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## IV. ENVIRONMENTAL IMPACT ANALYSIS

### F. WATER SUPPLY

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#### 1. INTRODUCTION

This section provides an analysis of potential impacts regarding water supply that could occur with implementation of the proposed Project. The analysis is primarily based on the 2005 City of Pasadena Urban Water Management Plan (UWMP) prepared by the City of Pasadena Water and Power Department (PWP). The UWMP includes an overview of current and projected water supplies and demands and a description of the local water system. The water supply analysis in this section uses the projected water supplies demands to determine if water would be available to meet the future demands of the project.

#### 2. ENVIRONMENTAL SETTING

##### a. Regulatory Framework

##### (1) Senate Bill 610 and Senate Bill 221

State legislation addressing water supply includes Senate Bill (SB) 610 (Costa) and SB 221 (Kuehl), which became effective January 1, 2002. SB 610, codified in the California Water Code (CWC), §10910 et seq., describes requirements for both water supply assessments and UWMPs applicable to the CEQA process. SB 610 requires that for specified projects subject to CEQA, the urban water supplier must prepare a water supply assessment that determines whether the projected water demand associated with a proposed Project is included as part of the most recently adopted UWMP. Specifically, a water supply assessment shall identify existing water supply entitlements, water rights, or water service contracts held by the public water system, and prior years' water deliveries received by the public water system. In addition, it must address water supplies over a 20-year period and consider average, dry, and multiple dry years. In accordance with SB 610 and Section 10912 of the Water Code, such projects subject to CEQA requiring submittal of a water supply assessment include the following:

- Residential developments of more than 500 dwelling units;
- Shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space;

- Commercial office buildings employing more than 1,000 persons or having more than 250,000 square feet of floor space;
- Hotels, motels, or both, having more than 500 rooms;
- Industrial, manufacturing, or processing plants, or industrial parks 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;
- Mixed-use projects that include one or more of the projects specified in this subdivision; or
- 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.

The water supply assessment must be approved by the public water system at a regular or special meeting and must be incorporated into the CEQA document. The lead agency must then make certain findings related to water supply based on the water supply assessment.

SB 221 also addresses water supply in the land use planning process and focuses on new residential subdivisions in non-urban areas. Specifically, SB 221 requires that written verification from the water service provider be submitted indicating sufficient water supply is available to serve a proposed subdivision or the local agency shall make a specified finding that sufficient water supplies are or will be available prior to completion of a project. SB 221 specifically applies to residential subdivisions of 500 units or more. In addition, Government Code Section 66473.7(i) exempts "...any residential project proposed for a site that is within an urbanized area and has been previously developed for urban uses, or where the immediate contiguous properties surrounding the residential project site are, or previously have been, developed for urban uses, or housing projects that are exclusively for very low and low-income households."

The proposed Project is not subject to the requirements of SB 610 or SB 211 as it is an office project that contains less than 500,000 square feet of floor space and would not employ more than 1,000 persons.

## **(2) California Urban Water Management Plan Act**

The California Urban Water Management Planning Act (CWC Division 6, Part 2.6, Sections 10610-10656) addresses several State policies regarding water conservation and the development of water management plans to ensure the efficient use of available supplies. The California Urban Water Management Planning Act also requires water suppliers to develop

water management plans every five years to identify short-term and long-term demand management measures to meet growing water demands during normal, dry, and multiple-dry years. Specifically, municipal water suppliers that serve more than 3,000 customers or provide more than 3,000 acre-feet per year (AFY) of water must adopt an UWMP.

### **(3) California State 20x2020 Program**

It is anticipated that there will soon be Statewide demand reduction requirements as a result of Governor Schwarzenegger's 2008 call for a 20 percent gallon per capita day (GPCD) reduction in demand by 2020 (20x2020 Program). It is not yet known exactly how this Statewide target would be achieved or what individual agency targets would be, but potential reductions should be considered to assess their impact to PWP's demand.

An initial phase of the 20x2020 Program is currently under development by the California Department of Water Resources (DWR). As new information is released to the public, PWP will refine the potential impacts to their demand as a result of the 20x2020 Program. For purposes of this analysis, it is assumed that PWP would need to reduce its demand by 20 percent GPCD by 2020 (equivalent to the average State reduction goal). It is also assumed that there would be an intermediate demand reduction requirement of 10 percent by 2015.

### **(4) City of Pasadena 2005 Urban Water Management Plan**

The PWP prepared the 2005 UWMP to comply with the Urban Water Management Planning Act, California Water Code Sections 10610 through 10657. The UWMP updated the last UWMP submitted in 2000. The UWMP documents the planning that has been accomplished by PWP staff. It includes an overview of current and projected water supplies and demands, and a description of the local water system. The UWMP also includes a description of water conservation and water management activities that PWP currently conducts or has planned for the next five years. It also addresses the topics of reliability and impacts of water quality considerations on water supply. Where possible, the UWMP has been integrated with other regional and inter-city planning efforts to ensure a coordinated approach to water management.

In the next UWMP update (available in 2010), the PWP will develop a revised demand forecast that will factor in the water demand for which all water supply assessments have been prepared in addition to future demands. This will also allow PWP to work collaboratively with its supplemental water supplier, the Metropolitan Water District of Southern California (MWD), to ensure the City's anticipated water demands are incorporated into MWD's long-term water resources development plan.

### (5) City of Pasadena Urban Environmental Accords

Signed by Pasadena in 2005, the Urban Environmental Accords (Accords) provide environmentally beneficial guiding principles for agencies to follow. As part of the Accords, signatories will be requested to reduce water per capita consumption by 10 percent by 2015. To accomplish this, PWP has developed and begun implementation of a conservation program with the aim to reduce water consumption to meet this goal. The reductions obtained by meeting the Accords will help meet the 20x2020 target of 10 percent through 2015, however an additional 10 percent potable demand reduction will need to take place from 2015 through 2020. The conservation measures currently being conducted by PWP are summarized below.

#### Residential (BMP 1)

- *Indoor Water Use* – offered in response to a high bill complaint and upon request.
  - Provide site survey/audit to include leak detection, check for low flow toilets, showerheads and aerators and make recommendations for retrofits where appropriate.
  - Distribution of water efficiency kit and 1.5 gallon per minute (gpm) showerheads.
- *Outdoor Water Use* – target 100 highest water consumption sources.
  - Landscape surveys;
  - Smart irrigation workshops;
  - Partnership with Landscape Warehouse on efficient irrigation class;
  - Native Nights plant workshop;
  - Rebates for smart controllers and rotating sprinkler nozzles; and
  - California friendly landscaping classes.
- *MWD's regional residential water efficiency rebate program* – participation will provide benefits/enhancements to PWP's existing rebate program.

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Commercial (BMP 9) /Multi-family (BMP 1)

- Indoor Water Use - Site surveys/audits in conjunction with energy audit to target high consumption market sectors;
- Mass marketing to small and medium business customers;
- Rebates for water use efficiency fixtures and appliances;
- Showerhead/aerator distributions at targeted users;
- Grant funding for flow restriction devices at specific locations; and
- Leak prevention device – Drip Stop® direct install pilot program.

Outdoor Water Use (BMP 5 – Large Landscape)

- Landscape surveys;
- Rebates for water use efficiency devices;
- Waterbroom distribution to targeted users;
- Smart irrigation workshops;
- Professional California friendly landscaping classes for HOAs, property managers and professional landscapers;
- Water forums targeted to City leaders, business leaders, property managers, neighborhood associations, commercial customers;
- Demonstration gardens; and
- Public sector program.

**(6) City of Pasadena – Water Shortage Plans**

PWP has several options at hand to address potential water supply issues, arising from either a reduction in its MWD allocations or its ability to pump groundwater from the Pasadena subarea of the Raymond Basin. The most immediate tool available is the declaration of a “water shortage” pursuant to Pasadena Municipal Code (PMC) Chapter 13.10.

