase in the effective water rate, and "MANAGEMENT'S DISCUSSION OF HISTORICAL AND PROJECTED REVENUES AND EXPENSES" for a discussion of potential impacts. Some assumptions inevitably will not materialize and unanticipated events and circumstances may occur. Therefore, the actual results achieved during the projection period will vary from the projections and the variations may be material.

Metropolitan's resource planning projections are developed using a comprehensive analytical process that incorporates demographic growth projections from recognized regional planning entities, historical and projected data acquired through coordination with local agencies, and the use of generally accepted empirical and analytical methodologies. See "METROPOLITAN'S WATER SUPPLY–Integrated Water Resources Plan" in this Appendix A. Metropolitan has conservatively set the water sales projections in the following table. Due to the variability of supplemental wholesale water sales and unpredictability of future hydrologic conditions, sales projections are based on long-term average forecasts consistent with Metropolitan's latest Board adopted Integrated Resources Plan, the 2015 IRP Update.

Nevertheless, Metropolitan's assumptions have been questioned by directors representing SDCWA on Metropolitan's Board. Metropolitan has reviewed SDCWA's concerns and, while recognizing that assumptions may vary, believes that the estimates and assumptions that support Metropolitan's projections are reasonable based upon history, experience and other factors as described above.

Metropolitan's water sales projections are the result of a comprehensive retail demand, conservation, and local supply estimation process, including supply projections from member agencies and other water providers within Metropolitan's service area. Retail demands for water are estimated with a model driven by projections of relevant demographics provided by SCAG and SANDAG. Retail demands are adjusted downward for conservation savings and local supplies, with the remainder being the estimated demand for Metropolitan supplies. Conservation savings estimates include all conservation programs in place to date as well as estimates of future conservation program goals that will result from regional 20 percent reductions by 2020 conservation savings. See "CONSERVATION AND WATER SHORTAGE MEASURES" in this Appendix A. Local supplies include water produced by local agencies from various sources including but not limited to groundwater, surface water, locally-owned imported supplies, recycled water, and seawater desalination (see "REGIONAL WATER RESOURCES" in this Appendix A). For example, water sales projections for fiscal year 2016-17 assumed that local projects such as groundwater recovery and desalination projects (see "REGIONAL WATER RESOURCES–Local Water Supplies" in this Appendix A) would become operational and produce local supplies in 2017. For additional description of Metropolitan's water sales projections, see "HISTORICAL AND PROJECTED REVENUES AND EXPENSES" in this Appendix A.

The water sales projections used to determine water rates and charges assume an average year hydrology. Actual water sales are likely to vary from projections. As shown in the *Historical Water Sales* chart below, sales can vary significantly from average and demonstrates the degree to which Metropolitan's commitments to meet supplemental demands can impact sales. In years when actual sales exceed projections, the revenues from water sales during the fiscal year will exceed budget, potentially resulting in

an increase in financial reserves. In years when actual sales are less than projections, Metropolitan uses various tools to manage reductions in revenues, such as reducing expenses below budgeted levels, reducing funding of capital from revenues, and drawing on reserves. See "METROPOLITAN REVENUES–Financial Reserve Policy" in this Appendix A. Metropolitan considers actual sales, revenues and expenses, and financial reserve balances in setting rates for future fiscal years.

Projections for fiscal year 2016-17 in the following table reflect actual financial results through December 31, 2016 and revised projections for the balance of the fiscal year. The financial projections for fiscal year 2017-18 reflects the adopted biennial budget that was approved by the Board on April 12, 2016, with revised preliminary water sales projections as of February 2017, but with no adjustments for lower expenses that can accompany lower water sales. Financial projections for fiscal years 2018-19 through 2020-21 are reflected in the ten-year financial forecast provided in the adopted biennial budget. This includes the projected issuance of $320 million of bonds in fiscal years 2017-18 through 2019-21 to finance the CIP. See "MANAGEMENT'S DISCUSSION OF HISTORICAL AND PROJECTED REVENUES AND EXPENSES–Water Sales Revenues" and "CAPITAL INVESTMENT PLAN–Capital Investment Plan Financing" in this Appendix A.

