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ENGINEER'S REPORT

GROUNDWATER REPLENISHMENT AND ASSESSMENT PROGRAM FOR THE WHITEWATER RIVER, MISSION CREEK, AND GARNET HILL SUBBASINS

DESERT WATER AGENCY 2017/2018

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ABBREVIATIONS

2013-2014 Multi-Year Water Pool ..... MYWP
acre feet per year ..... AF/Yr
Applicable State Water Project Charges ..... Applicable SWP Charges
Bay Delta Conservation Plan ..... BDC
California Department of Water Resources ..... CDWR
Coachella Valley Water District ..... CVWD
degrees Fahrenheit ..... °F
Desert Water Agency ..... DWA
Metropolitan Water District of Southern California ..... MWD
Mission Creek/Garnet Hill Water Management Plan ..... MC/GH WMP
Mission Springs Water District ..... MSWD
Montgomery Watson Harza ..... MWH
Off-Aqueduct Power Component of the State Water Project Transportation Charge ..... Off-Aqueduct Power Charge
State Water Resources Control Board ..... SWRCB
State Water Project ..... SWP
United States Geological Survey ..... USGS
Variable OMP&R Component of the State Water Project Transportation Charge ..... Variable Transportation Charge

CHAPTER I
EXECUTIVE SUMMARY

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Since 1973, Coachella Valley Water District (CVWD) and Desert Water Agency (DWA) have been using Colorado River water exchanged for State Water Project (SWP) water to replenish groundwater in the Whitewater River Subbasin and Mission Creek Subbasin of the Coachella Valley Groundwater Basin.

Through the 2015/2016 Engineer's Reports, each subbasin within DWA's Area of Benefit was described in its own separate report. Beginning with the 2016/2017 Engineer's Report, all subbasins (Whitewater River, Mission Creek, and Garnet Hill Subbasins) have been included in a single report.

Groundwater production continues to exceed natural groundwater replenishment. If groundwater replenishment with imported water (artificial replenishment) is excluded, gross groundwater overdraft (defined herein as groundwater extractions or water production in excess of natural groundwater replenishment and/or recharge) within the Whitewater River, Mission Creek, and Garnet Hill Subbasins of the Coachella Valley Groundwater Basin (see **Figure 1**) would continue to increase at a steady rate. The five-year average gross overdraft (total net production minus net natural inflow) in the Upper Whitewater River Subbasin is currently estimated to be about 85,000 acre feet per year (AF/Yr), while gross overdraft in the Mission Creek Subbasin is currently estimated at about 6,600 AF/Yr. Supplementing natural groundwater recharge resulting from rainfall runoff with artificial replenishment using imported water supplies is therefore necessary to offset annual and cumulative gross overdraft.

Increases in cumulative overdraft, without artificial replenishment, will result in declining groundwater levels and increasing pump lifts, thereby increasing energy consumption for groundwater extraction. Extreme cumulative overdraft has the potential of causing ground surface settlement, and could also have an adverse impact upon groundwater quality and storage volume. Artificial replenishment offsets annual groundwater overdraft and the concerns associated therewith and arrests or reduces the effects of cumulative groundwater overdraft.

The Area of Benefit for DWA's portion of the groundwater replenishment program is that portion of the Whitewater River, Mission Creek, and Garnet Hill Subbasins and tributaries--including subbasins (San Gorgonio Pass Subbasin), rivers, or streams--which lie within the boundaries of DWA (**Figure 2**). The costs involved in carrying out DWA's groundwater replenishment program are essentially recovered through water replenishment assessments applied to all groundwater and surface water production within the Area of Benefit, aside from specifically exempted production. Desert Water Agency Law defines

production as "the extraction of groundwater by pumping or any other method within the boundaries of the agency, or the diversion within the agency of surface supplies which naturally replenish the groundwater supplies within the agency and are used therein." The Whitewater Water Management Agreement (2014) and Mission Creek Water Management Agreement (2014) referring to production that is assessable under the replenishment assessment program, further define *water production* as "water pumped or diverted from a Management Area and from sources tributary to the Management Area excluding minimal pumpers and pumpers or diverters exercising adjudicated water rights." Therefore, *production*, as used herein, is understood as either extraction of groundwater from the Whitewater River, Mission Creek, and Garnet Hill Subbasins and upstream tributaries, or diversion of surface water that would otherwise naturally replenish the subbasins and upstream tributaries (not including water diverted pursuant to adjudicated water rights), all within their respective Management Areas.

As a result of the implementation of the Mission Creek Groundwater Replenishment Agreement, dated April 8, 2003, between CVWD and DWA to replenish and jointly manage groundwater in the Mission Creek Subbasin, the Mission Springs Water District (MSWD) filed an action in the Superior Court of California challenging the replenishment assessments levied on MSWD groundwater extractions or production. The three parties settled the dispute as documented in a Settlement Agreement and Addendum in December 2004. The Settlement Agreement stipulated that the three parties would form the Mission Creek/Garnet Hill Subbasin Management Committee to collectively discuss water management in the Whitewater River, Mission Creek, and Garnet Hill Subbasins. The three parties also agreed to investigate whether the Garnet Hill Subbasin was in fact benefitting from the artificial recharge programs within the Whitewater River and Mission Creek Subbasins and to prepare a water management plan for the Mission Creek and Garnet Hill Subbasins (MC/GH WMP).

The MC/GH WMP determined that, since artificial recharge activities began, the Garnet Hill Subbasin has benefitted from artificial recharge in both the Whitewater River and Mission Creek Subbasins: the former by means of infiltration from the Whitewater River channel, from subsurface flow across the Garnet Hill Fault from the Whitewater River Subbasin into the upper and central portions of the Garnet Hill Subbasin, and by retardation of subsurface outflow from the lower portion of the Garnet Hill Subbasin during high groundwater levels resulting from recharge operations within the Whitewater River Spreading Basins; and the latter by means of subsurface flow across the Banning Fault from the Mission Creek Subbasin resulting from recharge operations within the Mission Creek Spreading Basins, as evidenced by the groundwater contours observed on either side of the Banning Fault.

The MC/GH WMP did not specifically quantify the recharge contributions to the Garnet Hill Subbasin from either the Whitewater River Subbasin or the Mission Creek Subbasin, and stated that hydrologic data for such a determination is currently lacking and, based on data available, it is unclear and uncertain as to the exact relative contribution from these sources to the replenishment of the Garnet Hill Subbasin. Regardless, the Garnet Hill Subbasin is dependent on both the Whitewater River Subbasin and the Mission Creek Subbasin for its groundwater replenishment, both natural and artificial.

The benefits resulting from artificial groundwater infiltration from the Whitewater River channel and subsurface flow of groundwater from the Mission Creek Subbasin and from the Whitewater River Subbasin is evidenced by the response observed by groundwater levels in wells within the Garnet Hill Subbasin. Historic groundwater levels within the Garnet Hill Subbasin and historic quantities of imported water delivered to the spreading grounds within the Whitewater River and Mission Creek Subbasins are shown in **Exhibit 3**. The rising groundwater levels correlate with the large quantities of groundwater recharge, particularly in those groundwater wells located in the westerly and central portions of the Garnet Hill Subbasin, especially for the periods 1983 through 1987, 1995 through 2000, and 2009 through 2012.

Since the Garnet Hill Subbasin benefits from CVWD's and DWA's recharge programs in the Whitewater River and Mission Creek Subbasins, CVWD and DWA have the authority to levy replenishment assessment charges on production within the Garnet Hill Subbasin under the provisions set forth in the Settlement Agreement.

The following producers are specifically exempted from assessment: producers extracting groundwater from all three subbasins and upstream tributaries at rates of 10 AF/Yr or less; and producers diverting surface water without diminishing stream flow and groundwater recharge of the subbasins and upstream tributaries by 10 AF/Yr or less.

Because groundwater production continues to exceed natural groundwater replenishment and cumulative groundwater overdraft persists within each subbasin, continued artificial replenishment in the Whitewater River and Mission Creek Subbasins is necessary to either eliminate or reduce the effects of cumulative overdraft, and to reduce the resultant threat to the groundwater supply. There are currently no artificial replenishment facilities within the Garnet Hill Subbasin.

DWA has requested its maximum 2017 Table A SWP water allocation of 55,750 AF pursuant to its SWP Contract, which was increased from 38,100 AF in 2004 to 50,000 AF in 2005 and to 55,750 in 2010, for the purpose of groundwater replenishment. CVWD plans to do the same with its maximum 2017 Table A water allocation, which was increased in quantity from 23,100 AF in 2003 to 33,000 AF in 2004, to 121,100 AF in 2005, and to 138,350 AF in 2010.

By virtue of the 2003 Exchange Agreement, The Metropolitan Water District of Southern California (MWD) assigned 11,900 AF of its annual Table A allocation to DWA and 88,100 AF of its annual Table A allocation to CVWD; however, MWD retained the option to call-back or recall the assigned annual Table A water allocations, in accordance with specific conditions, in any year. In implementing the 2003 Exchange Agreement, MWD advised CVWD and DWA that it would probably recall the 100,000 AF assigned to the two Coachella Valley agencies from 2005 through 2009. In fact, MWD did recall 100,000 AF in 2005 but has not recalled any water since then. According to communications with MWD management, it is unlikely that MWD will recall any water in 2017 or in future years.

According to current projections for 2017, California Department of Water Resources (CDWR) will deliver 85% of Table A water allocation requests, resulting in deliveries of 164,385 AF of Table A water to the Coachella Valley agencies (based on verbal notification from CDWR). DWA and CVWD have requested 375 AF and 1,500 AF, respectively, of SWP surplus water under Pool A of the Turn-Back Water Pool Program for 2017. As of March 1, 2017, they have been allocated 325 and 806 AF of Pool A water, respectively. As of March 20, 2017, one seller has offered up to 6,000 AF of Pool B water for 2017 at 100% allocation. DWA and CVWD have requested 334 AF and 1,000 AF of Pool B water, respectively. The actual quantity available will depend on the final Table A allocation, to be determined by June 1, 2017. It is likely that up to 1,242 AF Article 21 water will be available to DWA via MWD for 2017. Up to approximately 60,000 AF of water under the Yuba River Accord is estimated to be available for 2017, of which DWA and CVWD have requested 444 AF and 1,016 AF, respectively. 25,435 AF of Article 56 water carried over from 2016 and 16,776 AF of flexible storage pay-back has already been delivered to the agencies in 2017. In addition, CVWD is anticipated to receive up to approximately 44,500 AF of non-SWP water deliverable to the Whitewater River Replenishment Facility.

The maximum replenishment assessment rate permitted by Desert Water Agency Law for Table A water for the 2017/2018 fiscal year is $224.24/AF. The $224.24 rate is based on estimated Applicable SWP Charges of $9,397,722 (see **Table 5** for DWA applicable charges for 2017 and 2018) and estimated combined assessable production of 41,910 AF for the Whitewater River, Mission Creek, and Garnet Hill

Subbasins (estimated based on the production for 2013 minus 15% for implementation of permanent conservation measures: 33,050 AF within the Whitewater River Subbasin, 8,560 AF within the Mission Creek Subbasin, and 300 AF within the Garnet Hill Subbasin).