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City of Pasadena Water Shortage Plan I. In December of 2007, PWP projected a local “water shortage” as defined in PMC § 13.10.020.G. On that basis, the City Council implemented a Water Shortage Plan I. The goal of the Water Shortage Plan I was to reduce total water usage in the City by 10 percent.<sup>1</sup> The Water Shortage Plan I contains the following nine voluntary water reduction measures to assist all Pasadena customers with conservation techniques (PMC § 13.10.040).

- Refrain from hosing or washing sidewalks, walkways, driveways, parking area or other paved surfaces;
- Refrain from cleaning, filling, or maintaining levels in decorative fountains, ponds, lakes, and similar structures unless such structure is equipped with a water recycling system;
- Refrain from serving drinking water, unless at the express request of a customer, in all restaurants, hotels, cafes, cafeterias, or other public places where food is sold, served or offered for sales;
- Promptly repair all leaks from indoor and outdoor plumbing fixtures, including but not limited to sprinkler systems;
- Refrain from allowing water to run off landscape areas into adjoining streets, sidewalks, parking lots or alleys;
- Refrain from allowing water to run off into adjoining streets, sidewalks, parking lots or alleys while washing vehicles;
- Refrain from landscape watering more often than once every three days;
- Refrain from landscape watering between the hours of 10:00 A.M. and 5:00 P.M.; and
- Refrain from filling or refilling a swimming pool. (Ord. 6289 § 1 (part), 1988; Ord. 6275 § 1 (part), 1988).

Since declaration of the local water shortage, PWP engaged in an aggressive public education campaign to raise awareness of the Water Shortage Plan I and its conservation techniques. Specifically, PWP hosted efficient irrigation workshops; joined MWD in offering a new regional incentive program for water efficient devices (SoCal Water Smart); and provided a

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<sup>1</sup> See minutes of December 17, 2007 City Council meeting, at <http://www.cityofpasadena.net/councilagendas/2007%20agendas/Minutes%202007/20071217.pdf>; see related staff report at [http://www.cityofpasadena.net/councilagendas/2007%20agendas/Dec\\_17\\_07/6A.pdf](http://www.cityofpasadena.net/councilagendas/2007%20agendas/Dec_17_07/6A.pdf).

host of links and information options on its website to educate Pasadena residents about other ways to save water. Despite this aggressive public education campaign, as of the summer of 2008, total water usage in the City had not changed appreciably and the goal of the Water Shortage Plan I was not being met.

City of Pasadena Water Shortage Plan II. The purpose of Water Shortage Plan II is to ensure that water is put to the maximum beneficial use and that water conservation is properly implemented. In the event of a continued water shortage, PWP could recommend to the City Council moving to a Water Shortage Plan II, pursuant to PMC § 13.10.040. At this time, PWP anticipates requesting that the City Council move to a Water Shortage Plan II by early 2009. In that event, the water reduction measures outlined above would become mandatory and the City could impose penalties on violators. PWP anticipates that implementation of Water Shortage Plan II would result in the 10 percent reduction the City has been seeking. The City's Water Shortage Plan II includes eight water conservation measures that are similar to the water conservation measures in Plan I.

City of Pasadena Water Shortage Plan III. The Water Shortage Plan III allows the PWP to impose monetary penalties to ensure that water is put to the maximum beneficial use and that water conservation is properly implemented to the extent feasible. The following measures would be implemented during Plan III.

- Phase 1. No customer shall use or allow the use of water from the department for any purpose in an amount in excess of 85 percent of that customer's base, except that process water may be used to the extent of 95 percent of that customer's base.
- Phase 2. No customer shall use or allow the use of water from the department for any purpose in an amount in excess of eighty 80 percent of that customer's base, except that process water may be used to the extent of 90 percent of that customer's base.
- Phase 3. No customer shall use or allow the use of water from the department for any purpose in an amount in excess of 75 percent of that customer's base, except that process water may be used to the extent of 85 percent of that customer's base.
- Phase 4. No customer shall use or allow the use of water from the department for any purpose in an amount in excess of 65 percent of that customer's base.
- Phase 5. No customer shall use or allow the use of water from the department for any purpose in an amount in excess of 50 percent of that customer's base.
- Nothing contained in this section shall be deemed to require any customer of the department to reduce his consumption of water provided by the department to an

amount less than 20 billing units bi-monthly at each meter during any billing period. (Ord. 6425 § 2, 1991; Ord. 6289 § 1 (part), 1988; Ord. 6275 § 1 (part), 1988).

## **b. Existing Conditions**

### **(1) Overview of Water Supplier - Pasadena Water and Power (PWP)**

The project site is within PWP's service area. PWP is the water supply service provider to City of Pasadena residents and businesses, as well as to a limited number of customers within adjacent unincorporated areas. The following presents a summary of the most recent water supply and demand projections based on the findings and conclusions in the 2005 UWMP.

#### **(a) PWP Water Supply and Demand**

The PWP has a variety of water sources available, including groundwater, local surface water, and imported water. Additional water supplies are also available through optional short-term water exchanges with neighboring agencies. Imported water is purchased from the MWD. The following sections provide a detailed discussion of the PWP's relationship with the MWD, as well as supply and demand forecasts for the MWD.

Water supply consists of 40 percent groundwater and 60 percent imported water, although the exact proportion can vary from year to year. PWP attempts to maximize its groundwater use each year and then utilize imported water to meet any remaining demand. The average PWP total yearly production from 1995 to 2004 was 37,094 AFY.

PWP also diverts surface water runoff from two streams that flow within its service area; (1) up to 25 cubic feet per second from Arroyo Seco, which lies on the northwest side of the City and (2) up to 8.9 cubic feet per second from Eaton Canyon, which lies in the eastern portion of the City. Although this water can be treated and used directly, PWP currently diverts and spreads the water in spreading basins where it percolates into the ground and recharges the aquifer.

Groundwater production is obtained from the Raymond Basin, a large aquifer that underlies the City and surrounding region. It has a groundwater production of approximately 30,000 AFY and has potential to store large amounts of imported water for drought purposes (up to 16 times the amount of water consumed by residents living over the Basin).<sup>2</sup> The Raymond Basin is adjudicated and under the judgment, the City of Pasadena has the right to 12,807 AFY

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<sup>2</sup> *City of Pasadena, 2005 Urban Water Management Plan, Page 1 December 2005.*

with additional pumping rights each year based on spreading surface water diversions in the Arroyo Seco and Eaton Canyon. Spreading credits vary from year to year, but on average PWP has received 4,128 AFY in credits since 1994. Thus, on an average year, PWP has the right to pump approximately 16,935 AFY from the Raymond Basin. PWP is currently operating seven wells with a combined capacity of 15,200 AFY.

In May of 2008, PWP was made aware that the Raymond Basin Management Board (Watermaster) is concerned that, in certain areas of the Raymond Basin, groundwater production is greater than net recharge, which has led to decreases in groundwater levels and increased depth-to-pumping.<sup>3</sup> It was estimated that the safe yield of the Pasadena subarea of the Raymond Basin, the subarea from which Pasadena takes a vast majority of its pumping rights, was approximately 35 percent less than current decreed rights in that subarea. To protect the storage capacity of the Pasadena subarea, PWP anticipates that the Watermaster may reduce the pumping allocation of every pumper in the Pasadena subarea by 35 percent. If that should occur, PWP's groundwater pumping rights would be reduced to 5,423 AFY in the subarea, for a total of 9,877 AFY in the Raymond Basin.