Water sales were 1.62 million acre-feet in fiscal year 2015-16. Water sales are projected to be 1.60 million acre-feet in fiscal year 2016-17 and 1.50 million acre-feet for fiscal year 2017-18, and 1.75 million acre-feet for fiscal years 2018-19 through 2020-21. Rates and charges increased by 1.5 percent on January 1, 2015 and January 1, 2016, and by 4.0 percent on January 1, 2017. On April 12, 2016 the Board adopted average increases in rate and charges of 4.0 percent, which will become effective on January 1, 2018. Rates and charges are projected to increase an average of 4.5 percent annually thereafter. Actual rates and charges to be effective in 2019 and thereafter are subject to adoption by Metropolitan's Board. The projections were prepared by Metropolitan and have not been reviewed by independent certified public accountants or any entity other than Metropolitan. Dollar amounts are rounded.

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## HISTORICAL AND PROJECTED REVENUES AND EXPENSES[a]
**(Dollars in Millions)**

| | Actual | | | | Projected | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** |
| Water Sales[b] | $1,283 | $1,485 | $1,383 | $1,166 | $1,198 | $1,233 | $1,473 | $1,533 | $1,597 |
| Additional Revenue Sources[c] | 173 | 182 | 199 | 200 | 191 | 173 | 179 | 184 | 192 |
| Total Operating Revenues | 1,456 | 1,667 | 1,582 | 1,366 | 1,389 | 1,405 | 1,652 | 1,717 | 1,789 |
| O&M, CRA Power and Water Transfer Costs[d] | (456) | (512) | (697) | (799) | (646) | (631) | (661) | (681) | (695) |
| Total SWC OMP&R and Power Costs[e] | (337) | (342) | (308) | (402) | (365) | (453) | (486) | (532) | (577) |
| Total Operation and Maintenance | (793) | (854) | (1,005) | (1,201) | (1,011) | (1,084) | (1,147) | (1,212) | (1,272) |
| Net Operating Revenues | $ 663 | $ 813 | $ 577 | $ 165 | $ 378 | $ 321 | $ 505 | $ 505 | $ 517 |
| Miscellaneous Revenue[f] | 23 | 19 | 21 | 24 | 21 | 24 | 24 | 24 | 25 |
| Transfer from Reserve Funds[g] | -- | -- | 142 | 222 | 46 | -- | -- | -- | -- |
| Sales of Hydroelectric Power[h] | 25 | 15 | 8 | 7 | 13 | 22 | 22 | 23 | 22 |
| Interest on Investments[i] | (2) | 19 | 13 | 17 | 3 | 12 | 19 | 19 | 20 |
| Adjusted Net Operating Revenues[j] | 709 | 866 | 761 | 435 | 461 | 378 | 569 | 571 | 584 |
| Senior Bond Service[k] | (298) | (343) | (280) | (309) | (307) | (330) | (328) | (322) | (314) |
| Subordinate Obligations[l] | (1) | (1) | (1) | (1) | (4) | (4) | (6) | (6) | (6) |
| Funds Available from Operations | $ 410 | $ 522 | $ 480 | $ 125 | $ 150 | $ 44 | $ 236 | $ 243 | $ 265 |
| Senior Bond Debt Service Coverage [m] | 2.38 | 2.52 | 2.72 | 1.41 | 1.50 | 1.15[q] | 1.74 | 1.77 | 1.86 |
| Subordinate Lien Debt Service Coverage | -- | -- | -- | -- | 39.45 | 11.52[q] | 43.57 | 44.83 | 48.72 |
| Debt Service Coverage on all Senior and Subordinate Bonds[n] | 2.37 | 2.51 | 2.71 | 1.40 | 1.48 | 1.13[q] | 1.71 | 1.74 | 1.83 |
| Funds Available from Operations | $ 410 | $ 522 | $ 480 | $ 125 | $ 150 | $ 44 | $ 236 | $ 243 | $ 265 |
| Other Revenues (Expenses) | (5) | (6) | (7) | (6) | (6) | (6) | (7) | (7) | (7) |
| Pay-As-You Go Construction[p] | (55) | (117) | (210) | (273) | (132) | (120) | (120) | (120) | (120) |
| Pay-As-You Go Funded from Replacement & Refurbishment Fund Reserves[p] | -- | -- | -- | 160 | -- | -- | -- | -- | -- |
| Total SWC Capital Costs Paid from Current Year Operations | (88) | (68) | (46) | (24) | (54) | (65) | (71) | (86) | (103) |
| Remaining Funds Available from Operations | 262 | 331 | 217 | (18) | (42) | (147) | 39 | 30 | 35 |
| Fixed Charge Coverage[o] | 1.83 | 2.10 | 2.33 | 1.30 | 1.26 | 0.95[q] | 1.41 | 1.38 | 1.38 |
| Property Taxes | 95 | 95 | 104 | 108 | 106 | 101 | 103 | 105 | 107 |
| General Obligation Bonds Debt Service | (40) | (40) | (22) | (22) | (22) | (23) | (19) | (14) | (14) |
| SWC Capital Costs Paid from Taxes | (55) | (55) | (82) | (86) | (83) | (75) | (82) | (88) | (91) |
| Net Funds Available from Current Year[p] | $ 262 | $ 331 | $ 217 | $ (18) | $ (42) | $(147) | $ 39 | $ 30 | $ 35 |