The effective replenishment assessment rate for Table A water is based on DWA's estimated Allocated SWP Charges for the current year (based on CDWR's projections for the assessment period) divided by the estimated assessable production for the assessment period, as set forth in **Table 6**. Historically, the estimated assessable production has been based on the assessable production for the previous year; however, the production during 2015 and 2016 was unusually low due to mandatory water conservation measures imposed as a result of the Governor's April 1, 2015 executive order mandating water restrictions on urban water use statewide, and demanding a 32% reduction in water use within DWA. Only a portion of the effects of these severe water restrictions are anticipated to be permanent; therefore, for 2016/2017, DWA elected to estimate assessable groundwater production based on the 2014 assessable groundwater production minus a factor of 10% to account for the effects of permanent water conservation measures. However, since the State urban water use restrictions were based on water usage in 2013 as a baseline, DWA has elected, for 2017/2018, to estimate assessable groundwater production based on the 2013 assessable groundwater production minus a factor of 15% to account for the effects of permanent water conservation measures.

For the 2012/2013 fiscal year, DWA's effective replenishment assessment rate was based on the actual payments made to the SWP by DWA for the previous calendar year divided by the assessable production for that calendar year. This change was made due to a history of variability in the estimated charge projections published by CDWR in Appendix B of Bulletin 132, which have occasionally diverged significantly from the amounts actually charged by CDWR. However, due to significant quantities of surplus and carryover water from 2011 delivered in 2012, DWA paid significantly higher SWP charges in 2012 than in 2011. It became clear that the variability in the actual payment of effective replenishment assessment rates was no less than the variability previously observed in CDWR's estimated charge projections. Therefore, beginning in 2013/2014, DWA's estimated effective replenishment assessment rate is based on CDWR's projected charges, since carryover and surplus water quantities cannot be projected.

Pursuant to the terms of the Water Management Agreement between CVWD and DWA, and based on DWA's allocated SWP charges amount of $6,639,110 and estimated assessable production of 41,910 AF for the 2017 calendar year (shown in **Table 6** as the estimated assessable production for the 2017/2018

fiscal year), the effective replenishment assessment rate component for Table A water is $158/AF for the 2017/2018 fiscal year.

During the Proposition 218 proceedings held in Fall 2016, DWA elected to adopt anticipated rate ranges for fiscal years 2017/2018 through 2020/2021, based on estimated projections of expenses and revenues at the time of adoption. Since rates are anticipated to increase sharply over the next several years and then stabilize, the rate ranges adopted for the transitional period of fiscal years 2017/2018 through 2019/2020 were calculated to incorporate a diminishing deficit, to be recovered in subsequent years. The rate range adopted for the 2017/2018 fiscal year was $110 to $130. DWA has elected to adopt a rate of $120 AF for FY 2017/2018, which is near the midpoint of the specified range.

At that rate, DWA's replenishment assessment for the entire Replenishment Program will be about $5,029,200, based on estimated assessable production of 41,910 AF (33,050 AF for the Whitewater River Subbasin, 8,560 AF for the Mission Creek Subbasin, and 300 AF for the Garnet Hill Subbasin). Accordingly, DWA will bill approximately $3,996,000 for the Whitewater River Subbasin, approximately $1,027,200 for the Mission Creek Subbasin, and approximately $36,000 for the Garnet Hill Subbasin.

Due to recent significant increases in the Delta Water Charge that could result in a large increase in the replenishment assessment rate, DWA elected last year to transfer the existing cumulative deficit in the Replenishment Assessment Account to reserve account(s), rather than continue to attempt to recover past deficits by future increases in the replenishment assessment rate. Deficits that result from the current and future assessments will be recovered by adding surcharges, as shown in the "Other Charges and Costs" column for each subbasin in **Table 7**.

It should be noted that there is currently no independent replenishment program for the Garnet Hill Subbasin. Assessment of the Garnet Hill Subbasin production began in the 2015/2016 fiscal year as a result of the MC/GH WMP findings that the Garnet Hill Subbasin benefits from artificial replenishment activities in the Whitewater River and Mission Creek Subbasins. The estimated assessable production for the 2017 calendar year is 300 AF, yielding $36,000 in replenishment assessments.

In summary, gross overdraft persists in the Coachella Valley Groundwater Basin even though groundwater levels have generally stabilized (cumulative gross overdraft offset by artificial replenishment is estimated to be approximately 847,000 AF in the Whitewater River Subbasin and 112,000 AF in the Mission Creek Subbasin); thus, there is a continuing need for groundwater replenishment. Even though

DWA has requested of CDWR its full SWP Table A allocation of 55,750 AF, CDWR currently expects to deliver 85% of this allocation during the coming year, and DWA has elected to adopt a groundwater replenishment assessment rate for 2017/2018 of $120.00/AF.

CHAPTER II
INTRODUCTION

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INTRODUCTION

A. THE COACHELLA VALLEY AND ITS GROUNDWATER

1. The Coachella Valley

The Coachella Valley is a desert valley in Riverside County, California. It extends approximately 45 miles southeast from the San Bernardino Mountains to the northern shore of the Salton Sea. Cities of the Coachella Valley include Cathedral City, Coachella, Desert Hot Springs, Indian Wells, Indio, La Quinta, Palm Desert, Palm Springs, and Rancho Mirage. The Coachella Valley is bordered on the north by Mount San Gorgonio of the San Bernardino Mountains, on the west by the San Jacinto and Santa Rosa Mountains, on the east by the Little San Bernardino Mountains, and on the south by the Salton Sea.

The Coachella Valley lies within the northwesterly portion of California's Colorado Desert, an extension of the Sonoran Desert. The San Bernardino, San Jacinto, and Santa Rosa Mountains provide an effective barrier against coastal storms, and greatly reduce the contribution of direct precipitation to replenish the Coachella Valley's groundwater basin, resulting in an arid climate. The bulk of natural groundwater replenishment comes from runoff from the adjacent mountains.

Climate in the Coachella Valley is characterized by low humidity, high summer temperatures, and mild dry winters. Average annual precipitation in the Coachella Valley varies from 4 inches on the Valley floor to more than 30 inches in the surrounding mountains. Most of the precipitation occurs during December through February (except for summer thundershowers). The low rainfall is inadequate to supply sufficient water supply for the valley, thus the need for the importation of Colorado River water. Precipitation data recorded at nine rain gauge stations in the Upper Coachella Valley by Riverside County Flood Control and Water Conservation District is included in **Appendix A**.

Prevailing winds in the area are usually gentle, but occasionally increase to velocities of 30 miles per hour or more. Midsummer temperatures commonly exceed 100 degrees Fahrenheit (°F), frequently reach 110°F, and periodically reach 120°F. The average winter temperature is approximately 60°F.

2. The Coachella Valley Groundwater Basin

The Coachella Valley Groundwater Basin, as described in CDWR Bulletins 108 and 118, is bounded on the north and east by non-water-bearing crystalline rocks of the San Bernardino and Little San Bernardino Mountains and on the south and west by the crystalline rocks of the Santa Rosa and San Jacinto Mountains. At the west end of the San Gorgonio Pass, between Beaumont and Banning, the basin boundary is defined by a surface drainage divide separating the Coachella Valley Groundwater Basin from the Beaumont Groundwater Basin of the Upper Santa Ana Drainage Area.

The southern boundary is formed primarily by the watershed of the Mecca Hills and by the northwest shoreline of the Salton Sea running between the Santa Rosa Mountains and Mortmar. Between the Salton Sea and Travertine Rock, at the base of the Santa Rosa Mountains, the lower boundary coincides with the Riverside/Imperial County Line.

Southerly of the southern boundary, at Mortmar and at Travertine Rock, the subsurface materials are predominantly fine grained and low in permeability; although groundwater is present, it is not readily extractable. A zone of transition exists at these boundaries; to the north the subsurface materials are coarser and more readily yield groundwater.

Although there is interflow of groundwater throughout the groundwater basin, fault barriers, constrictions in the basin profile, and areas of low permeability limit and control movement of groundwater. Based on these factors, the groundwater basin has been divided into subbasins and subareas as described by CDWR in 1964 and the United States Geological Survey (USGS) in 1971.

3. Subbasins and Subareas

The San Andreas Fault drives a complex pattern of branching fault lines within the Coachella Valley which define the boundaries of the subbasins that make up the Coachella Valley Groundwater Basin (CDWR 2003). There are five subbasins within the Coachella Valley Groundwater Basin: the Whitewater River, Mission Creek, San Gorgonio Pass, Desert Hot Springs, and Garnet Hill Subbasins (USGS 1974).

The subbasins, with their groundwater storage reservoirs, are defined without regard to water quantity or quality. They delineate areas underlain by formations which readily yield the stored water through water wells and offer natural reservoirs for the regulation of water supplies.

The boundaries between subbasins within the groundwater basin are generally defined by faults that serve as effective barriers to the lateral movement of groundwater. Minor subareas have also been delineated, based on one or more of the following geologic or hydrologic characteristics: type of water bearing formations, water quality, areas of confined groundwater, forebay areas, groundwater divides and surface drainage divides.

The following is a list of the subbasins and associated subareas, based on the CDWR and USGS designations:

- Mission Creek Subbasin (Subbasin 7-21.02 per CDWR Bulletin 118, 2003)
- Desert Hot Springs Subbasin (Subbasin 7-21.03 per CDWR Bulletin 118, 2003)
    - Miracle Hill Subarea
    - Sky Valley Subarea
    - Fargo Canyon Subarea
- Garnet Hill Subbasin (considered a subarea of the Indio Subbasin in CDWR Bulletin 118, 2013)
- San Gorgonio Pass Subbasin (Subbasin 7-21.04 per CDWR Bulletin 118, 2003)

- Whitewater River Subbasin (Subbasin 7-21.01 per CDWR Bulletin 118, 2003, referred to therein as the Indio Subbasin)
    - Palm Springs Subarea
    - Thermal Subarea
    - Thousand Palms Subarea
    - Oasis Subarea

DWA's groundwater replenishment program encompasses portions of four of the five subbasins (Whitewater River, Mission Creek, San Gorgonio Pass, and Garnet Hill). DWA's replenishment program does not include the Desert Hot Springs Subbasin. **Figure 2** illustrates the subbasin boundaries per the MC/GH WMP (Montgomery Watson Harza (MWH) 2003) and DWA's Areas of Benefit of the replenishment program.

B. THE GROUNDWATER REPLENISHMENT AND ASSESSMENT PROGRAM

DWA's Groundwater Replenishment and Assessment Program was established to augment groundwater supplies and arrest or retard declining water table conditions within the Coachella Valley Groundwater Basin, specifically within the Whitewater River, Mission Creek, and Garnet Hill Subbasins (see **Figure 1**).

1. Water Management Areas

Pursuant to the Water Management Agreements between CVWD and DWA, the Water Management Areas encompass the Palm Springs Subarea (westerly portion) of the Whitewater River Subbasin, a portion of the San Gorgonio Pass Subbasin, and the entire Mission Creek and Garnet Hill Subbasins (except three square miles in the painted hills area and a small portion that lies within San Bernardino County) within the Coachella Valley Groundwater Basin (see **Figure 1**).

2. Areas of Benefit

The Areas of Benefit for DWA's replenishment program consist of the northwesterly portion of the Coachella Valley Groundwater Basin including portions of the Whitewater River Subbasin, Mission Creek Subbasin, Garnet Hill Subbasin, and tributaries thereto, situated within DWA's service area boundary (see **Figure 2**). The Area of Benefit for CVWD's replenishment program consists of the portions of the east and west portion of the Whitewater River Subbasin, Mission Creek Subbasin, and Garnet Hill Subbasin within CVWD's boundary.

Within DWA's Area of Benefit, there are seven stream diversions on the Whitewater River and its tributaries, five by DWA (two on Chino Creek, one on Snow Creek, one on Falls Creek, and one by the former Whitewater Mutual Water Company, which has been acquired by DWA), one by the Wildlands Conservancy (formerly the Whitewater Trout Farm) which is used for conservation and educational purposes, and one by CVWD at the Whitewater River Spreading Basins the latter three being on the Whitewater River itself. There are no stream diversions within the Mission Creek or Garnet Hill Subbasins.