In 2007, PWP supplied a total of 38,434 AF, of which 25,100 AF was from imported water, 12,849 AF was from groundwater, and approximately 485 AF was from local water exchanges. Water use in PWP's service area is approximately two-thirds residential and one-third commercial/industrial. Total system per capita water use (excluding agricultural water use) averages 170 gallons per day (GPD). There were approximately 36,830 connections in 2007. Since 1990, new connections have been added at a rate of approximately 0.15 percent per year. However, demand for water has remained relatively constant with the implementation of water efficiency improvements.

Current and projected water use within PWP's service area is shown in Table IV.F-1 on page IV.F-10. Table IV.F-1 shows water usage projected for normal years and single dry years from 2010 through 2030.

Multiple dry-year supply and demand scenarios for 2010 through 2030 are shown in Table IV.F-2 on page IV.F-11. The City has a long-term storage program in the Raymond Basin and banks water within the basin for withdrawal during dry years when supplies are not sufficient to cover demands. Based on the supply and demand comparisons, PWP will have sufficient supply to meet the projected demand over the next 25 years. Its ability to meet demands during a multiple dry year period is based on the storage reserve it maintains in the Raymond Basin. During a time of drought, it can draw on this reserve to supplement its supply.

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<sup>3</sup> 2007 Technical Memorandum: Evaluation of Groundwater Production in the Pasadena Subarea of the Raymond Basin (Stetson Engineers, 2007).

Table IV.F-1

## PWP Service Area Normal and Single Dry Year Supply and Demand (Acre-Feet/Year)

	2010	2015	2020	2025	2030
Normal Year 1					
Supply	39,957	41,291	42,624	43,959	45,293
Demand	39,957	41,291	42,624	43,959	45,293
Difference	0	0	0	0	0
Single Dry Year					
Supply	32,318	32,318	32,318	32,318	32,318
Demand	33,963	35,097	36,230	37,365	38,497
Difference	(1,645)	(2,779)	(3,912)	(5,047)	(6,179)

*1 Table 9-2 Projected Normal Year Supply and Demand Comparison. Projected supplies exceed demands; however, PWP will only take the amount of imported water necessary to serve projected demand. Additional water may be purchased by PWP at an increased rate; however PWP plans to get additional water from long-term storage*

*Source: PWP 2005 UWMP.*

In the previous comparisons, the scenarios showed that the storage reserve would be drawn down over the course of a three-year dry period. In the final multiple year analysis from 2026-2030, the long-term storage (LTS) reached 5,511 AF. Thus, although there is enough projected supply and storage available under these scenarios, it is important that PWP take steps to boost its reserves. There are a number of critical actions that PWP is planning to take to provide additional assurance that it will be able to maintain deliveries.

- In the short-term, PWP will restore most of the out-of-service wells into production by installing perchlorate treatment systems.
- In the long-term, PWP will maintain deliveries through aggressive conservation programs and the implementation of recycled water for irrigation purposes.
- PWP will cooperate with the watershed planning efforts in the Arroyo Seco to develop the plan to increase the capacity of its spreading basins.

The comparisons in Table IV.F-1 and Table IV.F-2 are based on the assumption that MWD is forced to curtail its deliveries during a drought. In reality, MWD has performed its own multiple dry-year analysis and has determined that it would be able to maintain deliveries to its member agencies even in the event of a historical multiple dry-year period. However, by taking the critical actions above, PWP will ensure that it can reliably maintain its own supply in the event that MWD experiences delays in implementing its Integrated Resources Plan (IRP), discussed below, as well as providing a buffer against uncertainty.

Table IV.F-2

## PWP Service Area Multiple Dry Year Supply and Demand (Acre-Feet/Year)

<b>2011 through 2015</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Supply	40,224	40,491	36,861	31,665	34,294
Demand	40,224	40,491	40,757	34,870	35,097
Difference	0	0	(3,896)	(3,205)	(803)
Pumped from Long-term Storage	0	0	3,896	3,205	803
Long-term Storage Balance	24,221	24,221	20,325	17,120	16,137
Annual Net Deficit	0	0	0	0	0
<b>2016 through 2020</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Supply	41,559	41,826	36,861	31,665	34,294
Demand	41,559	41,826	42,092	36,005	36,232
Difference	0	0	(5,231)	(4,340)	(1,938)
Pumped from Long-term Storage	0	0	5,231	4,340	1,938
Long-term Storage Balance	24,221	24,221	18,990	14,650	12,712
Annual Net Deficit	0	0	0	0	0
<b>2021 through 2025</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
Supply	42,891	43,158	36,861	31,665	34,294
Demand	42,891	43,158	43,424	43,691	43,957
Difference	0	0	(6,563)	(5,472)	(3,070)
Pumped from Long-term Storage	0	0	6,563	5,472	3,070
Long-term Storage Balance	24,221	24,221	17,658	12,186	9,116
Annual Net Deficit	0	0	0	0	0
<b>2026 through 2030</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>
Supply	44,226	44,493	36,861	31,665	34,294
Demand	44,226	44,493	44,759	38,272	38,499
Difference	0	0	(7,898)	(6,607)	(4,205)
Pumped from Long-term Storage	0	0	7,898	6,607	4,205
Long-term Storage Balance	24,221	24,221	16,323	9,716	5,511
Annual Net Deficit	0	0	0	0	0

Source: 2005 City of Pasadena UWMP, Tables 9-5, 9-6, 9-7, and 9-8.

PWP has many options at hand to address potential water supply issues, arising from either a reduction in its MWD allocations or its ability to pump groundwater from the Pasadena subarea of the Raymond Basin. The most immediate tool available is the declaration of a “water shortage” pursuant to PMC Chapter 13.10 and implementation of a water shortage plan. These plans discussed above, would implement voluntary water conservation plans under the City of Pasadena Water Shortage Plan I and mandatory measures under the City of Pasadena Water Shortage Plan II.

To maintain supply stability in the face of supply uncertainties in the past, PWP is managing its supplies to ensure the reliability for the future. As a primary example, the City maintains a contract with the City of Glendale for the provision of recycled water and has the right to 6,000 AFY of recycled water from the Los Angeles/Glendale Water Reclamation Plant. The City has the right to take this allocation at a point of connection in Scholl Canyon, on the northwestern end of Pasadena. Although implementation of the pipe construction project to bring recycled water into Pasadena has been on hold since 1995, the City has already begun the work necessary to re-start implementation of that project. Funding for the initial planning of this project is currently available. As additional funding can be secured, the City anticipates increasingly offsetting the use of potable water for landscaping with recycled water and thus, leaving more potable water for other uses.

PWP is also considering other water supply enhancement and storage projects. In addition, the City is looking at ways to strengthen the local regulation of water use through other PMC amendments. As one example, the City is awaiting the DWR Office of Water Use and Efficiency’s update to the State model water efficient landscape ordinance. DWR anticipates that the model ordinance will be updated in early 2009. By late 2009, and pursuant to the requirements of Government Code Section 65595, the City anticipates updating its ordinances regulating landscaping water use to be at least as stringent as the State model ordinance. Through these efforts, PWP anticipates serving demand in the City as forecast in the City’s General Plan and UWMP into the foreseeable future.

### **(b) MWD Water Supply and Demand**

PWP has contracted with the MWD for deliveries under a purchase order arrangement. Under the contract, MWD charges for water supply under a two-tiered rate structure. PWP has the right to purchase up to 90 percent of their initial base demand at Tier 1 rates. Initial base demand is calculated as the maximum firm demand for MWD water over a 10-year period since 1989. Tier 1 rates are set by MWD to recover its costs of maintaining a reliable supply. Any amount higher than 90 percent of base demand is charged at higher Tier 2 rates to encourage efficient utilization of local resources and include MWD's costs for developing additional supplies.