*Source: Metropolitan.*

*(Footnotes on next page)*

*(Footnotes to table on prior page)*

(a) Unaudited. Prepared on a modified accrual basis. Projected revenues and expenses in fiscal year 2016-17 are based on preliminary financial results through December 31, 2016, and revised projections for the balance of fiscal year 2016-17. Projections for fiscal year 2017-18 are based on assumptions and estimates used in the adopted biennial budget for fiscal years 2016-17 and 2017-18 and revised for water sales of 1.5 million acre-feet. Projections for fiscal years 2018-19 through 2020-21 are based on assumptions and estimates used in the adopted fiscal years 2016-17 and 2017-18 biennial budget and reflect the projected issuance of additional bonds.

(b) During the fiscal years ended June 30, 2013 through June 30, 2016, annual water sales (in acre-feet) were 1.86 million, 2.04 million, 1.905 million and 1.62 million, respectively. See "METROPOLITAN REVENUES–Water Sales Revenues," the table entitled "SUMMARY OF WATER SOLD AND WATER SALES" in this Appendix A. The water sales projections (in acre-feet) are 1.60 million acre-feet for fiscal year 2016-17, 1.50 million acre-feet for fiscal years 2017-18, and 1.75 million acre-feet for fiscal years 2018-19, 2019-20 and 2020-21. Projections reflect Board adopted rate and charge increases of 4.0 percent, effective on January 1, 2017 and January 1, 2018. Rates and charges are projected to increase an average of 4.5 percent per fiscal year thereafter, subject to adoption by Metropolitan's Board. See "MANAGEMENT'S DISCUSSION OF HISTORICAL AND PROJECTED REVENUES AND EXPENSES."

(c) Includes receipts from water standby, readiness-to-serve, and capacity charges. The term Operating Revenues excludes *ad valorem* taxes. See "METROPOLITAN REVENUES–Other Charges" in this Appendix A.

(d) Water Transfer Costs are included in operation and maintenance expenses for purposes of calculating the debt service coverage on all Obligations.