While the replenishment assessments outlined on the following pages are based on and limited to water production within DWA's Area of Benefit, available water supply, estimated water requirements, and groundwater replenishment are referenced herein to the entire Whitewater River (Palm Springs Subarea), Mission Creek, and Garnet Hill Subbasins. The Whitewater River, Mission Creek, and Garnet Hill Subbasins are replenished jointly by CVWD and DWA for water supply purposes, and the two agencies jointly manage the imported water supplies within said subbasins.

3. Water Management Agreements

The replenishment program was implemented pursuant to a joint Water Management Agreement for the Whitewater River Subbasin (executed July 1, 1976 and amended December 15, 1992 and July 15, 2014) between CVWD and DWA. Later, a similar program was implemented within the Mission Creek Subbasin pursuant to a similar joint Water Management Agreement (executed April 8, 2003 and amended July 15, 2014). Currently, there is no Water Management Agreement between CVWD and DWA

specifically for the Garnet Hill Subbasin because direct artificial groundwater replenishment has not been implemented within the subbasin. However, groundwater in the Garnet Hill Subbasin is managed under the provisions of the Whitewater River and Mission Creek Subbasin Water Management Agreements.

CVWD and DWA entered into a Settlement Agreement with MSWD in December 2004, which affirmed the water allocation procedure that had been established earlier by CVWD and DWA, and which established a Management Committee, consisting of the General Managers of CVWD, DWA, and MSWD, to review production and recharge activities. The Addendum to the Settlement Agreement states that the water available for recharge each year shall be divided among the management areas proportionate to the previous year's production from within each management area (see **Appendix B)**.

Conditions of the Settlement Agreement and Addendum between DWA, CVWD, and MSWD state that DWA and CVWD have the authority to levy replenishment assessments on water produced from subbasins of the Upper Coachella Valley Groundwater Basin within DWA and CVWD's Areas of Benefit, if found that recharge activities benefit those subbasins.

The Management Committee engaged MWH to prepare the MC/GH WMP, which was completed in January 2013. According to the MC/GH WMP, the Garnet Hill Subbasin benefits from the recharge activities in both the Mission Creek and Whitewater River Subbasin. It benefits from the recharge activities in the Mission Creek Subbasin via subsurface flow across the Banning Fault, and from the recharge activities in the Whitewater River Subbasin via: (a) infiltration from the Whitewater River channel, which carries imported water from the Colorado River Aqueduct to the spreading basins within the Whitewater River Subbasin, and (b) from subsurface flow across the Garnet Hill Fault at the northerly end of the Garnet Hill Subbasin during major recharge events that significantly raise the groundwater level in the vicinity of the Whitewater River Spreading Basins. Exact quantities of replenishment benefit from the Mission Creek and Whitewater River Subbasins to the Garnet Hill Subbasin cannot be ascertained at this time with currently available hydrologic data.

The Water Management Agreements call for maximum importation of SWP Contract Table A water allocations (formerly "entitlements") by CVWD and DWA for replenishment of groundwater basins or subbasins within defined Water Management Areas. The Agreement also requires collection of data necessary for sound management of water resources within these same Water Management Areas.

4. Groundwater Overdraft

CDWR Bulletin 160-09 (2009 California Water Plan Update) defines "Groundwater overdraft" as:

> *"...the condition of a groundwater basin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years, during which the water supply conditions approximate average conditions."*

According to CDWR Bulletin 118-80 (Groundwater Basins in California):

> *"Overdraft is characterized by groundwater levels that decline over a period of years and never fully recover, even in wet years. Overdraft can lead to increased extraction costs, land subsidence, water quality degradation, and environmental impacts."*

For purposes of this report, the term "gross overdraft" refers to groundwater extractions or water production in excess of natural groundwater replenishment or recharge, as an annual rate in AF/Yr, and "cumulative overdraft" refers to the cumulative gross overdraft in AF over the history of an aquifer.

The initial Water Management Agreement was developed following numerous investigations regarding the groundwater supply within the Coachella Valley; said investigations are addressed in DWA's previous reports (*Engineer's Report on Groundwater Replenishment and Assessment Program for the Whitewater River Subbasin* for the years 1978/1979 through 1983/1984). These investigations all concluded that gross overdraft (groundwater extractions or water production in excess of

natural groundwater replenishment and/or recharge) existed within the Coachella Valley Groundwater Basin and its subbasins.

5. Groundwater Replenishment

a. Summary

Since 1973, CVWD and DWA have been using Colorado River water exchanged for SWP water (Table A water allocations and supplemental water as available) to replenish groundwater in the Coachella Valley Groundwater Basin within the Whitewater River Subbasin (including a portion of the San Gorgonio Pass Subbasin), Mission Creek Subbasin, and Garnet Hill Subbasin Water Management Areas. The two agencies are permitted by law to replenish the groundwater basins and to levy and collect water replenishment assessments from any groundwater extractor or surface water diverter (aside from exempt producers) within their jurisdictions who benefits, such as those within the Garnet Hill Subbasin and San Gorgonio Pass Subbasin, from replenishment of groundwater.

b. History

DWA and CVWD completed construction of the Whitewater River Spreading Basins in 1973 and the Mission Creek Spreading Basins in 2002, and recharge activities commenced within each respective subbasin upon completion of the facilities. Annual recharge quantities are set forth in **Exhibit 9**.

From 1973 through 2016, CVWD and DWA have replenished the Whitewater River and Mission Creek Subbasins with approximately 3,086,034 AF (2,932,188 AF to Whitewater River Subbasin and 150,313 AF to Mission Creek Subbasin). Of this total, 2,863,385 AF consisted of exchange deliveries (Colorado River water exchanged for SWP water, including advance deliveries) and 2,782,975 AF consisted of exchange deliveries and advance deliveries converted to exchange deliveries, but excluding advance deliveries not yet converted to exchange deliveries. See **Exhibit 6**.

Between October 1984 and December 1986, MWD initially provided about 466,000 AF of advance delivered water for future exchange with CVWD and DWA that was used to replenish the Whitewater River Subbasin. This initial quantity of advanced delivered water has been augmented several times since then (with a portion on the augmented supply delivered to the Mission Creek Spreading Basins), and the total quantity of advance delivered water is currently 907,653 AF. During drought conditions, MWD has periodically met exchange delivery obligations with water from its advance delivery account. By December 2016, MWD had converted approximately 827,243 AF of advance delivered water to exchange water deliveries, leaving a balance of approximately 80,410 AF in MWD's advance delivery account (see **Exhibit 6**, included at the end of this report, for an accounting of exchange and advance deliveries).

c. Table A Water Allocations and Deliveries

SWP Table A water allocations are based primarily on hydrologic conditions and legal constraints, and vary considerably from year to year. In 2016, the final allocation was 60% of maximum Table A allocations. However, the Table A water deliveries during 2016 were approximately 38% of maximum Table A allocations, with the remainder delivered in 2017 as Article 56 carry-over water and flexible storage pay-back at Lake Perris. As of the writing of this report, Table A water deliveries in 2017 are projected to be 85% of maximum Table A allocations. Long-term average Table A allocations are currently predicted to be approximately 58% of maximum Table A allocations.

A portion of Table A allocations for a given year are occasionally carried over into the following year under Article 56 of the SWP Contract. In 2017, 25,435 AF of Article 56 water carried over from 2016 has been delivered to CVWD and DWA.

Even though CVWD and DWA have requested and will continue to request their maximum annual Table A allocations, the "Probable Table A Water Allocations" and "Probable Table A Water Deliveries" have been adjusted herein for long-

term reliability for estimating purposes. The Probable Table A Water Allocations are herein assumed to be equal to the maximum Table A Water allocations with the MWD transfer portion reduced to 38% (4,522 AF Table A reduction) to represent a long-term average transfer quantity (from 2016 through 2035) with possible recalls by MWD pursuant to the 2003 Exchange Agreement and its implementation, and "Probable Table A Water Deliveries" are herein assumed to be 58% of the aforementioned Probable Table A Water Allocations.

From 1973 through 2003, CVWD and DWA had SWP maximum annual Table A allocations of 23,100 AF and 38,100 AF, respectively. To meet projected water demands and to alleviate cumulative overdraft conditions, CVWD and DWA have secured additional SWP Table A water allocations, increasing their combined maximum Table A water allocations from 61,200 AF/Yr in 2003 to 194,100 AF/Yr beginning in 2010. CVWD and DWA's current Table A allocations are described in additional detail in the following paragraphs.

1) Tulare Lake Purchase

CVWD obtained an additional 9,900 AF/Yr of Table A water allocation from Tulare Lake Basin Water Storage District, another State Water Contractor, thus increasing its annual Table A water allocation to 33,000 AF/Yr, effective January 1, 2004.

2) 2003 Exchange Agreement

In 2003, CVWD and DWA obtained a further 100,000 AF/Yr (88,100 AF/Yr for CVWD and 11,900 AF/Yr for DWA) of Table A water allocation through a new exchange agreement (the 2003 Exchange Agreement) among CVWD, DWA, and MWD (all State Water Contractors). The new exchange agreement, which became effective January 1, 2005, permits MWD to call-back or recall the assigned annual Table A water allocation of 100,000 AF/Yr in 50,000 AF/Yr increments during periods of constrained, limited, or low water supply conditions; however, it gives CVWD and DWA the opportunity to secure increased

quantities of surplus water in addition to increased quantities of Table A water during normal or high water supply conditions. MWD must notify CVWD and DWA of its intentions regarding call-back or recall of the 100,000 AF or 50,000 AF increment thereof.

In implementing the 2003 Exchange Agreement, MWD advised CVWD and DWA that it would probably recall the 100,000 AF/Yr assigned to the two Coachella Valley agencies from 2005 through 2009. In fact, it did recall the full 100,000 AF/Yr in 2005, but it has not recalled any water since that time. According to communications with MWD management, it is unlikely that MWD will recall any water in 2017.

3) Kern County/Tulare Lake Purchase

In 2010, CVWD and DWA negotiated transfer of an additional 16,000 AF/Yr (12,000 AF/Yr for CVWD and 4,000 AF/Yr for DWA) of Table A water allocation from Kern County Water Agency and an additional 7,000 AF/Yr (5,250 AF/Yr for CVWD and 1,750 AF/Yr for DWA) from Tulare Lake Basin Water Storage District, both State Water Contractors.

d. Supplemental Water

Any surplus water secured by CVWD and DWA is exchanged for a like quantity of Colorado River Water. Charges for surplus water are allocated between CVWD and DWA in accordance with the terms of the Water Management Agreements. DWA secures funds for its allocated charges for surplus water payments from its Reserve for Additional Water Reserve Account.

1) Turn-Back Water Pool Water

From 1996 through 2016, CVWD and DWA jointly obtained 296,690 AF of water under CDWR's Turn-Back Water Pool Program,

which was exchanged for a like quantity of Colorado River Water and delivered to the Whitewater River and Mission Creek Recharge Basins.

Turn-Back Water Pool water was originally Table A water scheduled for delivery to other State Water Contractors, but those Contractors subsequently determined that the water was surplus to their needs. Surplus water in the Turn-Back Water Pool Program is allocated between two pools based on time: Pool A water must be secured by March 1 of each year and Pool B water must be secured between March 1 and April 1 of each year. The charge for Pool A water is higher than the charge for Pool B water.

Since fiscal year 1999/2000, requests for Turn-Back Water Pool water have exceeded water available. Quantities of Pool A and Pool B water purchased by CVWD and DWA are shown in **Exhibit 9**.