Future projected annual supplies from MWD during single dry, multiple dry and normal years are shown in Table IV.F-3 on page IV.F-14. MWD supplies range from a high of about 3.3 million acre-feet (MAF) to a low of 1.9 MAF, depending on the year and the scenario. In drought conditions, water supplies may be reduced as a result of reduced precipitation. Since the City receives the majority (approximately 60 percent) of its water from MWD, an analysis of the reliability of the MWD supply under drought conditions is required. An analysis of single dry year, multiple dry year, and average year MWD supply reliability follows.

Table IV.F-3 presents the MWD demand and supply capabilities through the year 2030 under average year, single dry year and multiple dry year scenarios. The data shows that not only will demand from MWD customers be met under the three different scenarios through the year 2030, but that the MWD will maintain a surplus ranging from a low of 240,000 AFY to 1,160,000 AFY.

The MWD receives its water from various supplies including the Colorado River and the State Water Project (SWP). Currently, these sources are undergoing litigation and face various uncertainties regarding water supply. The following sections provide a brief summary of the challenges facing MWD's individual supplies.

#### **(i) The Colorado River**

Pursuant to a contract with the U.S. Secretary of the Interior under Section 5 of the federal Boulder Canyon Project Act, MWD possesses the right to divert 550,000 AFY of water from the Colorado River.<sup>4</sup> In March 2003, MWD published the *Report on Metropolitan Water Supplies: A Blueprint for Water Reliability* (Blueprint Report). The Blueprint Report includes a description of MWD's base apportionment water right, along with the Colorado River supply projects that MWD is implementing to maximize the reliability of the Colorado River supplies.<sup>5</sup> The Quantification Settlement Agreement (QSA) and other related agreements were approved on October 10, 2003, following distribution of the Blueprint Report, which related to the supplies of all the California users of the Colorado River including MWD. Signing of the QSA and related agreements will allow implementation of the Colorado River supply projects identified in the Blueprint Report, as well as other projects. The impact on the reliability of MWD's supplies as a result of the QSA and related agreements is described in MWD's 2006 Integrated Water Resources Plan Implementation Report.<sup>6</sup>

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<sup>4</sup> 45 Stat. 1057 (December 21, 1928).

<sup>5</sup> *Blueprint Report*.

<sup>6</sup> *Metropolitan Water District of Southern California, 2006 Integrated Water Resources Plan Implementation Report at 1-2 to 1-10 (October 10, 2006)*.

Table IV.F-3

## MWD Supply and Demand (Acre-Feet/Year)

Scenario	2010	2015	2020	2025	2030
<i>Multiple Dry Year</i>					
Supply	2,619,000	2,834,000	2,841,000	2,827,000	2,827,000
Demand	2,376,000	2,389,000	2,317,000	2,454,000	2,587,000
<b>Surplus (Supply less Demand)</b>	<b>243,000</b>	<b>445,000</b>	<b>524,000</b>	<b>373,000</b>	<b>240,000</b>
<i>Single Dry Year</i>					
Supply	3,151,000	3,356,000	3,309,000	3,252,000	3,203,000
Demand	3,320,000	2,196,000	2,229,000	2,358,000	2,487,000
<b>Surplus (Supply less Demand)</b>	<b>831,000</b>	<b>1,160,000</b>	<b>1,080,000</b>	<b>894,000</b>	<b>716,000</b>
<i>Average Year</i>					
Supply	2,668,000	2,600,000	2,654,000	2,654,000	2,654,000
Demand	2,036,000	1,947,000	1,983,000	2,110,000	2,246,000
<b>Surplus (Supply less Demand)</b>	<b>632,000</b>	<b>653,000</b>	<b>671,000</b>	<b>544,000</b>	<b>408,000</b>

*Demand represents FIRM demand, defined as full service demands (Tier I and Tier II) plus 70% of the Interim Agricultural Water Program.*

*Source: Metropolitan Water District Regional UWMP, November 2005, Tables II-7, II-8, and II-9.*

MWD diverts water from the Colorado River at Lake Havasu on the California/Arizona border and conveys it across the Mojave Desert via the agency's Colorado River Aqueduct to Lake Mathews near Riverside. From there, MWD pumps the water into its feeder pipeline distribution system for delivery to its member agencies throughout Southern California.

The MWD anticipates that its apportionment of 550,000 AF of Colorado River water will be available during all year types, including wet, average, single dry-year, and multiple dry-year weather conditions for the next 20 years.<sup>7</sup> However, current challenges facing MWD's Colorado River supply include risk of continued drought in the Colorado River Basin and pending litigation that may threaten implementation of part or all of the QSA. In anticipation of these possible events, MWD has been preparing responses to these challenges, which are described in detail below.

<sup>7</sup> *Blueprint Report at B-6.*

The Colorado River Basin has experienced below-normal runoff for the past eight years. During 2006, Lake Mead was at its lowest level in 41 years.<sup>8</sup> A Draft Environmental Impact Statement on Lower Basin Shortage Guidelines and Coordinated Management Strategies for Lake Powell and Lake Mead, Particularly Under Lower Reservoir Conditions was released by the U.S. Bureau of Reclamation, which operates the Colorado River reservoirs, in February 2007.<sup>9</sup> That study analyzed various alternatives to manage the Colorado River in light of the current extended dry period for enhanced reliability in water allocations for all the users of the Colorado River, including MWD. For example, one of the alternatives would introduce new operating and accounting procedures to address the ability of MWD and others to store water in Lake Mead.<sup>10</sup> Despite the challenges of recent Colorado River Basin hydrology, MWD “does not anticipate adverse water supply impacts resulting from the implementation of [the] shortage guidelines because California’s 4.4 million acre-foot apportionment has a higher priority than a portion of Arizona and Nevada’s apportionments during shortage conditions.”<sup>11</sup>

Additional programs that will help to implement the QSA and meet Colorado River water supply targets, which are currently in operation, are close to completion, or in progress include: the Imperial Irrigation District (IID) and MWD water conservation and transfer program; the Coachella and All-American Canal lining projects; the IID and San Diego County Water Authority (SDCWA) water transfer; the Palo Verde Irrigation District land management and crop rotation program; and the Interim Surplus Guidelines adopted by the U.S. Secretary of the Interior.<sup>12</sup> MWD is actively working to implement several of these QSA-related programs. In addition, MWD is participating in the Intentional Created Surplus program to store water in Lake Mead for withdrawal during dry years. During 2006 and 2007, MWD stored 50,000 AF of water in Lake Mead that it had saved under the Palo Verde Irrigation District Land Management and Crop Rotation Program.<sup>13</sup> Collectively, these programs are expected to maintain the reliability of MWD’s Colorado River supplies.

MWD’s 550,000 AFY apportionment of Colorado River water has been delivered to MWD every year since 1939, in all hydrologic year types.<sup>14</sup> By existing contract, this supply “will continue to be available in perpetuity” due to California’s senior rights on the Colorado

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<sup>8</sup> *Metropolitan Water District of Southern California, 2006 Integrated Water Resources Plan Implementation Report at 12 (October 10, 2006).*

<sup>9</sup> *Id.*

<sup>10</sup> *Id at 13.*

<sup>11</sup> *Id.*

<sup>12</sup> *Id. See also 66 Fed. Reg. 7772-7782 (January 25, 2001).*

<sup>13</sup> *Id.*

<sup>14</sup> *MWD’s 2005 UWMP at A.3-2.*

River.<sup>15</sup> MWD has affirmed that "[t]he historical record for available Colorado River water indicates that Metropolitan's fourth priority supply has been available in every year and can reasonably be expected to be available over the next 20 years."<sup>16</sup> Thus, according to MWD, its Colorado River supply is secure through at least 2025. Pursuant to the analysis in more recent MWD assessments of its water supplies and this analysis, there are no substantial challenges that are currently predicted to arise between 2025 and 2030. Therefore, the same reliability that MWD declared through 2025 is also applicable through at least 2030.