(e) Includes on- and off-aqueduct power and operation, maintenance, power and replacement costs payable under the State Water Contract. See "METROPOLITAN EXPENSES–State Water Contract Obligations" in this Appendix A.

(f) May include lease and rental net proceeds, net proceeds from sale of surplus property, reimbursements, and federal interest subsidy payments for Build America Bonds.

(g) Reflects transfers from the Water Management Fund, the Water Stewardship Fund, and the Water Rate Stabilization Fund, of $142 million in fiscal year 2014-15, $222 million in fiscal year 2015-16, and projected transfers of $46 million in fiscal year 2016-17 to fund a like amount of costs for conservation and supply programs. See "MANAGEMENT'S DISCUSSION OF HISTORICAL AND PROJECTED REVENUES AND EXPENSES."

(h) Includes CRA power sales.

(i) Does not include interest applicable to Bond Construction Funds, the Excess Earnings Funds, other trust funds and the Deferred Compensation Trust Fund. Fiscal year 2012-13 included Fair Value Adjustment of $(13.8) million, as per modified accrual accounting

(j) Adjusted Net Operating Revenues is the sum of all available revenues that the revenue bond resolutions specify may be considered by Metropolitan in setting rates and issuing additional Senior Revenue Bonds and Senior Parity Obligations and Subordinate Revenue Bonds and Subordinate Parity Obligations.

(k) Includes debt service on outstanding Senior Revenue Bonds, and additional Senior Revenue Bonds (projected). Assumes issuance of $80 million annually in additional Senior Revenue Bonds as provided in budget assumptions for the adopted biennial budget for fiscal years 2016-17 and 2017-18 and as projected for fiscal years 2018-19, 2019-20, and 2020-21. For fiscal years 2013-14 and 2014-15, reflects the defeasance of the 2004 Series B Water Revenue Refunding Bonds, payable on July 1, 2014, through a payment of $33.7 million to an escrow account on May 29, 2014. Fiscal year 2015-16 debt service increased $7.0 million for debt service paid on June 30, 2016, rather than July 1, 2017 and fiscal year 2016-17 debt service was therefore reduced by $7.0 million. See "CAPITAL INVESTMENT PLAN–Capital Investment Plan Financing" in this Appendix A.

(l) Consisting of subordinate lien California Safe Drinking Water Revolving Fund Loan and Subordinate 2016 Series A Bonds.

(m) Adjusted Net Operating Revenues divided by the sum of debt service on outstanding Senior Revenue Bonds and additional Senior Revenue Bonds (projected).

(n) Adjusted Net Operating Revenues, divided by the sum of debt service on outstanding Senior Revenue Bonds, Senior Parity Obligations, Subordinate Revenue Bonds and Subordinate Parity Obligations, including the subordinate lien California Safe Drinking Water Revolving Fund Loan and projected Revenue Bonds. See "METROPOLITAN EXPENSES–Outstanding Subordinate Revenue Bonds and Subordinate Parity Obligations" in this Appendix A.