In 2016, DWA and CVWD were allocated 0 AF of SWP surplus water under the Turn-Back Water Pool Program. Based on current projections, CVWD and DWA may receive up to 1,131 AF of Pool A water in 2017. DWA and CVWD have jointly requested 1,334 AF of Pool B water. The actual quantity available will depend on the final Table A allocation, to be determined by June 1, 2017.

2) Flood Water

In 1997 and 1998, CVWD and DWA jointly obtained 47,286 AF of Kaweah River, Tule River, and Kings River flood flow water, which was also exchanged for a like quantity of Colorado River water delivered to the Whitewater River Recharge Basins. Currently, the availability of flood water in 2017 is uncertain.

3) Article 21 Surplus Water

From 2000 through 2011, CVWD and DWA obtained 42,272 AF of Article 21 surplus water and, similarly, that water was also exchanged for a like quantity of Colorado River water which was delivered to the Whitewater River Recharge Basins. No Article 21 water has been delivered to the Coachella Valley since 2011. CDWR currently estimates that DWA and CVWD may receive up to 5,296 AF and 13,143 AF of Article 21 in 2017, pending MWD's ability to deliver it.

4) Yuba River Accord and Other Water

In 2008, CVWD and DWA obtained 1,836 AF of water under the terms of the Yuba River Accord (then newly-ratified). In 2009 and 2012, CVWD and DWA obtained 3,482 AF and 1,188 AF, respectively, of water under the Yuba River Accord and other conservation/transfer agreements. No water was obtained in 2010 or 2011 under the Yuba River Accord. In 2014 and 2015, respectively, CVWD and DWA jointly obtained 1,213 AF and 426 AF of water under the Yuba River Accord. Up to approximately 60,000 AF of water under the Yuba River Accord is estimated to be available for 2017, of which DWA and CVWD have requested 444 AF and 1,016 AF, respectively.

5) Multi-Year Water Pool

In 2012, the State Water Contractors began discussions regarding options for expanding the water market within the confines of the existing SWP Contracts. The Contractors and CDWR developed a demonstration program called the 2013-2014 Multi-Year Water Pool (MYWP) Demonstration Program, whereby participating buyers and sellers would commit to buying water from the pool or selling water into the pool during calendar years 2013 and 2014. This MYWP Demonstration Program was designed to allow water-short State Water Contractors to purchase SWP water from other willing State Water Contractors, for two consecutive years, at a reasonable cost. Price and acre-foot amounts

would vary as a function of the June 1 SWP allocation of water available each year.

The MYWP Demonstration Program is separate from the single year Turn-Back Pool program, and was developed to address issues with the single year Turn-Back Pool program resulting from low pricing.

In February 2015, in response to continuing dry conditions statewide, CDWR began administering a 2015-2016 MYWP Demonstration Program.

MWD requested that DWA participate in the 2015-2016 MYWP Demonstration Program on their behalf. They requested that DWA request up to 1,000 AF in 2015 and 5,000 AF in 2016. MWD will accept delivery of this water and DWA will pay CDWR the cost of the water and its delivery (transportation). If MWD chooses to keep this water and not exchange it, they will reimburse DWA the cost of the water and the cost of transportation. If MWD chooses to credit the water against the advanced delivery account balance, or deliver the water to the recharge basins, they will reimburse DWA only the cost of the water, and DWA will be responsible for the typical costs associated with Table A water deliveries.

So far, 633 AF of water (67 AF in 2015 and 566 AF in 2016) have been delivered to MWD under the 2015-2016 MYWP Demonstration Program, and DWA was reimbursed by MWD for same.

e. Past Year Water Deliveries

Total artificial recharge (to both the Whitewater River and Mission Creek Subbasins) for 2016 was 35,699 AF (including CVWD's MWD Quantitative Settlement Agreement purchases). This entire quantity was delivered to the Whitewater River Subbasin. 35,000 AF were delivered under CVWD's Second Supplemental Agreement to their Delivery and Exchange Agreement for the

Delivery of 35,000 AF, dated June 14, 2013, the remaining 699 AF were an over-delivery which was debited to the SWP exchange account (see **Exhibit 9**).

f. Water Available in Current Year

The estimated quantity of water available for artificial recharge in the Upper Coachella Valley during 2017, based on delivery of 85% of the maximum Table A allocation, is as follows: 164,385 AF of Table A water (85% allocation) plus 25,435 AF of Article 56 carry-over water and 16,776 AF of flexible storage pay-back at Lake Perris. The estimated quantity of supplemental water is as follows: 1,131 AF of Turn-Back Pool water, 18,439 AF of Article 21 water, 1,460 AF of Yuba water, and 44,500 AF of non-SWP water (CVWD), minus 67,936 AF of Table A water to be carried over to 2018, for a grand total of approximately 204,187 AF. A total of 26,258 AF of Colorado River water has already been delivered to the Whitewater River Replenishment Facility during the first three months of 2017.

g. Historic Effects of Artificial Replenishment on Aquifer

Prior to recharge activities in the Whitewater River and Mission Creek Subbasins, water levels were declining steadily in those subbasins as well as the Garnet Hill Subbasin. As shown in **Exhibits 1, 2, and 3**, after recharge activities commenced in 1973, and specifically after the three large recharge events listed below, groundwater levels in all three subbasins have risen substantially.

- 1985 - 1987: 655,000 AF Recharged
- 1995 - 2000: 609,000 AF Recharged
- 2009 - 2012: 760,000 AF Recharged

Exhibit 1 includes hydrographs for a collection of groundwater wells within the Whitewater River Subbasin (see **Figure 2** for the locations of the wells) in comparison with the total annual quantities of water delivered to the Whitewater River Spreading Basins. This comparison clearly indicates that the recharge program has benefitted wells within the subbasin.

MSWD's Wells 25 and 26 are located upstream of the spreading grounds overlying the portion of the San Gorgonio Pass Subbasin, a tributary to the Whitewater River Subbasin, within the management area. Similar to other wells in the management area, water levels in these wells were also declining prior to groundwater recharge, and water levels in these wells rose by about 80 feet each after recharge commenced in the 1980s, and also rose following the other significant recharge events.

Exhibit 2 includes hydrographs for a selection of groundwater wells owned and operated by MSWD and the Mission Creek Monitoring Well located at the Mission Creek Spreading Basins (see **Figure 2** for the locations of the wells), in comparison with the total annual quantities of water delivered to the Mission Creek Spreading Basins. The comparison clearly indicates that the recharge program has benefitted the wells within the subbasin, especially the wells near the spreading basins. The magnitude of the response to the groundwater recharge is inversely proportional to the distance the wells are located from the spreading basins.

Exhibit 3 includes hydrographs from a collection of groundwater wells within the Garnet Hill Subbasin (see **Figure 2** for the locations of the wells) including one well owned by MSWD in comparison with both the replenishment quantities replenished by the Whitewater River and Mission Creek Spreading Basins. Groundwater levels in the Garnet Hill Subbasin responded rapidly when replenishment activities commenced at the Whitewater River Spreading Basins in the 1970s.

Water levels in the wells closest to the Whitewater River Spreading Basins rose approximately 400 feet in the late 1980s and nearly 200 feet following each significant recharge event to the Whitewater River Subbasin. The most significant response to groundwater recharge in the Whitewater River Subbasin is observed in the wells located closest to the spreading grounds. The degree of benefit observed from recharge decreases the farther the well is from the spreading grounds. Well locations are shown on **Figure 2**.

Although artificial replenishment with imported water, augmenting natural replenishment, has met increasing average annual groundwater demands during the past 30 years, it has not, for all practical purposes, reduced or diminished cumulative groundwater overdraft within the Coachella Valley Groundwater Basin, which existed prior to artificial replenishment of the groundwater basin. In effect, the groundwater overdraft condition that existed prior to imported water becoming available for groundwater replenishment has not been significantly altered, but the trend has been arrested. Although current groundwater levels have generally stabilized in the subbasins within the management areas, current cumulative gross overdraft (not yet offset by cumulative artificial recharge) is estimated at roughly 3,783,000 AF in the Whitewater River Subbasin and 262,000 AF in the Mission Creek Subbasin. Cumulative net overdraft, (overdraft offset by artificial replenishment) is currently estimated at 847,000 AF in the Whitewater River Subbasin and 112,000 AF in the Mission Creek Subbasin.

CDWR has been unable to deliver full annual Table A water allocations for the past decade, with the exception of 2006 where 100% was delivered to Contractors. Had CVWD and DWA been able to obtain and exchange their maximum Table A quantities during that time period, cumulative groundwater overdraft would be significantly less and groundwater levels would be correspondingly higher.

h. Meeting Future Water Requirements

Historic and projected water supplies and water requirements for the Whitewater River and Mission Creek Subbasins are set forth in **Figures 3 and 4**. Projected water supplies include SWP supplies, estimated natural inflow, and estimated non-consumptive return. Historic and projected water requirements include historic and projected groundwater production, and estimated natural outflow.

The projected water supply curves shown in **Figures 3 and 4**, are based on the estimates for the natural inflow to the Whitewater River and Mission Creek Subbasins, continuing artificial recharge, non-consumptive return, and

groundwater in storage, if necessary. Artificial recharge is based on the 2013 SWP reliability projections (based on existing conditions) excluding all potential surplus water deliveries which may become available during any particular year.

In contrast to the data presented in past Engineer's Reports, which relied primarily on the linear regression of the previous 10-year period of recorded groundwater production, projected water requirements (demands) through 2035 for the Whitewater River and Mission Creek Subbasins (also shown in **Figures 3 and 4**) are based on the water balance model utilized in the 2010 Update to the Coachella Valley Water Management Plan and the 2014 Status Report prepared by MWH (and others), and the Groundwater Flow Model for the Mission Creek and Garnet Hill Subbasins Water Management Plan prepared by Psomas. As shown in the figures, the projected requirements are largely offset by probable supplies; however, the cumulative annual change in storage will remain in the negative through 2035 under currently projected conditions.

Based on the production relationship between the Whitewater River Subbasin and the Mission Creek Subbasin, in accordance with the Mission Creek Groundwater Replenishment Agreement, about 92% of imported water deliveries in 2017 will be directed to the Whitewater River Subbasin and 8% to the Mission Creek Subbasin based on 2016 production (see **Exhibit 8**). For future years, the percentage of the total production is expected to range from 87% to 81% in the Whitewater River Subbasin and 12% to 19% in the Mission Creek Subbasin through 2035 due to increased production (increased demands) in the Mission Creek Subbasin due to anticipated population growth (MWH 2011, MWH 2013).

i. Adequacy of Current Supplies, Water Conservation, and Future Prospects

1) State Water Project Improvements

Continuous availability of SWP allocations will require complete development of the SWP, which currently has only about half of the water supply capacity needed to meet maximum Table A obligations during times of drought. Available water supplies are being further

threatened by new and increasing constraints on the development of new water supply facilities and on the operation of existing facilities. In particular, the Wanger decisions regarding protection of the Delta smelt, concerns about reliability of the Delta levees, and other concerns led the CDWR to issue a revision in June 2012 of *The State Water Project Reliability Report 2009,* dated August 2010, wherein the long-term reliability of SWP supplies was reduced to approximately 60% of maximum allocations (later reduced to 58%). Without the construction of additional Sacramento-San Joaquin Delta facilities and certain water storage reservoirs, the water supply capability of the SWP will remain limited and State Water Contractors will have to share reduced quantities of available supplies, especially during droughts.