The second challenge to MWD's Colorado River supplies is the pending litigation concerning the QSA and related agreements. That litigation has taken two forms: (1) a series of lawsuits against the lining of the All-American Canal; and (2) a series of lawsuits which challenge the IID/SDCWA transfer. The All-American Canal litigation has been litigated and resolved in favor of the QSA parties, thus increasing the certainty of MWD's Colorado River supplies since the publication of the Blueprint Report.<sup>17</sup>

Several lawsuits against the IID/SDCWA transfer were brought by the County of Imperial, various landowners within IID and environmental advocacy groups, and have been consolidated in Sacramento County Superior Court. In two of those lawsuits, the County of Imperial sued the State Water Resources Control Board (SWRCB), IID and SDCWA regarding the legitimacy of the QSA approvals. In November 2004, the Superior Court dismissed those cases with prejudice on the ground that the County had failed to name MWD and the Coachella Valley Water District as necessary and indispensable parties to the actions on a timely basis. The County appealed that decision and the Court of Appeal affirmed the dismissal in 2007, which lifted a stay on the other QSA cases.<sup>18</sup> In addition, several demurrers have been filed and sustained in the consolidated cases, reducing the number of causes of action pending in the litigation.<sup>19</sup> As of the date of this document, the water transfer challengers' motions for preliminary injunction have been denied and thus, the parties are free to implement the provisions of the QSA, as appropriate. The full cases are expected to reach the court for decision during 2009.

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<sup>15</sup> *Id.*

<sup>16</sup> *Id.*

<sup>17</sup> *On April 6, 2007, the U.S. Court of Appeals for the Ninth Circuit dismissed the challenge to the lining of the All-American Canal and lifted the court-imposed injunction that for a period of time halted construction. The ruling allowed IID to commence work on the project to conserve water lost by seepage from the existing earthen canal. See Consejo de Desarrollo Economico de Mexicali, A.C. v. United States, 482 F.3d 1157 (2007).*

<sup>18</sup> *County of Imperial v. Superior Court, 152 Cal.App.4th 13 (2007).*

<sup>19</sup> *October 10, 2007 Order by Judge Candee in Imperial Irrigation District v. All Persons Interested in Any of the Following Contracts, Imperial County Case No. ECU01649 (Sacramento County Case No. 04CS00875) filed November 5, 2003.*

While all significant issues in the QSA litigations have been resolved in favor of MWD and the other QSA parties to date, including the entire All-American Canal case, it is impossible to predict with absolute certainty how the remaining litigation will be resolved. However, MWD is actively involved in the litigation and plans to defend the QSA fully to prevent any impacts to its Colorado River supplies.

### **(ii) State Water Project**

MWD has contracted with DWR for approximately 46 percent of its contracted Table A amount of 1,911,500 AFY from the SWP. This supply is diverted from the Feather River at Lake Oroville, released and conveyed through the Sacramento-San Joaquin River Delta (Delta), and rediverted at the Harvey O. Banks Delta Pumping Plant for conveyance through the California Aqueduct to Southern California and MWD. MWD estimated the availability of SWP supplies in its Blueprint Report, stating that “according to the historical record of hydrologic conditions, existing system capabilities, requests of the state water contractors and SWP contract provisions for allocating Table A, Article 21 and other SWP deliveries to each contractor.” As such, the MWD estimated in the Blueprint Report that in 2025, it will have 794,700 AF available in multiple dry years, 418,000 AF in a single dry year, 1,523,300 AF in an average year and 1,741,000 AF in a wet year. Challenges to this water supply include environmental litigation concerning the Delta due to water quality and environmental issues that can affect pumping operations and the potential for levee failure. Actions being taken by DWR and MWD to avoid or mitigate these risks are described below.

In 2007, two courts ruled that the SWP and the Central Valley Project (CVP) were violating State and federal environmental laws regarding a threatened fish species, the Delta smelt. First, the Alameda County Superior Court concluded that the SWP had failed to obtain a permit required under the California Endangered Species Act (CESA) that would provide protections for Delta smelt, salmon and steelhead from the effects of water pumping for activities at the Harvey O. Banks Delta Pumping Plant located in Tracy, California. The court ordered the SWP pumps to be turned off unless appropriate permits were obtained within 60 days. DWR appealed that decision, automatically staying the decision pending the outcome of the appeal. Regardless, DWR shut down the Harvey O. Banks Delta Pumping Plant from May 31 to June 10, 2007, to protect the Delta smelt. DWR resumed pumping on June 10, 2007, and pumping has remained at normal operating levels.

In May 2007, the U.S. District Court ruled that a federal Endangered Species Act (ESA) take permit that had been issued to protect Delta smelt at both the SWP pumps and the federal Jones Pumping Plant was not legally sufficient. At issue was a 2005 biological opinion (“BiOp”) that was issued by the U.S. Fish and Wildlife Service (USFWS) pursuant to the ESA, which concluded that current project operations and certain planned future actions would not jeopardize the continued existence of the Delta smelt or adversely modify its critical habitat based on

certain actions being taken by the CVP and SWP. The court found that the BiOp was legally inadequate because it did not provide a reasonable degree of certainty that mitigation measures would take place, use the best available science, address climate change, or address the impacts of joint project operations on the continued survival of the Delta smelt. In anticipation of the court decision, the SWP and CVP water agencies requested a new permit in consultation with USFWS. On August 31, 2007, the court issued an interim oral decision that allowed the SWP and CVP to continue operating under the prior take permit as long as they complied with a USFWS-proposed five-point action matrix, as modified slightly, plus certain increased monitoring plans requested by the plaintiffs and other actions. In December 2008, a new BiOp was issued by the USFWS, which is currently under review by the MWD to determine the potential impacts on its future available supplies.

The Chief of the SWP Operations Planning Branch has stated that it is anticipated that in an average year, when combined deliveries of the CVP and SWP would be 5.9 million AF, reductions in deliveries due to compliance with the USFWS matrix will range from 820,000 to 2.17 million AF, which represent 14 and 37 percent of baseline deliveries, respectively. In a dry year, when combined deliveries would be 3.2 million AF, reductions will range from 183,000 to 814,000 AF, which represent reductions from baseline deliveries of 6 and 25 percent, respectively. However, the modifications to the USFWS matrix will increase the delivery reductions by a slightly greater amount than the figures provided above.

The U.S District's Court ruling will impact diversions from December 25, 2007 until MWD determines the potential impacts of the new USFWS BiOp issued in December 2008. However, it should be expected that the USFWS will include similar restrictions in the final BiOp to those that were in its action matrix. Thus, the SWP and CVP will likely see long-term reductions in deliveries based on this litigation. Among other results, the decision likely will increase the political pressure for construction of the Peripheral Canal to avoid use of the south Delta pumping plants. In response to this decision and other water supply and quality issues, MWD has reported that "[i]n the short and long-term, continued investment in regional and local resources will help ensure and diversify reliable water supplies to meet Southern California's future needs." MWD has embarked on many proactive programs to deal with potential future delivery restrictions, should they occur.

MWD is one of the parties that are drafting the Bay-Delta Conservation Plan (BDCP), which allows water contractors, who must comply with the federal and State ESAs, to work cooperatively to attain incidental take coverage via a habitat conservation plan and natural community conservation plan. A draft report has been prepared and the appropriate permits and completion of an environmental impact statement/impact report is anticipated by late 2009.