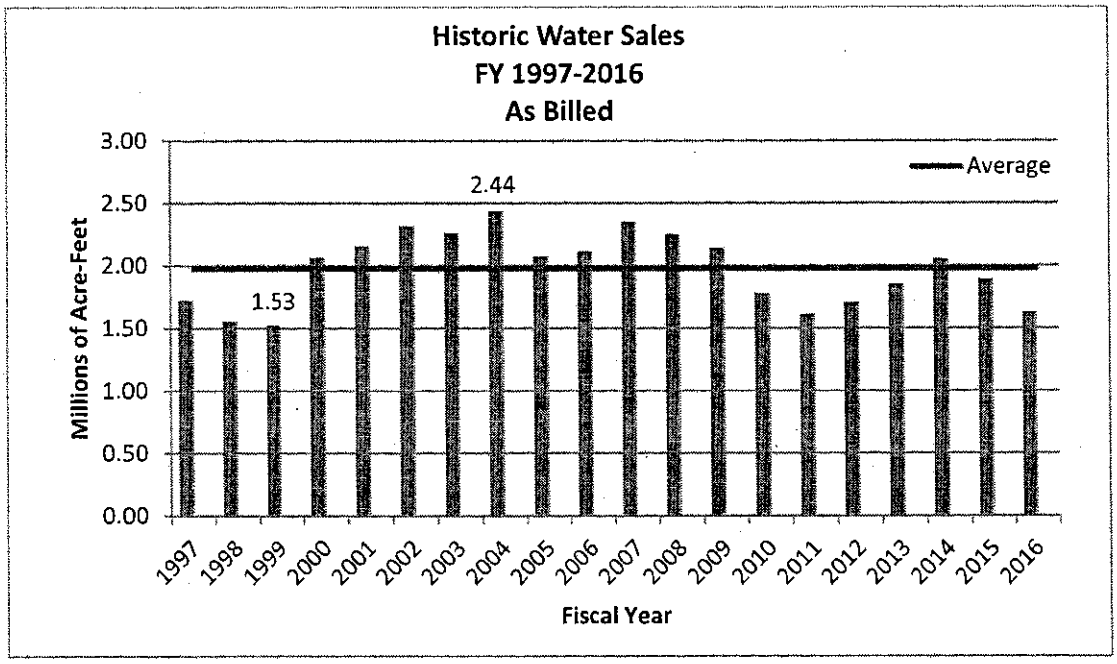
(o) Adjusted Net Operating Revenues, divided by the sum of State Water Contract capital costs paid from current year operations and debt service on outstanding Revenue Bonds, the subordinate lien California Safe Drinking Water Revolving Fund Loan, Subordinate 2016 Series A Bonds and additional Revenue Bonds (projected).

(p) For Fiscal Year 2012-13, includes amounts that were transferred prior to June 30, 2013: $25 million to the Water Transfer Fund, $25 million to a trust to pre-fund Metropolitan's unfunded liability for other post-employment benefits, and $25 million for pay-as-you-go Construction. For Fiscal Year 2013-14, includes amounts transferred prior to June 30, 2014: $100 million to a trust to pre-fund Metropolitan's unfunded liability for other post-employment benefits; $100 million for pay-as-you-go Construction, $232 million to the Water Management Fund, for water purchases to replenish storage and funding drought response programs. For Fiscal Year 2014-15, includes amounts transferred prior to June 30, 2015: $160 million to the Water Management Fund, for water conservation programs. For fiscal year 2015-16, Metropolitan used $264 million for acquiring properties in Riverside and Imperial Counties, funded by $160 million from the Replacement and Refurbishment Fund Reserves and the balance from unrestricted reserves. This land purchase is reflected as a pay-as-you-go expenditure for fiscal year 2015-16.

(q) The financial projection for fiscal year 2017-18 reflects the revised preliminary water sales projection of 1.50 million acre-feet and a corresponding reduction in projected water sales revenues. It does not take into account any potential reduction in expenses that may accompany such reduced water sales. As discussed, Metropolitan uses its financial reserves and budgetary tools to manage the financial impact of the variability in revenues due to fluctuations in annual water sales. See also "METROPOLITAN REVENUES–Financial Reserve Policy."

**Water Sales Projections**

Water sales forecast in the table above for fiscal year 2016-17 is 1.60 million acre-feet, 100 thousand acre-feet under budget. The updated water sales forecast is 1.50 million acre-feet for fiscal year 2017-18, and 1.75 million acre-feet for fiscal years 2018-19 and 2019-21, consistent with the biennial budget and ten-year financial forecast. For purposes of comparison, Metropolitan's highest water sales during the past 20 fiscal years was approximately 2.44 million acre-feet in fiscal year 2003-04 and the lowest was 1.53 million acre-feet in fiscal year 1998-1999. The chart below shows the last 20 fiscal years of water sales.