With continued progress in the completion of California WaterFix (formerly known as the Bay Delta Conservation Plan (BDCP)), the balance between more reliable SWP water supplies and ecosystem restoration will be increased. The BDCP was a long-term conservation strategy designed to set forth actions required for a healthy Delta that will be implemented over the next 50 years, with an estimated cost of about $20 billion. California WaterFix is a refinement of the BDCP that involves a shorter term of implementation and incidental take authorization, and a narrowing of scope: the principal habitat restoration effort of the BDCP has been isolated as a separate program called "California EcoRestore."

California WaterFix itself involves the construction and operation of new water diversion facilities near Courtland to convey water from the Sacramento River through two tunnels to the existing state and federal pumping facilities near Tracy. In addition to other federal, state, and local approvals, California WaterFix requires changes to the water rights permits for the SWP and the federal Central Valley Project to authorize the proposed new points of water diversion and rediversion.

Currently, the cost of California WaterFix is estimated at about $15 billion. Eventually, SWP water supply reliability, quality, and delivered quantities and the overall health of the Delta may improve; however, it is unlikely that the costs for Delta improvements will be allocated to the State Water Contractors before 2020.

2) California Drought

In addition to the existing restrictions on water supplies from the SWP, California has just experienced over four consecutive years of severe drought. The four-year period between fall 2011 and fall 2015 was the State's driest since record keeping began in 1895. High temperatures worsened its effects, with 2014 and 2015 being the two hottest years in the State's recorded history. In late 2016 and early 2017, a series of winter storms produced record-level rainfall, resulting in the Governor's declaration ending the statewide drought emergency. Additionally, the US Drought Monitor report for California showed that DWA went from "Exceptional Drought", the most severe categorization, to "Abnormally Dry", the least severe.

During the course of the drought, the state implemented a number of mandatory water conservation measures. On January 17, 2014, Governor Jerry Brown, prompted by record dry conditions in California, proclaimed a drought state of emergency, followed by several executive orders continuing the state of emergency and extending government assistance. On April 25, 2014, the Governor issued a proclamation of a continued state of emergency based on drought conditions. Subsequently, in July 2014, the Office of Administrative Law approved emergency regulations mandating water conservation measures set forth by the State Water Resources Control Board (SWRCB).

On April 1, 2015, Governor Brown issued Executive Order B-29-15, finding that drought conditions persisted, and ordering that the SWRCB impose mandatory water use restrictions in order to achieve a statewide

25% reduction in potable urban water usage (as compared to usage in 2013) from June 2015 through February 2016.

In order to reach the statewide 25% reduction mandate, the SWRCB assigned each urban water supplier a conservation standard that ranged between 4% and 36%, based on the supplier's residential gallons per capita per day water use for the months of July through September 2014. The SWRCB tasked DWA, CVWD, and MSWD to reduce potable urban water use within their service areas, ultimately by 32%, 32%, and 24%, respectively.

Actual cumulative statewide water use reductions generally complied with the Governor's 25% reduction mandate through May 2016. As of May 2016, DWA achieved a 27% cumulative water savings, CVWD a 26% savings, and MSWD a 19% savings.

On May 9, 2016, the Governor issued another executive order establishing a new water use efficiency framework for California. The order established longer-term water conservation measures, including permanent monthly water use reporting, new urban water use targets customized to fit the unique conditions of each water supplier, requirements to reduce system leaks and eliminate clearly wasteful practices, strengthen urban drought contingency plans, and improve agricultural water management and drought plans.

On May 18, 2016, the SWRCB adopted a statewide water conservation approach (effective from June 2016 through January 2017) that replaced the prior percentage reduction-based water conservation standard with a localized "stress test" approach that mandates urban water suppliers act to ensure at least a three-year supply of water to their customers under drought conditions similar to those experienced from 2012 through 2015. Cumulative, statewide water conservation figures dropped to approximately 18% over the summer of 2016, but began to increase again in the fall.

In response to the "stress test" regulation, DWA, CVWD, and MSWD all self-certified that sufficient water had been identified to meet all anticipated demands with existing conservation programs and plans in place, effectively placing their local conservation targets at 0%. Despite passing the stress test, DWA elected to retain a 10% to 13% conservation target for its customers for the purposes of long-term sustainability.

Based on reports to the SWRCB, DWA's cumulative water savings (as compared to 2013) through January 2017 was 23.9%, that of CVWD 22.6%, and that of MSWD 16.9%.

The winter storms of late 2016 and early 2017 resulted in the removal of the "exceptional drought" designation from the State's drought monitor. As of March 7, 2017, about 76% of the State was identified as drought-free; and, on April 7, 2017, after 22 months of restrictions, Governor Brown proclaimed an end to the drought state of emergency, with the exception of Fresno, Kings, Tulare, and Tuolumne Counties. Water reporting requirements and prohibitions on wasteful practices remain in place.

3) State Water Project Long-Term Reliability Estimates

The *State Water Project Final Reliability Report 2013*, dated December 2014, estimated the long-term reliability of SWP supplies at 58% of maximum Table A allocations through 2033. In July 2015, CDWR issued the *2015 State Water Project Deliverability Capability Report*. Said report estimated the median deliverability of SWP supplies at approximately 64%, and long-term deliverability (82-year average value) at 62% of maximum Table A allocations, 50% of the time over the historic long-term. However, said report's estimates are qualified as being based on existing and historical conditions, and are not intended as future projections. Furthermore, as mentioned above, the extremely dry sequence from the beginning of January 2013 through the end of 2014

was one of the driest two-year periods in historical record, and resulted in a low SWP supply allocation in 2013 (35% of maximum SWP Table A allocations), and an extremely low SWP water supply allocation in 2014 (5% of maximum Table A allocations). The dry hydrologic conditions that led to the low 2014 SWP water supply allocation were extremely unusual, and to date have not been included in the SWP delivery estimates presented in CDWR's *2015 Delivery Capability Report*. It is anticipated that the hydrologic record used in the CDWR model will be extended to include the period through 2014 during the next update of the model, which is expected to be completed prior to issuance of the next update to the biennial SWP Delivery Capability Report. Given these factors, the older, more conservative 58% reliability figure has been used for future projections in this report.

4) Conclusion

In conclusion, the Coachella Valley Groundwater Basin (and its subbasins) is in an overdraft condition and will most likely remain so, even with the importation and exchange of available SWP water, until a higher proportion of the maximum SWP Table A allocations becomes available. With maximum Table A allocations, recharge in the Whitewater River and Mission Creek Subbasins would offset the current annual overdraft, although overdraft in future years is virtually unpredictable, due to the difficulty of projecting long-term growth and reliability of SWP supplies.

6. Replenishment Assessment

For the Whitewater River Subbasin, DWA began its groundwater assessment program in fiscal year 1978/1979 and CVWD began its groundwater assessment program in fiscal year 1980/1981. For the Mission Creek Subbasin, the two agencies initiated their groundwater assessment programs simultaneously in fiscal year 2003/2004. The two agencies are not required to implement the assessment procedure jointly or identically; however, they have each continuously levied an annual assessment on water produced

within their respective jurisdictions since inception of their groundwater assessment programs.

Since the 2013 MC/GH WMP demonstrates that the Garnet Hill Subbasin benefits from the groundwater replenishment activities in the two adjacent subbasins, pursuant to the 2004 Settlement Agreement between CVWD, DWA, and MSWD; DWA and CVWD have the authority establish a groundwater assessment program for the Garnet Hill Subbasin. DWA's replenishment assessment program was initiated in this subbasin in fiscal year 2015/2016. Currently, there is no assessable production in the Garnet Hill Subbasin within CVWD's Area of Benefit.

Desert Water Agency Law requires the filing of an engineer's report regarding the Replenishment Program before DWA can levy and collect groundwater replenishment assessments. The report must address the condition of groundwater supplies, the need for groundwater replenishment, the Areas of Benefit, water production within said Areas of Benefit, and replenishment assessments to be levied upon said water production. It must also contain recommendations regarding the replenishment program. This report has been prepared in accordance with these requirements.

CHAPTER III
WHITEWATER RIVER SUBBASIN
PRODUCTION AND REPLENISHMENT

CHAPTER III
WHITEWATER RIVER SUBBASIN
PRODUCTION AND REPLENISHMENT

A. GROUNDWATER PRODUCTION

Annual water production (groundwater extractions plus surface water diversions) within the Palm Springs Subarea of the Whitewater River Subbasin (herein referred to simply as the Whitewater River Subbasin) averaged about 93,000 AF from 1965 through 1967, and then increased to approximately 187,000 AF in 1990. It then decreased to approximately 174,000 AF in 1991, coincident with the initiation of significant deliveries of recycled water by CVWD and DWA to irrigation users within the Water Management Area (which had the effect of temporarily reversing the trend toward steadily increasing production of groundwater therein).

Due to development, production increased sharply to about 187,000 AF in 1997 and to about 208,000 AF in 1999. It then averaged about 211,000 AF during the three-year period 2000 through 2002 and remained relatively stable through 2007, probably as a result of water conservation and increased use of recycled water, and (within CVWD's service area) conversion of agricultural land to residential development, which leveled off in 2000. Production has decreased following 2007 due to poor economic conditions reducing demands for construction water and water conservation programs implemented by both agencies.

During the past five calendar years (2012 through 2016), average annual water production within the Whitewater River Subbasin has been about 167,000 AF/Yr, approximately three-fourths of which took place within CVWD and approximately one-fourth within DWA. Current (2016 calendar year) and historic groundwater production and surface water diversion data for the Whitewater River Subbasin is set forth in **Table 1**.

B. NATURAL RECHARGE

Natural recharge includes precipitation, surface water runoff, and subsurface inflow. It is estimated that natural inflow into the Whitewater River Subbasin is approximately 54,000 AF/Yr, while natural outflow, including evaporative losses, is currently estimated at approximately 25,000 AF/Yr (MWH 2011). Thus, approximately 29,000 AF (natural inflow less natural outflow) of natural, or native, groundwater is available for water supply each year.

C. NON-CONSUMPTIVE RETURN

Consumptive use in the Upper Coachella Valley has long been estimated to be about 65% of water production (per USGS Water Resources Investigation 91-4142). Total annual reported production in the Upper Coachella Valley has averaged about 181,000 AF/Yr for the past five years. Considering the reported production, an estimated 1,000 AF/Yr for production from exempt minimal pumpers (500 AF each in Whitewater River and Mission Creek Subbasins), and annual importation of between 2,200 AF and 9,600 AF of Colorado River water for golf course irrigation via CVWD's Mid-Valley Pipeline, the average non-consumptive return was about 54,000 AF/Yr during the same period.

Non-consumptive return water is water returned to the aquifer after use (for example, irrigation water percolating beyond the root zone or treated wastewater discharged to percolation ponds or leach fields) or water used for public parks or golf course irrigation (wastewater recycled for irrigation use). Although non-consumptive return in the Whitewater River Subbasin has been estimated at approximately 40% (USGS 1974) and 35% (USGS 1992), CVWD's 2010 Update to the Coachella Valley Water Management Plan (and 2014 Status Report to that plan) incorporated groundwater modeling by MWH (now a part of Stantec) which projected that non-consumptive return may decrease from 35% to approximately 30% through 2035 based on the effects of implementing water conservation measures, such as turf removal and more efficient irrigation practices. According to the model, the overall non-consumptive return for 2016 was projected to be approximately 33%. However, MWH and Krieger & Stewart have recently conducted efforts to more accurately characterize non-consumptive return by quantifying water use categories; with estimates made for water percolated via agricultural and landscaping irrigation return, wastewater treatment plant and septic tank discharge, and water recycling activities within each Management Area of the Coachella Valley, and considering such factors as transfers of produced water between subbasins. This effort has resulted in a current estimate for non-consumptive use within the Upper Whitewater River Subbasin Management Area of approximately 30%, which is used herein.