The MWD has also engaged in a voluntary Central Valley storage and transfer program to bank MWD's SWP water supplies. MWD reported in its 2006 Integrated Water Resources

Plan Implementation Report, that “492,000 AF of dry-year yield has been developed in Central Valley storage and transfer programs,” and “[p]otential partners and programs have been identified to meet IRP targets.” This program will provide MWD with the flexibility to address shortages due to drought or court-imposed cutbacks to protect Delta smelt. In addition, MWD has employed conjunctive use programs which utilize groundwater basins to store water during wet seasons, in order to provide a buffer supply that MWD can extract during dry periods. In 2006, MWD developed groundwater storage capable of providing 135,000 AF of dry year supply and the MWD continues to seek additional opportunities to expand groundwater conjunctive use storage programs in Southern California.

Delta Levees. The State is preparing a plan to protect the Delta in the event of a levee failure that would potentially impact SWP supplies. At the recommendation of CALFED, an interagency effort began a two-year Delta Risk Management Study (DRMS) to analyze risks to the levee system in the spring of 2006. The interagency effort, which includes 23 State and federal agencies that have management or regulatory responsibility for the Delta, initiated Stage I analysis that includes a discussion of the region’s assets, existing problems with the system, the degree of risk that exists and the potential consequences of multiple levee failures. The Stage II analysis addresses levee risk reductions.

Ultimately, the DRMS reports became a part of the Delta Vision Report, which was finalized for submission to the State Legislature and Governor in January 2008. The next step of the interagency effort is to begin studying long-term strategic solutions for the conflicts in the Delta. That process assesses alternative implementing measures and management practices to implement the Delta Vision recommendations. The final recommendations will include modifications to existing land uses and services in the Delta and will assess governance, funding mechanisms, water resource uses, and ecosystem management practices. It should be noted that in response to concerns over the integrity of the levee system, the State significantly increased the budget for levee repairs in 2006, and a \$5.4 billion natural resources bond was approved by voters in November 2006 (Proposition 84), which assigns additional funds for flood control in the Delta and to plan for future water supplies.

In conclusion, a review of MWD’s resource development programs demonstrates that although SWP supplies are facing challenges and may become more expensive based on the cost of ultimately adopted solutions, MWD’s adaptive planning framework (conservation, in-region surface water storage, groundwater storage programs, and local water production within the MWD service area) will allow MWD to adapt to changing conditions and ensure a reliable, diverse water supply to its members agencies that supply water to municipal customers. Specifically, MWD has worked for the past 10 years to increase the capacity of its reservoirs and its overall water reserve is several times larger than it was during the 1991-1992 drought. In addition, actions that are being taken by the CALFED process and the State should enhance reliability of the SWP supplies in the future.

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## Water Management Plans

MWD also has several programs that address its overall supply reliability including preparation of a Water Surplus and Drought Management Plan, Drought Allocation Plan, Integrated Resources Plan, and a Five-Year Supply Plan. Each of these plans is described in detail below.

Water Surplus and Drought Management Plan (WSDM). The WSDM provides policy guidance to manage MWD's supplies and achieve the goals laid out in the agency's Integrated Resources Plan (refer to discussion below). The WSDM also "identifies the expected sequence of resource management actions that [MWD] will execute during surpluses and shortages to minimize the probability of severe shortages and eliminate the possibility of extreme shortages and shortages allocations." MWD's ten-year WSDM categorizes its ability to deliver water to its customers by distinguishing between surpluses, shortages, severe shortages, and extreme shortages, which reflects MWD's belief that these actions are interrelated.

MWD's regional storage facilities (Lake Skinner, Lake Mathews, and Diamond Valley Lake), along with storage capacity available to MWD in Castaic Lake and Lake Perris, provide MWD with flexibility in managing its supplies. MWD's storage supplies and existing management practices allow MWD to mitigate shortages without having to impact retail municipal and industrial demands, except in severe or extreme shortages.

As specified in MWD's 2005 UWMP, the MWD is expected to meet demands in single dry years by water supply source. Specifically, in 2010 MWD expects to have 831,000 AF in potential reserve and replenishment supplies, primarily through in-basin storage and in 2030, MWD estimates that it will have 716,000 AF in potential reserve and replenishment supplies. Therefore, the WSDM explains that, "Each [shortage] stage is associated with specific resource management actions designed to (1) avoid an Extreme Shortage to the maximum extent possible and (2) minimize adverse impacts to retail customers if an Extreme Shortage occurs" and concludes that the "overriding goal of the WSDM Plan is to never reach Shortage Stage 7, an Extreme Shortage."

In an actual shortage, MWD will take one or more of the following actions: (1) draw on storage out of reservoirs; (2) draw on out-of-region storage in the Semitropic and Arvin-Edison groundwater banks; (3) reduce or suspend long-term seasonal and groundwater replenishment deliveries; (4) draw on groundwater storage programs; (5) draw on SWP terminal reservoir storage; (6) reduce Interruptible Agricultural Water Program (IAWP) deliveries; (7) call on water transfer options contracts; (8) purchase additional water; and (9) reduce imported supplies to its members agencies by an allocation method. MWD clarifies that this list is not in any particular order, "although it is clear that the last action [taken] will be the curtailment of firm deliveries to

the member agencies.” If MWD were obligated to curtail firm deliveries, it would enforce these shortage allocations using rate surcharges. For example, if deliveries exceed 102 percent of a customer’s allotment, the customer will be assessed a surcharge.

Prior to the start of calendar year 2007, MWD estimated that water demands would exceed annual supplies (not including stored water) by approximately 300,000 AF. In response, MWD took the following actions: (1) called for water stored in its Central Valley storage programs; (2) initiated replenishment cuts and notified participating agencies with in-basin groundwater storage programs; (3) embarked on a public outreach and media conservation campaign; and (4) announced reductions in IAWP agricultural supplies.<sup>20</sup>

In 2008, MWD implemented a strategic approach regarding its WSDM Plan. Besides exercising interruptions to the IAWP, MWD’s major strategies were as follows:

- Continue conservation campaign;
- Maximize recovery of water from Central Valley storage and banking programs;
- Purchase additional supplies to augment existing supplies; and
- Develop and implement a shortage allocation plan.

Drought Allocation Plan. MWD is presently developing a long-term Drought Allocation Plan that may include reductions of full service deliveries. MWD has used several of these types of initiatives in the past (e.g., during the droughts of 1977-78 and 1989-92), which allowed the agency to meet the needs of its member agencies. Past experience demonstrates that MWD has always provided its members agencies with sufficient supplies in the face of variable weather conditions, new environmental and water quality regulations, and evolving political and legal challenges.

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<sup>20</sup> *Regarding reductions in agricultural water deliveries, before MWD imposes any restrictions on the PWP’s Tier 1 water, it will reduce deliveries of discounted agricultural supplies. In 1994, MWD established the IAWP to deliver surplus water for irrigation purposes at a reduced rate that is more affordable for certain sectors of the agricultural industry. In exchange for the discounted rate, the MWD General Manager has the authority to reduce IAWP deliveries up to 30 percent before it imposes mandatory allocations to municipal and industrial retail customers under its WSDM.*

*Due to dry conditions and the pending Delta smelt litigation in 2007 that may affect MWD’s supplies, MWD will implement the water shortage actions which it outlined in its WSDM, which include a 30 percent reduction in IAWP deliveries. On October 9, 2007, MWD’s Board of Directors announced that it will reduce IAWP deliveries over a 12-month calendar year beginning in January 2008. At this time, MWD has stated that it will not reduce water purchased by its member agencies at the full service rate. PWP’s supplies are currently secure as it purchases non-discounted non-interruptible supplies from MWD.*

Integrated Resources Plan. MWD's original Integrated Resources Plan (IRP) was adopted in 1996 however; the most recent IRP was adopted in 2004. The IRP discusses local water supply initiatives (e.g., local groundwater conjunctive use programs) and establishes a buffer supply to mitigate against the risks associated with implementation of local and imported water supply programs. The 2004 IRP notes that future water supply reliability depends not only upon actions by MWD to secure reliable imported supplies, but also further development of local projects by local agencies.