**Water Sales Revenues**

Metropolitan relies on revenues from water sales for about 85 to 90 percent of its total revenues. In adopting the budget and rates and charges for each fiscal year, Metropolitan's board reviews the anticipated revenue requirements and projected water sales to determine the rates necessary to produce the required revenues to be derived from water sales during the fiscal year. Metropolitan sets rates and charges estimated to provide operating revenues sufficient, with other sources of funds, to provide for payment of its expenses. See "HISTORICAL AND PROJECTED REVENUES AND EXPENSES" in this Appendix A.

Metropolitan's Board has adopted annual increases in water rates each year beginning with the rates effective January 1, 2004. See "METROPOLITAN REVENUES–Rate Structure" and "–Classes of Water Service" in this Appendix A. On April 10, 2012, Metropolitan's Board adopted annual water rate increases of 5.0 percent, which became effective January 1, 2013 and January 1, 2014. On April 8, 2014, Metropolitan's Board adopted 1.5 percent average water rate increases effective January 1, 2015, and January 1, 2016, and on April 12, 2016, Metropolitan's Board adopted an average 4.0 percent water rate increase, effective January 1, 2017, and an additional average 4.0 percent water rate increase effective January 1, 2018.

**Projected Fiscal Year 2016-17 Results**

Projections for fiscal year 2016-17, in the table above, are based on preliminary financial results through December 31, 2016, and revised projections for the balance of fiscal year 2016-17. The financial

projection for fiscal year 2017-18 reflects the adopted biennial budget for this fiscal year as approved by the Board on April 12, 2016, with revised preliminary water sales projections. Financial projections for fiscal years 2018-19 through 2020-21 are reflected in the ten-year financial forecast provided in the adopted biennial budget. The fiscal year 2016-17 and 2017-18 biennial budget and rates set the stage for predictable and reasonable rate increases over the ten-year planning period, with Board adopted rate increases of 4.0 percent annually in both fiscal years 2016-17 and 2017-18, and projected average increases of 4.5 percent per year thereafter. Actual rates and charges to be effective in fiscal year 2018-19 and thereafter are subject to adoption by Metropolitan's Board as part of the biennial budget process, at which point the ten-year forecast will also be updated as well. Increases in rates and charges reflect the impact of reduced water sales projections, increasing operations and maintenance costs, and increasing State Water Project costs, when compared to prior fiscal years.

Metropolitan's revenues exceeded expenses during fiscal year 2014-15, resulting in a significant increase in unrestricted reserves. On May 29, 2015, Metropolitan's Board approved the use of $160 million of unrestricted reserves over the target reserve level, $50 million from the Water Stewardship Fund, and $140 million from the Water Management Fund to fund conservation incentives. As of June 30, 2015, Metropolitan's unrestricted reserves were $476 million, on a modified accrual basis. On July 14, 2015, Metropolitan's Board approved $264 million to acquire various properties in Riverside and Imperial Counties, with $160 million funded from the Replacement and Refurbishment Fund and the remaining amount from unrestricted reserves. Unrestricted reserves, as of April 30, 2016, include $250 million drawn from Short-Term Revolving Credit Facilities with RBC Municipal Products, LLC, and U.S. Bank N.A, and deposited in Metropolitan's financial reserves. See "METROPOLITAN REVENUES–Financial Reserve Policy" and "METROPOLITAN EXPENSES–Outstanding Senior Revenue Bonds and Senior Parity Obligations – Senior Parity Obligations – Short-Term Revolving Credit Facilities" in this Appendix A.

In fiscal years 2014-15 and 2015-16, Adjusted Net Operating Revenues reflect the use of $142 million and $222 million respectively, from reserves to fund a like amount of costs for conservation and supply programs. In fiscal year 2016-17, $46 million of Adjusted Net Operating Revenues are projected to come from reserves to fund a like amount of costs for conservation and supply programs.