D. ARTIFICIAL RECHARGE

Total artificial recharge (to both the Whitewater River and Mission Creek Subbasins) for 2016 was 35,699 AF (including CVWD's MWD Quantitative Settlement Agreement purchases). This entire quantity was delivered to the Whitewater River Subbasin; 35,000 AF were delivered under CVWD's Second Supplemental Agreement to their Delivery and Exchange Agreement for the Delivery of 35,000 AF, dated June 14, 2013, and the remaining 699 AF were an over-delivery debited to the SWP exchange account (see **Exhibit 9**).

E. GROUNDWATER IN STORAGE

Average annual reported production within the Whitewater River Subbasin of 167,000 AF for the past five years (plus approximately 500 AF of annual production by minimal pumpers) has been met with approximately 29,000 AF of net natural recharge, approximately 53,500 AF of non-consumptive return, and 65,503 AF from artificial recharge, resulting in a net decrease in groundwater in storage of about 20,000 AF/Yr over the past five years.

F. OVERDRAFT STATUS

Based on information contained in USGS Water Resources Investigations 77-29 and 91-4142, average annual groundwater overdraft within the Whitewater River Subbasin of the Coachella Valley Groundwater Basin began in the 1950s and was estimated to be 30,000 AF/Yr during the late 1960s and early 1970s. It is now estimated to be as much as three and one half times greater. Gross groundwater overdraft within the Whitewater River Subbasin (excluding artificial recharge) is now estimated to have averaged up to 85,000 AF/Yr (167,500 AF water produced - 29,000 AF net inflow - 53,500 AF non-consumptive return = 85,000 AF of groundwater overdraft) during the last five years. Since 1956, cumulative gross overdraft (net pumpage minus net natural recharge) is currently estimated at approximately 3,783,000 AF, and cumulative net overdraft (cumulative gross overdraft offset by artificial recharge) is currently estimated to be about 847,000 AF.

CHAPTER IV
MISSION CREEK SUBBASIN
PRODUCTION AND REPLENISHMENT

CHAPTER IV
MISSION CREEK SUBBASIN
PRODUCTION AND REPLENISHMENT

A. GROUNDWATER PRODUCTION

Annual water production (groundwater extractions) within the Mission Creek Subbasin increased from an average of approximately 500 AF/Yr in the late 1950s and 1960s to approximately 2,300 AF/Yr in 1978. It increased relatively steadily since then to approximately 17,400 AF/Yr in 2006, then began dropping slightly as a result of declining economic conditions to about 16,400 AF/Yr in 2007, 15,800 AF/Yr in 2008, 15,100 AF/Yr in 2009, 14,300 in 2010, and 14,200 in 2011. Annual groundwater production within the Mission Creek Subbasin resulted in cumulative long-term groundwater overdraft, as evidenced by the steady decline of groundwater levels within the Mission Creek Subbasin prior to commencement of recharge activities.

During the past five calendar years (2012 through 2016), average annual reportable water production within the Mission Creek Subbasin has been about 14,000 AF/Yr; approximately two-thirds of which took place within DWA and approximately one-third within CVWD. Current (2016 calendar year) and historic groundwater production and surface water diversion data for the Mission Creek Subbasin is set forth in **Table 1**.

B. NATURAL RECHARGE

Natural recharge includes precipitation, surface water runoff, and subsurface inflow. As discussed in past reports, it is currently estimated that natural inflow and surface recharge of the Mission Creek Subbasin has averaged approximately 3,500 to 10,800 AF/Yr over the long-term. Most estimates of natural outflow from the Mission Creek Subbasin equal or exceed the corresponding estimates of natural inflow.

The most recent estimate for natural inflow into the Mission Creek Subbasin was prepared by Psomas for the MC/GH WMP prepared by MWH in January 2013. Psomas estimated said natural inflow at approximately 9,340 AF/Yr, consisting of approximately 7,500 AF/Yr from mountain front runoff and precipitation under average conditions and approximately 1,840 AF/Yr from flows across the Mission Creek Fault from the Desert Hot Springs Subbasin. This estimate falls within the range of average natural inflow previously cited herein.

Psomas estimated natural outflow at approximately 6,000 AF/Yr, consisting of 4,000 AF/Yr of subsurface flow from the Banning Fault to the Garnet Hill Subbasin, 900 AF/Yr of evapotranspiration, and 1,100 AF/Yr of flow through semi-water bearing rocks, known as the Indio Hills, at the southeastern end of the Mission Creek Subbasin. However, water level data in that part of the Garnet Hill Subbasin does not appear to support an outflow of this magnitude. For purposes of this report, natural outflow from the Mission Creek Subbasin is currently estimated at about 5,700 AF/Yr.

C. NON-CONSUMPTIVE RETURN

Consumptive use and non-consumptive return are discussed in **Chapter III, Section C**. Within the Mission Creek Subbasin, non-consumptive return is currently estimated at approximately 34% of total production, or about 5,000 AF/Yr (average for the past five years).

D. ARTIFICIAL RECHARGE

Total artificial recharge (to both the Whitewater River and Mission Creek Subbasins) for 2016 was 35,699 AF (including CVWD's MWD Quantitative Settlement Agreement purchases). The entirety of that quantity was delivered to the Whitewater River Subbasin, and no deliveries were made to the Mission Creek Subbasin (see **Exhibit 9**).

Based on the production relationship between the Whitewater River Subbasin and the Mission Creek Subbasin, in accordance with the Mission Creek Groundwater Replenishment Agreement, about 92% of imported water deliveries in 2017 will be directed to the Whitewater River Subbasin and 8% to the Mission Creek Subbasin based on 2016 production (see Exhibit 8). At the time of writing of this report, Mission Creek's portion of the water has been delivered. For future years, the percentage of the total production is expected to range from 87% to 81% in the Whitewater River Subbasin and 12% to 19% in the Mission Creek Subbasin through 2035 due to increased production (increased demands) in the Mission Creek Subbasin due to anticipated population growth (MWH 2011, MWH 2013).

E. GROUNDWATER IN STORAGE

Average annual reported production within the Mission Creek Subbasin of 14,000 AF for the past five years (plus approximately 500 AF of annual production by minimal pumpers) has been met with approximately 3,300 AF of net natural recharge, approximately 5,000 AF of non-consumptive return, and 6,056 AF from artificial recharge, resulting in a net increase in groundwater in storage of about 144 AF/Yr over the past five years.

Average annual reduction in stored groundwater was 3,400 AF/Yr from 1955 through 2016, and 1,800 AF/Yr from 1998 through 2016 (see **Exhibit 4**). Annual metered production and non-consumptive return are plotted on **Figure 4**, which provides an indication of consumptive use and cumulative overdraft.

F. OVERDRAFT STATUS

Gross groundwater overdraft within the Mission Creek Subbasin (excluding artificial recharge) is now estimated at approximately 6,200 AF/Yr (14,500 AF water produced – 3,300 AF natural recharge - 5,000 AF non-consumptive return = 6,200 AF of gross groundwater overdraft) during the last five years. Since 1978, cumulative gross overdraft (net pumpage minus net natural recharge) is currently estimated at approximately 262,000 AF, and cumulative net overdraft (cumulative gross overdraft offset by artificial recharge) is currently estimated to be about 112,000 AF.

CHAPTER V
GARNET HILL SUBBASIN
PRODUCTION AND REPLENISHMENT

CHAPTER V
GARNET HILL SUBBASIN
PRODUCTION AND REPLENISHMENT

A. GROUNDWATER PRODUCTION

During the past five calendar years (2012 through 2016), average annual water production within the Garnet Hill Subbasin has been about 290 AF/Yr; most, if not all, of which took place within DWA's service area. There are no reporting groundwater pumpers within CVWD's service area in the Garnet Hill Subbasin. Current (2016 calendar year) and historic groundwater production and surface water diversion data for the Garnet Hill Subbasin are set forth in **Table 1**.

B. NATURAL RECHARGE

Natural recharge includes precipitation, surface water runoff, and subsurface inflow. The Garnet Hill Subbasin is separated from the Whitewater River Subbasin to the south by the Garnet Hill Fault and from the Mission Creek Subbasin to the north by the Banning Fault.

As stated in the MC/GH WMP, the principle form of natural recharge within the Garnet Hill Subbasin comes from mountain-front runoff derived from precipitation and snow melt, as well as return flow from water use.

The Garnet Hill Subbasin receives no direct artificial recharge; however, it does receive artificial recharge via infiltration from the Whitewater River channel on the west end of the subbasin, subsurface flows from the Mission Creek Subbasin, and subsurface flows from the Whitewater River Subbasin when water levels are high due to large volumes of artificial recharge at the Whitewater River Artificial Recharge Area (MWH 2013).

The estimated flow across the Banning Fault from the Mission Creek Subbasin to the Garnet Hill Subbasin ranges from approximately 2,000 AF/Yr (Tyley 1974) to 8,250 AF/Yr (Psomas, 2010, based on pre-development, steady-state conditions). The outflow to the Whitewater River Subbasin is estimated to be approximately 4,000 AF/Yr (Psomas 2012, based on then current conditions).

C. NON-CONSUMPTIVE RETURN

Consumptive use and non-consumptive return are discussed in **Chapter III, Section C**. Within the Garnet Hill Subbasin, non-consumptive return is currently estimated at approximately 20% of production, or about 60 AF/Yr.

D. ARTIFICIAL RECHARGE

Direct artificial groundwater replenishment has not yet been implemented within the Garnet Hill Subbasin. However, the 2013 MC/GH WMP has shown that the Garnet Hill Subbasin benefits from replenishment activities within both the Whitewater River Subbasin and the Mission Creek Subbasin.

E. GROUNDWATER IN STORAGE

The quantity of groundwater in storage within the Garnet Hill Subbasin in 1974 was estimated to be approximately 1,520,000 AF (USGS 1974). Production in the subbasin has been limited, so groundwater in storage has not decreased significantly.

With minimal pumping occurring within the subbasin, cumulative groundwater storage in the Garnet Hill Subbasin was generally based on wet and dry periods and the introduction of imported water to the Coachella Valley. Changes in storage can be attributed to the rise and fall in the recorded groundwater levels observed in wells throughout the Garnet Hill Subbasin.

The recharge program in the Whitewater River Subbasin began in 1973, which resulted in rising water levels within the Garnet Hill Subbasin in rough proportion to the quantities recharged. Higher water levels in the Whitewater River Subbasin reduce the outflow from the Garnet Hill Subbasin across the Garnet Hill Fault, increasing storage volume in the Garnet Hill Subbasin.

F. OVERDRAFT STATUS

As part of the Coachella Valley Groundwater Basin, the Garnet Hill Subbasin is presumed to be in a state of overdraft since it is reliant on flows from the Whitewater River and Mission Creek Subbasins for replenishment, in accordance with the conclusions set forth in the MC/GH WMP.

CHAPTER VI
REPLENISHMENT ASSESSMENT

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REPLENISHMENT ASSESSMENT

Desert Water Agency Law, in addition to empowering DWA to replenish groundwater basins and to levy and collect water replenishment assessments within its areas of jurisdiction, defines production and producers for groundwater replenishment purposes as follows:

> Production: The extraction of groundwater by pumping or any other method within the Agency, or the diversion within the Agency of surface supplies which naturally replenish the groundwater supplies within the Agency and are used therein.
>
> Producer: Any individual, partnership, association, group, lessee, firm, private corporation, public corporation, or public agency including, but not limited to, the DWA, that extracts or diverts water as defined above.

Producers that extract or divert 10 AF of water or less in any one year are considered minimal producers, and their production is exempt from assessment.