Subsequently, MWD has released its 2006 Integrated Water Resources Plan Implementation Report (2006 Implementation Report) regarding progress towards implementing the goals of the 2004 IRP Update. The 2006 Implementation Report included a summary of each of MWD's water resource development categories: (1) conservation; (2) local resources; (3) Colorado River Aqueduct; (4) SWP supplies; (5) Central Valley storage and transfer programs; (6) in-region groundwater conjunctive use storage; and (7) in-region surface water storage. This recent report concluded that "while changes occur in all resource areas, Metropolitan is able to maintain supply reliability through its diversified water resources portfolio." In order to support this conclusion, MWD provided detailed updates for each of its resource categories, restating dry-year IRP targets and examining current considerations, changed conditions, implementation strategies and identified programs, implementation challenges and cost information. A brief summary of each of MWD's water resource development categories (other than the Colorado River and SWP supplies, which were discussed in detail in previous sections of this WSA) is provided below.

- **Conservation:** In 2006, MWD invested \$10.6 million in conservation programs and initiatives, including executing a 10-year residential master conservation funding agreement with member agencies, encouraging the use of high-efficiency toilets, strengthening outdoor conservation programs, and introducing new Industrial Process Improvement programs. In 2005 and 2006, MWD programs conserved approximately 762,000 AF, which was an increase of approximately 30,000 AF over the previous fiscal year. MWD's 2010 target for conservation savings is 865,000 AF.
- **Local Resources—Recycling, Groundwater Recovery and Seawater Desalination:** MWD has invested \$213 million with its member agencies to develop local resource programs. MWD contributed approximately \$24.5 million toward the production of 127,000 AF of local resource production supplies in 2006, which is an increase of 16,000 AF from 2005. MWD's 2010 target for regional water recycling and groundwater recovery is 410,000 AF. In addition, three desalination project agreements have been signed.
- **Central Valley Storage and Transfer Programs:** MWD has developed significant water storage and transfer program partnerships in the Central Valley and has

witnessed increased cooperation with DWR and federal agencies to facilitate water transfers. MWD continues to pursue transfers with Central Valley parties and has worked to improve existing storage programs with existing SWP storage partners. For 2008, MWD is currently seeking to acquire up to 250,000 AF by temporary transfer from the Central Valley.

- *In-Region Groundwater Storage:* The 2006 Implementation Report identified that components of MWD's in-region groundwater storage program may not meet its 2010 dry-yield target of 275,000 AF. As of October 2006, groundwater storage had been developed to provide about 135,000 AF. As a result, MWD conducted a groundwater basin assessment to explore other groundwater storage opportunities. MWD's recent Groundwater Basin Assessment Study provided new information to focus on meeting this goal and will continue to develop new strategies for groundwater storage.

By amending existing strategies, MWD has made significant progress in most resource areas toward meeting the IRP targets as described in MWD's 2007 Implementation Report. In fiscal year 2006-2007, MWD saved approximately 812,000 AF through conservation efforts and is expected to meet its 2010 target. Local resource production is expected to exceed the 2010 target of 426,000 AF based on current production and expansion of existing programs. Existing supplies in Central Valley storage programs are also expected to exceed the 2010 target of 300,000 AF. In addition, as described above, while in-region groundwater storage programs are currently falling short of MWD's 2010 IRP target, MWD is actively working to find new ways to meet this goal and the success of other programs, such as Central Valley storage, which can avoid any negative impacts from failure to meet this single goal. For example, MWD has already exceeded its 2010 IRP target for dry-year surface water storage. Therefore, while SWP supplies are not projected to meet the 2010 or longer-term targets, MWD is actively seeking to resolve the risks associated with that supply.<sup>21</sup>

Five-Year Supply Plan. The Five-Year Supply Plan was initiated in response to a number of extraordinary events including regulatory actions that reduced water supplies from the SWP to protect Delta smelt and record-dry hydrology that will result in approximately 1.1 million acre-feet of withdrawals from Metropolitan storage from January 2007 through December 2008. Therefore, as of April 2008, staff has been working with the member agencies through a series of meetings and workshops to develop a Five-Year Supply Plan, which identifies the specific resource and conservation actions that would be implemented over the next

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<sup>21</sup> *It should be noted that MWD is in the process of updating the 2004 IRP for release in 2009. The updated IRP will address existing and new challenges, such as the Delta smelt litigation and climate change. As can be seen by these ongoing studies, MWD is continually updating its plans to meet ever-changing challenges to its water supplies.*

five years to manage water deliveries under continued drought conditions and court ordered restrictions.

The Five-Year Supply Plan includes a number of various programs to enhance supplies through conservation, Colorado River transactions, near term Delta actions, SWP transactions, groundwater recovery, and local resource enhancement programs. There are numerous specific projects and transactions that have been identified as potential resource options for the next five years. These programs are anticipated to result in an additional 519,000 AFY to 1,255,500 AFY in 2009, with additional increases beyond 2009 as some improvements would require more than one year to become operational.

### **Summary of MWD Water Supply Reliability**

In conclusion, MWD has engaged in significant water supply projection and planning efforts. As noted above, those efforts have included the water demands of the City's service area as projected in the 2005 UWMP projections. In its 2003 Blueprint Report and 2005 Regional UWMP, MWD has consistently found that its existing water supplies, when managed according to its water resource plans (such as the WSDM and IRP), are and will be 100 percent reliable for at least a 20-year planning period. Since publication of those reports, MWD has continued to implement its water supply programs identified in its 2006 and 2007 Implementation Reports.<sup>22</sup> Although water supply conditions are always subject to uncertainties, MWD has maintained its supply reliability in the face of such uncertainties in the past and is actively managing its supplies to ensure the same 100 percent reliability for the future.

#### **(c) Global Warming and Climate Change**

While climate change is a growing concern that should be considered by PWP, at this time it is difficult to determine what the impacts of climate change are or will be to either PWP's local or imported supplies. Therefore, there are no quantified impacts to supply or demand provided in this analysis. However, this section is included since climate change is an important factor and that although not currently quantifiable, the potential for impacts to supply and demand need to be factored into PWP resource planning.

State and several regional/local agencies have begun trying to determine the impact of climate change on California's water supplies. The DWR report on climate change and effects on the SWP, the Central Valley Project, and the Sacramento-San Joaquin Delta concludes that "[c]limate change will likely have a significant effect on California's future water resources . . .

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<sup>22</sup> *The 2007 IRP was published on October 9, 2007*

[and] future water demand.” It also reports that “much uncertainty about future water demand [remains], especially [for] those aspects of future demand that will be directly affected by climate change and warming. While climate change is expected to continue through at least the end of this century, the magnitude and, in some cases, the nature of future changes is uncertain.”

In addition, the DWR and the California Climate Change Center (CCCC) both looked at impacts of climate change on California’s water system but used different modeling approaches. Both models did seem to agree that temperature will increase but the magnitude of precipitation changes will vary considerably. These analyses have provided no conclusive evidence on changes in frequency and magnitude of droughts. Through these efforts, there will be a lightly better understanding of the potential regional level impacts which will impact the SWP system that supplies PWP through MWD.

More small scale impacts that would affect PWP’s local supplies are almost impossible to estimate at this time. It is however, important to keep in mind that there is a potential for significant impacts to longer-term supplies and some consideration of this potential needs to be incorporated in any future resources planning and decision. Water agencies are planning for future changes with varying approaches. Some agencies use adaptation as a solution, while others are developing future climate scenarios via stochastic modeling and using them to evaluate impacts.