Financial projections for fiscal year 2016-17 reflect lower water sales revenues that are estimated to be $107.0 million, or 8 percent, below budget, based on the revised water sales projection of 1.60 million acre-feet, compared to the budgeted 1.70 million acre-feet, a reduction of 6 percent.

Operation and maintenance expenses in fiscal year 2016-17 are projected to be $1.01 billion, which represents approximately 63 percent of total costs. These expenses include the costs of labor, electrical power, materials and supplies of both Metropolitan and its contractual share of the State Water Project. Metropolitan's operation and maintenance expenditures are project to be on budget in fiscal year 2016-17. Metropolitan's State Water Project costs are projected to be $80.3 million lower than budgeted. Overall, projected expenditures for the twelve months ending June 30, 2017 are $1.6 billion. This is $89 million, or 5 percent, less than budgeted expenditures.

The combination of lower than budgeted water sales revenue and expenditures has resulted in projected fiscal year 2016-17 revenue bond debt service coverage to be 1.48x and fixed charge coverage to be 1.26x, compared to budgeted debt service coverage of 1.55x and budgeted fixed charge coverage of 1.27x. Fiscal year 2016-17 capital expenditures, currently estimated at $212 million, will be primarily funded by pay-as-you-go funding and the remainder from bond proceeds. Metropolitan's unrestricted reserves are projected to be approximately $378 million at June 30, 2017. See "METROPOLITAN REVENUES–Financial Reserve Policy" in this Appendix A. This amount does not include funds held in the Exchange Agreement Set-Aside Fund.

See also the "Management's Discussion and Analysis" contained in APPENDIX B–"THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA INDEPENDENT AUDITOR'S REPORT AND BASIC FINANCIAL STATEMENTS FOR FISCAL YEARS ENDED JUNE 30, 2016 AND JUNE 30, 2015 AND BASIC FINANCIAL STATEMENTS FOR THE SIX MONTHS ENDED DECEMBER 31, 2016 AND 2015 (UNAUDITED)."

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# Appendix G

Water Supply Assessment Checklist

# Water Supply Assessment Checklist

| Water Code Section | Water Supply Assessment Content | Page # in WSA |
|---|---|---|
| 10910(c)(2) | Incorporate data from UWMP. | 1-47 |
| 10910(d)(1) | Identification of existing water supply entitlements, water rights, or water service contracts relevant to identified water supply for proposed project, and description of quantity of water received in prior years. | 26-47 |
| 10910(d)(2)(A) | Written contracts or other proof of entitlement to an identified water supply. | 26-47 |
| 10910(d)(2)(B) | Capital outlay program for financing the delivery of a water supply that has been adopted. | 47 |
| 10910(d)(2)(C) | Federal, state, and local permits for construction of necessary infrastructure associated with delivering the water supply. | 15-47 |
| 10910(d)(2)(D) | Any necessary regulatory approval to deliver/convey the water supply. | 15-47 |
| 10910(f)(1) | Review of any information contained in the UWMP relevant to the identified water supply for the proposed project. | 1-47 |
| 10910(f)(2) | Description of any groundwater basin(s) from which proposed project will be supplied. For basins with adjudicated groundwater pumping rights, include a copy of the order/decree adopted by the court or the board and a description of quantity of groundwater public water system has the legal right to pump under the order/decree. | 26-28, 31-33, Appendix D |
| 10910(f)(3) | Description and analysis of amount and location of groundwater pumped for the past 5 years from any groundwater basin from which the proposed project will be supplied. | 31-33 |
| 10910(f)(4) | Description and analysis of amount and location of groundwater that is projected to be pumped from any basin to provided water to the proposed project. | 26-28, 31-33 |
| 10910(f)(5) | Analysis of sufficiency of groundwater from the basins from which the proposed project will be supplied to meet projected water demand of the proposed project. | 26-28, 31-33 |