Desert Water Agency Law also states that assessments may be levied upon all water production within an Area of Benefit, provided assessment rates are uniform throughout. Pursuant to Desert Water Agency Law, the amount of any replenishment assessment cannot exceed the sum of certain SWP charges, specifically, the Delta Water Charge, the Variable OMP&R Component of the SWP Transportation Charge (Variable Transportation Charge), and the Off-Aqueduct Power Component of the SWP Transportation Charge (Off-Aqueduct Power Charge), pursuant to the Contract between DWA and the State of California. The aforesaid charges are set forth in each year's CDWR *Bulletin on the State Water Project* (CDWR Series 132, Appendix B, Tables B-16B, B-18, and B-21).

Prior to 2002, groundwater replenishment with Colorado River Water (exchanged for SWP water) had been limited to recharge of the Whitewater River Subbasin. In 2002, DWA and CVWD commenced recharge activities in the Mission Creek Subbasin, in addition to continuing their ongoing activities in the Whitewater River Subbasin. The Areas of Benefit for Groundwater Replenishment and Assessment herein consist of those portions of the Whitewater River Subbasin, Mission Creek Subbasin, and Garnet Hill Subbasin, a portion of the San Gorgonio Pass Subbasin and tributaries thereto, situated within DWA's service area boundary (**Figure 2**).

The groundwater replenishment assessment and replenishment assessment rate for 2017/2018 are based on the following:

1. All groundwater production within DWA and MSWD, with certain exceptions, is metered, and all assessable surface water diversions within DWA are metered or measured. There are no surface water diversions within the Mission Creek or Garnet Hill Subbasin Areas of Benefit.

2. The Delta Water Charge, the Variable Transportation Charge, and the Off-Aqueduct Power Charge, as set forth in Appendix B of CDWR Bulletin 132 and hereafter referred to as Applicable SWP Charges.

3. The proportionate share of the Applicable SWP Charges allocable to CVWD and DWA in accordance with the Water Management Agreements between CVWD and DWA (Water Management Agreement for the Whitewater River Subbasin executed July 1, 1976 and amended December 15, 1992, and the Water Management Agreement for the Mission Creek Subbasin executed April 8, 2003; both amended July 15, 2014), hereafter referred to as Allocated SWP Charges. (The applicable charges are essentially apportioned between CVWD and DWA in accordance with relative water production within those portions of each entity lying within the applicable Water Management Areas, either the Whitewater River Subbasin, the Mission Creek Subbasin, the Garnet Hill Subbasin, and a portion of the San Gorgonio Pass Subbasin.)

4. Certain charges or costs other than those derived pursuant to items 1, 2, and 3 above. Such additional charges may be offset from time to time by discretionary reductions.

The replenishment assessment rate comprises two components: (1) the Allocated SWP Charges attributable to the estimated annual Table A allocation, and (2) certain other charges or costs related to groundwater recharge, such as those for reimbursement of past surplus water charges for which assessments had not been levied.

The replenishment assessment rate, when applied to estimated assessable production (all production, excluding that which is exempt, within the Area of Benefit), results in a replenishment assessment which must not exceed the maximum permitted by Desert Water Agency Law (the Applicable SWP Charges). Due to the interdependent nature of the imported water supply for the Whitewater River, Mission Creek,

Garnet Hill Subbasins, and a portion of the San Gorgonio Pass Subbasin, the Allocated SWP Charges component of the replenishment assessment rate is uniform throughout the Whitewater River (including a portion of San Gorgonio Pass), Mission Creek, Garnet Hill Areas of Benefit; however, due to the independent and separate nature of various other aspects of the groundwater replenishment program within the Whitewater River, Mission Creek, Garnet Hill, and a portion of the San Gorgonio Pass Subbasins, the other charges and costs component need not be uniform; they are specific to each subbasin.

A. ACTUAL 2016 WATER PRODUCTION AND ESTIMATED 2017/2018 ASSESSABLE WATER PRODUCTION

Estimated assessable production within DWA's Whitewater River Subbasin (including a portion of the San Gorgonio Pass Subbasin), Mission Creek Subbasin, and Garnet Hill Subbasin Areas of Benefit consist of groundwater extractions from the groundwater subbasins and diversions from streams (Snow, Falls, and Chino Creeks) in the tributary watersheds. Estimated assessable groundwater production is based on water production which, with the exception of Bel Air Greens, whose well in not metered or measured nor assessed, and Whitewater Ranch, whose wells are metered and measured but not assessed. Bel Air Greens and Whitewater Ranch wells are located within the Agua Caliente Band of Cahuilla Indian Reservation. DWA staff read and record metered water production quantities with the exception of the wells owned by MSWD and the Indigo Power Plant, which are reported to DWA. As discussed in previous reports, the water production for Bel Air Greens has been estimated at 127 AF/yr.

The effective replenishment assessment rate for Table A water is based on DWA's estimated Allocated SWP Charges for the current year (based on CDWR's projections for the assessment period) divided by the estimated assessable production for the assessment period, as set forth in **Table 6**. Historically, the estimated assessable production has been based on the assessable production for the previous year; however, production during 2015 and 2016 was unusually low due to mandatory water conservation measures imposed as a result of the Governor's April 1, 2015 executive order mandating water restrictions on urban water use statewide, and demanding a 32% reduction in water use within DWA. Only a portion of the effects of these severe water restrictions are anticipated to be permanent; therefore, for 2016/2017, DWA elected to estimate assessable groundwater production based on the 2014 assessable groundwater production minus a factor of 10% to account for the effects of permanent water conservation measures. However, since the State urban water use restrictions were based on water usage in

2013 as a baseline, DWA has elected, for 2017/2018, to estimate assessable groundwater production based on the 2013 assessable groundwater production minus a factor of 15% to account for the effects of permanent water conservation measures.

Estimated assessable water production is set forth in **Table 2**.

In 2016, actual reported production within CVWD's Area of Benefit within the Whitewater River Subbasin was about 3.6 times that within DWA's Area of Benefit, 115,706 AF versus 32,439 AF, whereas actual production within DWA's Area of Benefit within the Mission Creek Subbasin was about 2.2 times that within CVWD's Area of Benefit, 9,044 AF versus 4,175 AF. Production within DWA's Garnet Hill Subbasin Area of Benefit accounts for 100% of the total production at 300 AF. DWA's 2016 actual production accounts for approximately 25.8% of the 161,661 AF combined total of water produced within the Whitewater River, Mission Creek, Garnet Hill, and San Gorgonio Pass Subbasins that year.

B. WATER REPLENISHMENT ASSESSMENT RATES

The water replenishment assessment rates consist of two components, one being attributable to SWP annual Table A water allocations, and the other being attributable to other charges or costs necessary for groundwater replenishment. Each component is discussed below.

1. Component Attributable to SWP Table A Water Allocation Charges

In accordance with the current 2014 Water Management Agreement, CVWD and DWA combine their SWP Table A water allocations, exchange them for Colorado River water, and replenish the Whitewater River and Mission Creek Subbasins with exchanged Colorado River water. CVWD and DWA each assume the full burden for portions of their respective Fixed State Water Project Charges (Capital Cost Component and Minimum Operating Component of Transportation Charge); however, the two agencies share their Applicable SWP Charges (Delta Water, Variable Transportation, and Off-Aqueduct Power Charges) on the basis of relative production.

Although DWA could base its replenishment assessment rate on its Applicable SWP Charges, it only needs to recover its share (based on relative production) of the combined

Applicable SWP Charges for both CVWD and DWA (i.e. its Allocated SWP Charges). CVWD makes up the difference in accordance with the Water Management Agreement.

The Applicable SWP Charges for CVWD and DWA for Table A water are set forth in **Tables 3 and 4**, respectively. Unit Charges for Delta Water, Variable Transportation, and Off-Aqueduct Power Charges are based on estimates presented in Appendix B of CDWR Bulletin 132-15.

Since MWD can call-back or recall the 100,000 AF of Table A allocation it transferred to CVWD and DWA and since CDWR has been unable to deliver maximum Table A allocations for twelve of the past thirteen years, the amounts of the Applicable SWP Charges for 2017/2018 and future years are being computed based on long-term reliability factors; effectively 58% of maximum SWP allocations with the MWD transfer portion being further reduced to 38% to account for possible future recalls pursuant to the 2003 Exchange Agreement (heretofore, this percentage was 35%; it has been increased to 38% to reflect the probability of recalls for only the remaining 18 years of the 2003 Exchange Agreement with MWD).

The derivations of the Applicable SWP Charges are set forth in **Tables 3 and 4**. The "Maximum Table A Water Allocation" shown in **Tables 3 and 4** is the currently existing Table A Water Allocation per CDWR Bulletin 132-16, Appendix B, Table B-4 (contractual quantities based on requests for same by CVWD and DWA) with no reliability factors being applied. The "Probable Table A Water Allocation" is the currently existing Table A Water Allocation with the MWD transfer portion reduced to 38% to reflect the long-term average with probable recalls by MWD, pursuant to the remaining years of the 2003 Exchange Agreement and its implementation. The "Probable Table A Water Delivery" is based on 58% reliability of the probable Table A Water allocation including MWD transfer reduced to 38% for long-term average pursuant to the remaining 18 years of the 2003 Exchange Agreement and its implementation.

Applicable SWP Charges proportioned in accordance with the Water Management Agreement, more particularly in accordance with relative production within CVWD and DWA, yield Allocated SWP Charges. Over the past five years, 2012 through 2016, DWA has been responsible for approximately 22.0% of the water produced within the

Whitewater River Subbasin, and 68.1% of water produced from the Mission Creek Subbasin.

In the past, Allocated SWP Charges have been apportioned to CVWD and DWA based on production from the Whitewater River Subbasin Management Area. Since 2003/2004, Allocated SWP Charges have been apportioned to CVWD and DWA based on production from the combined Whitewater River Subbasin and Mission Creek Subbasin Management Areas. In 2016, DWA was responsible for approximately 25.8% of the combined water production within the Whitewater River, Mission Creek, and Garnet Hill Subbasins combined. On the assumption that DWA's relative production for 2017 and thereafter will be about the same as for 2016, DWA's share of the combined Applicable SWP Charges (i.e. Allocated Charges) for the next 18 years will be as set forth in **Table 5**.

Table 5 shows that DWA's estimated Allocated Charges (its share of combined Applicable Charges for Table A water) are anticipated to increase by about 4% between 2016 and 2017, increase by about 21% between 2017 and 2018 and decrease by about 7% between 2018 and 2019. DWA's estimated Allocated Charges will change as estimates presented in future annual editions of CDWR Bulletin 132 change.

Table 5 also shows that DWA's estimated 2017 Allocated Charges are about 70% of DWA's estimated Applicable Charges. Since water replenishment assessments must be used for groundwater replenishment purposes only, implementation of the maximum permissible replenishment assessment rate based on DWA's Applicable Charges would result in the collection of excess funds that would have to be applied to replenishment charges during subsequent years.

Rather than collect excess funds one year and apply the excess funds to replenishment charges in subsequent years, DWA attempts to establish from year to year the replenishment assessment rate that will result in collection of essentially the funds necessary to meet its annual groundwater replenishment charges. DWA therefore bases the Table A portion of its replenishment assessment on estimated Allocated Charges, rather than estimated Applicable Charges.

Pursuant to current Desert Water Agency Law, the maximum permissible replenishment assessment rate that can be established for fiscal year 2017/2018 is $224.24 /AF, based on DWA's estimated Applicable Charges (Delta Water Charge, Variable Transportation Charge, and Off-Aqueduct Power Charge) of $9,397,722 (average of estimated 2017 and 2018 Applicable Charges) and estimated 2017/2018 combined assessable production of 41,910 AF within the Whitewater River, Mission Creek, and Garnet Hill Subbasins.