In summary, while climate change is expected to continue through at least the end of this century, the magnitude and nature of future changes are uncertain. This uncertainty serves to complicate the analysis of future water demand, especially where the relationship between climate change and its potential effect on water demand is not well understood. Based on this information, the project has determined that global climate changes and their potential effects on California’s water supply are too speculative at this time for further evaluation. For further discussion on the effects of global climate change, please refer to Section IV.A, Air Quality.

### **3. ENVIRONMENTAL IMPACTS**

#### **a. Methodology**

The analysis of potential impacts to water resources was based on the increase in demand resulting from the proposed Project relative to the ability of the PWP to provide the required water for the Project.

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**b. Threshold of Significance**

Appendix G of the CEQA Guidelines provides a checklist of questions to assist in determining whether a project would have a significant impact related to various environmental issues including water supplies. According to the CEQA Guidelines, implementation of the proposed Project may have a significant adverse impact on water supply if it would:

- Fail to have sufficient water supplies available to serve the project from existing entitlements and resources, or if new or expanding entitlements are needed.

In addition, the City has two water conservation goals related to the Urban Environmental Accords and the Governor's 20 percent by 2020 reduction. The City seeks to reduce potable water consumption by 10 percent by the year 2015 and to further decrease consumption by an additional five percent by the year 2020 consistent with the Governor's 20 percent by 2020 reduction. Therefore, a project is required to conserve a minimum of 20 percent on potable water to be considered less than significant.

**c. Project Features**

The Project would incorporate active water conservation measures, including, but not limited to; low flush toilets, dual flush toilet/urinal controls, time-control sink faucets, drip irrigation systems for all landscape areas with a master environmental control system, roof storm water runoff filtered through selected planters to provide plant irrigation prior to entering the storm water runoff system, detention basin/rock pocket infiltration systems, low water use landscape materials with heavy surface mulch to reduce evaporation, recycled water in decorative water features, and maintenance specifications that require low water use, including a motorized brush machine for regular cleaning of the exterior plaza, courtyard and parking garage (no hose off allowed).

**d. Analysis of Project Impacts**

As shown in Table IV.F-4 on page IV.F-27, existing on-site uses currently generate approximately 9,536 gallons per day (gpd) of wastewater. Assuming that wastewater accounts for 75 percent of total water demand, the existing on-site uses have a water demand of 12,715 gpd. Assuming that the existing on-site uses operate 355 days per year, the yearly water demand would be 4,513,825 gallons per year or 13.9 AFY.

The proposed office use is anticipated to generate approximately 16,980 gpd of wastewater or a demand of 22,640 gallons of water per day. Assuming that the proposed office uses operate 252 days per year, the yearly water demand would be 5,705,280 gallons per year or

Table IV.F-4

## Project Water Demand

Use	Square Feet	Wastewater Generation Factor <sup>a</sup>	Total Wastewater
<u>Existing Conditions</u>			
Massage Parlor	1,360 gr. sf	275 gallons/day/1000 gr. sf.	374 gpd <sup>b</sup>
Restaurant (Full Service)	215 seats <sup>c</sup>	30 gallons/day/seat	6,450 gpd
Auto Body Shop	3,390 gr. sf.	800 gallons/day/1,000 gr. sf.	<u>2,712 gpd</u>
		<i>Subtotal</i>	<i>9,536 gpd</i>

**Assumption: wastewater = 75% of water demand. Thus, existing water demand = 12,715 gpd**

Proposed Project

Office	113,200 gr. sf.	150 gal/day/1,000 gr. sf.	16,980 gpd
<b>Net Increase in Wastewater w/Project</b>			<b>7,444 gpd</b>

**Assumption: wastewater = 75% of water demand. Thus, project water demand = 22,640 gpd**

**Net increase in water demand = 22,640 gpd - 12,715 gpd = 9,925 gpd**

<sup>a</sup> Generation factors from L.A. CEQA Thresholds Guide, City of Los Angeles, 2006. Exhibit M.2-12, Sewage Generation Factors.

<sup>b</sup> gpd = gallons per day

<sup>c</sup> Assumes 150 Seats for Monty's restaurant and 65 Seats for Grandview Palace restaurant.

Source: PCR Services Corporation, November 2008.

17.5 AFY. Thus, the project would result in a net demand increase of approximately 3.6 AFY of water when compared to existing conditions.

The 3.6 AFY is representative of standard water consumption rates absent water conservation techniques. As indicated in the discussions earlier in this section, water supplies face challenges from drought, climate change, and pumping restrictions. Both MWD and the City include conservation as a portion of the future strategy to ensure that water supplies are maximized, while consumer demand is minimized. Based on the water supply and demand comparison presented in Table IV.F-4, the PWP would be able to supply the projected demand based on existing entitlements. However, the City of Pasadena requires that projects conserve at least 20 percent on potable water for water supply impacts to be considered less than significant. Therefore, mitigation measures have been prescribed to ensure that potentially significant impacts regarding water supply are reduced to a less than significant level.

#### 4. MITIGATION MEASURES

The City requires that projects conserve at least 20 percent on potable water to be considered less than significant. Therefore, the Water Efficiency Credit shall become a mitigation measure to ensure that on-site consumption is reduced by 20 percent.

**Mitigation Measure F-1:** The water usage of the proposed building to be retained shall be reduced by 20 percent, in accordance with section 14.90.050 of the Pasadena Municipal Code. In order to demonstrate this reduction, the Applicant ~~shall use Worksheet WS-1 and WS-2 from Chapter 11 of the California Green Building Standards Code (CGBC) entitled “Baseline Water Use” and “20% Reduction Water Use Calculation Table.”~~ Reductions to the project’s water usage shall be demonstrated to the Planning Division prior to building permit approvals. must submit a water-conservation plan for review and approval by the Planning Division. This plan is also subject to review and approval by the City’s Water and Power Department and the Building Division before the issuance of a building permit. The plan must demonstrate the ability to limit water consumption to 80 percent of its originally anticipated amount. The project’s irrigation and plumbing plans are also required to comply with the approved water-conservation plan. For this project, the original amount is 22,640 gallons/day and the required 20 percent reduction is 4,528 gallons/day. Plumbing permits required in order to complete this reduction shall be finalized prior to certificate of occupancy.

**Mitigation Measure F-2:** The Applicant shall submit a detailed landscape plan that proposes the planting of “California Friendly” plants and the use of high efficiency irrigation technology. Landscape and irrigation plans shall be submitted for review with each phase of the project and shall be reviewed by the Design Commission in combination with the building plans.

#### 5. CUMULATIVE IMPACTS

The proposed Project, in conjunction with planned and pending development, would create additional demand for water. However, as indicated earlier in this section and in tables IV.F-1 to IV.F-3, water supplies would be adequate over a 20-year planning horizon to serve projected development increases. It is noted that there may be periods when policies from local and regional plans to reduce water usage are implemented to offset reduced supplies during shortage periods. However, these conservation programs, in addition to plans and policies at the regional and local level and the development of additional diversified supplies, are part of the evolving strategy to continue meeting increasing water demands in the future. Provided that all

new developments implement measures to help meet the City's 20 percent conservation goal, the projects contribution to cumulative impacts after mitigation would not be considerable and cumulative impacts to water service would be less than significant.

## **6. LEVEL OF SIGNIFICANCE AFTER MITIGATION**

Implementation of Mitigation Measures F-1 and F-2 would result in a 20 percent reduction of water usage over normal baseline usage. These mitigation measures would achieve project consistency with the City's goal of increasing water conservation by 20 percent by 2020. Therefore, the Project's impact to water service would be less than significant with implementation of Mitigation Measures F-1 and F-2. Furthermore, as indicated in Table IV.F-3, future water supplies would be adequate to meet project demands through a 20-year planning horizon with implementation of conservation and groundwater recharge programs, both locally and regionally.