The effective replenishment rate is based on DWA's estimated Allocated SWP Charges for the current year, as computed using CDWR's projected Applicable SWP Charges, divided by the estimated assessable production for the assessment period (based on the assessable production for the previous calendar year), as set for in **Table 6**.

According to the terms of the Water Management Agreement between DWA and CVWD, and based on DWA's estimated 2017/2018 Allocated Charges of $6,621,173 and estimated 2017 calendar year assessable production (shown in **Table 6** as estimated 2017/2018 assessable production) of 41,910 AF within the Whitewater River, Mission Creek, and Garnet Hill Subbasins, the effective replenishment assessment rate component for Table A water for the 2017/2018 fiscal year is $158/AF. **Table 7** includes DWA's historical estimated, actual effective, and estimated projected replenishment assessment rates.

Tables 3 through 7 include future projections through 2035. These projections are based on a number of assumptions regarding factors that can be highly variable and difficult to predict, such as development, conservation, and, as mentioned, State Water Project reliability and cost factors. Actual values in the future may be substantially different than as shown in these tables.

2. Component Attributable to Other Charges and Costs Necessary for Groundwater Replenishment

Charges and costs necessary for groundwater replenishment could include the costs for reimbursement for past SWP Table A water allocations and surplus water allocations for which insufficient assessments had been levied, acquisition or purchases of water from

sources other than the SWP, the cost of importing and recharging water from sources other than the SWP, and the cost of treatment and distribution of reclaimed water.

Currently, other charges and costs are being limited to past SWP water payments for which assessments have not been levied. Due to increases in SWP costs, DWA elected last year to transfer the deficit resulting from past payments for which assessments have not been levied to reserve account(s).

Since 1996, CVWD and DWA have obtained surplus SWP water, when available, to supplement deliveries of Table A water (see **Chapter II, Section B.5.d**). DWA currently pays charges for surplus water with funds from its Unscheduled State Water Project Deliveries Reserve Account, rather than from funds raised directly through replenishment assessment levies.

The charges levied on the Garnet Hill Subbasin are assessed as part of the Whitewater River and Mission Creek Subbasin replenishment programs based on the proportional production, in accordance with the Mission Creek Subbasin Settlement Agreement discussed in **Chapter II, Section B.3**. As shown in **Exhibit 5**, the portion of total production within the Whitewater River and Mission Creek Subbasins was approximately 92% and 8% respectively for 2016. Therefore, since there is no direct replenishment program for the Garnet Hill Subbasin, and since it benefits from both replenishment programs, the total production within the Garnet Hill Subbasin will be assessed as a proportion of the total production within those subbasins. For example, the total reported production within the Garnet Hill Subbasin was 297 AF in 2016. Of that 297 AF, 92% (273 AF) is assessed as part of the Whitewater River Subbasin, and 8% (24 AF) as part of the Mission Creek Subbasin.

3. Proposition 218 Proceedings

DWA held Proposition 218 proceedings in the winter of 2016. The public was duly notified per Proposition 218 requirements that a public hearing on new water rates would be held on December 15, 2016, including the proposed ranges of replenishment assessment rates for the next five years, as shown in the table below (ranges were proposed rather than specific rates due to the uncertainty regarding future groundwater

production demands and SWP charges). During the public hearing, DWA received comments and tallied protests regarding the proposed replenishment assessment rate ranges.

Fiscal Year	Anticipated Adoption Date	Rate Range ($/AF)
2017/2018	July 1, 2017	$110.00 to $130.00
2018/2019	July 1, 2018	$120.00 to $140.00
2019/2020	July 1, 2019	$125.00 to $155.00
2020/2021	July 1, 2020	$130.00 to $165.00
2021/2022	July 1, 2021	$130.00 to $175.00

Since protests were received from less than 50% of the affected parcels, replenishment assessment rates within the above ranges will be adopted on the dates shown, and such rates will be deemed to be in compliance with the requirements of Proposition 218.

4. Proposed 2017/2018 Replenishment Assessment Rates

As shown in **Table 7**, the recommended replenishment assessment rates proposed for 2017/2018 are $120.00/AF for the Whitewater River Area of Benefit, $120.00/AF for the Mission Creek Area of Benefit, and $120.00/AF for the Garnet Hill Area of Benefit. Historic replenishment assessment rates for both DWA and CVWD within the Whitewater River Subbasin are included in **Exhibit 7**.

C. ESTIMATED WATER REPLENISHMENT ASSESSMENTS FOR 2017/2018

The maximum replenishment assessment that can be levied by DWA for combined estimated production of 41,910 AF (see **Table 2**) within the Whitewater River, Mission Creek and Garnet Hill Subbasins based on a replenishment assessment rate of $120.00/AF is approximately $5,029,200 ($3,966,000 in the Whitewater River Subbasin, $1,027,200 in the Mission Creek Subbasin, and $36,000 in the Garnet Hill Subbasin).

DWA will continue to be the major producer within the Whitewater River Subbasin Area of Benefit, with assessable production of approximately 31,140 AF; seven other producers will be responsible for the remaining 1,910 AF of estimated assessable production. DWA will also be

the major assessee with an estimated replenishment assessment of $3,736,800. The seven other producers will be responsible for the remaining $259,200. DWA will therefore be responsible for approximately 94% of both the estimated assessable water production and the estimated replenishment assessment for the Whitewater River Subbasin; the other fourteen producers will be responsible for the remaining 6%.

MSWD will be the major producer within the Mission Creek Subbasin Area of Benefit, with assessable production of approximately 6,430 AF; four other producers will be responsible for the remaining 2,130 AF of estimated assessable production. MSWD will also be the major assessee with an estimated replenishment assessment of $771,600. The three other producers will be responsible for the remaining $255,600. MSWD will be responsible for approximately 75% of both the estimated assessable water production and the estimated replenishment assessment in the Mission Creek Subbasin Area of Benefit; the other four producers will be responsible for the remaining 25%.

MSWD and the Indigo Power Plant are the major producers in the Garnet Hill Subbasin Area of Benefit, with assessable production of approximately 290 AF and 10 AF, respectively. MSWD will also be the major assessee with an estimated replenishment assessment of $34,800, while the Indigo Power Plant is responsible for the remaining $1,200. MSWD will be responsible for approximately 97% of both the estimated assessable water production and the estimated replenishment in the Garnet Hill Subbasin Area of Benefit; Indigo Power Plant will be responsible for the remaining 3%.

CHAPTER VII
BIBLIOGRAPHY

CHAPTER VII
BIBLIOGRAPHY

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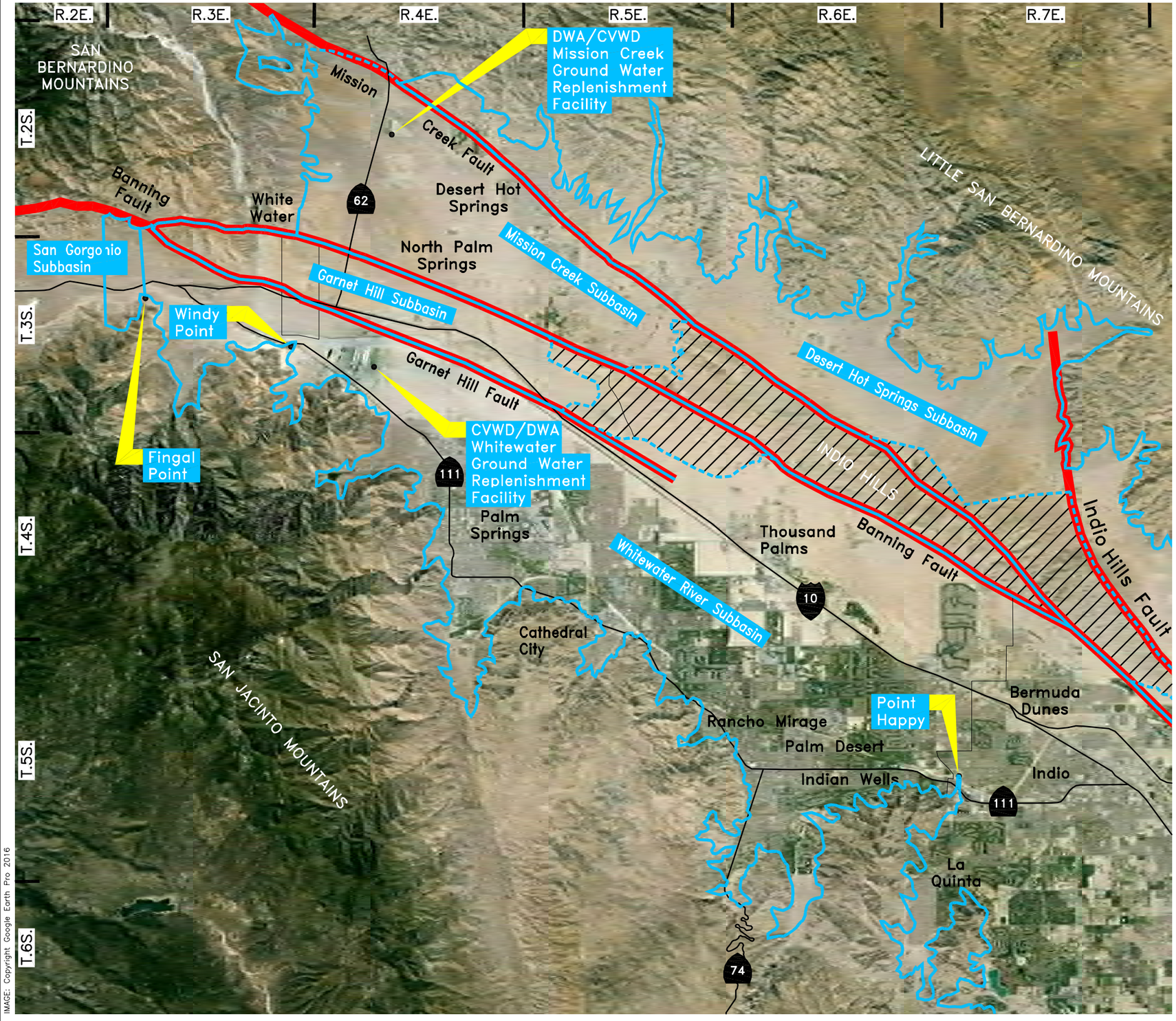
FIGURES

DESERT WATER AGENCY
GROUNDWATER REPLENISHMENT AND ASSESSMENT PROGRAM

2017–2018

GROUNDWATER SUBBASIN MAP
SHOWING
PORTION OF UPPER COACHELLA VALLEY
GROUNDWATER BASIN
AND
SUBBASINS THEREIN



LEGEND

- UPPER COACHELLA VALLEY GROUNDWATER SUBBASIN BOUNDARIES
- FAULTS
- INDIO HILLS (LOW PERMEABILITY)

NOTE:

THE MANAGEMENT AREAS WITHIN THE UPPER COACHELLA VALLEY GROUNDWATER BASIN ARE DEFINED BY THE SUBBASIN BOUNDARIES SHOWN HEREON FOR THE WHITEWATER RIVER, MISSION CREEK, AND GARNET HILL SUBBASINS.

MAP SOURCE:

2016 GOOGLE EARTH PRO (AERIAL PHOTOGRAPHY), MISSION CREEK AND GARNET HILL SUBBASINS WATER MANAGEMENT PLAN FINAL REPORT, JANUARY 2013 (SUBBASIN BOUNDARIES)

SCALE: 1"=3 MILES

Figure 1

DESERT WATER AGENCY
GROUNDWATER REPLENISHMENT AND ASSESSMENT PROGRAM

2017–2018

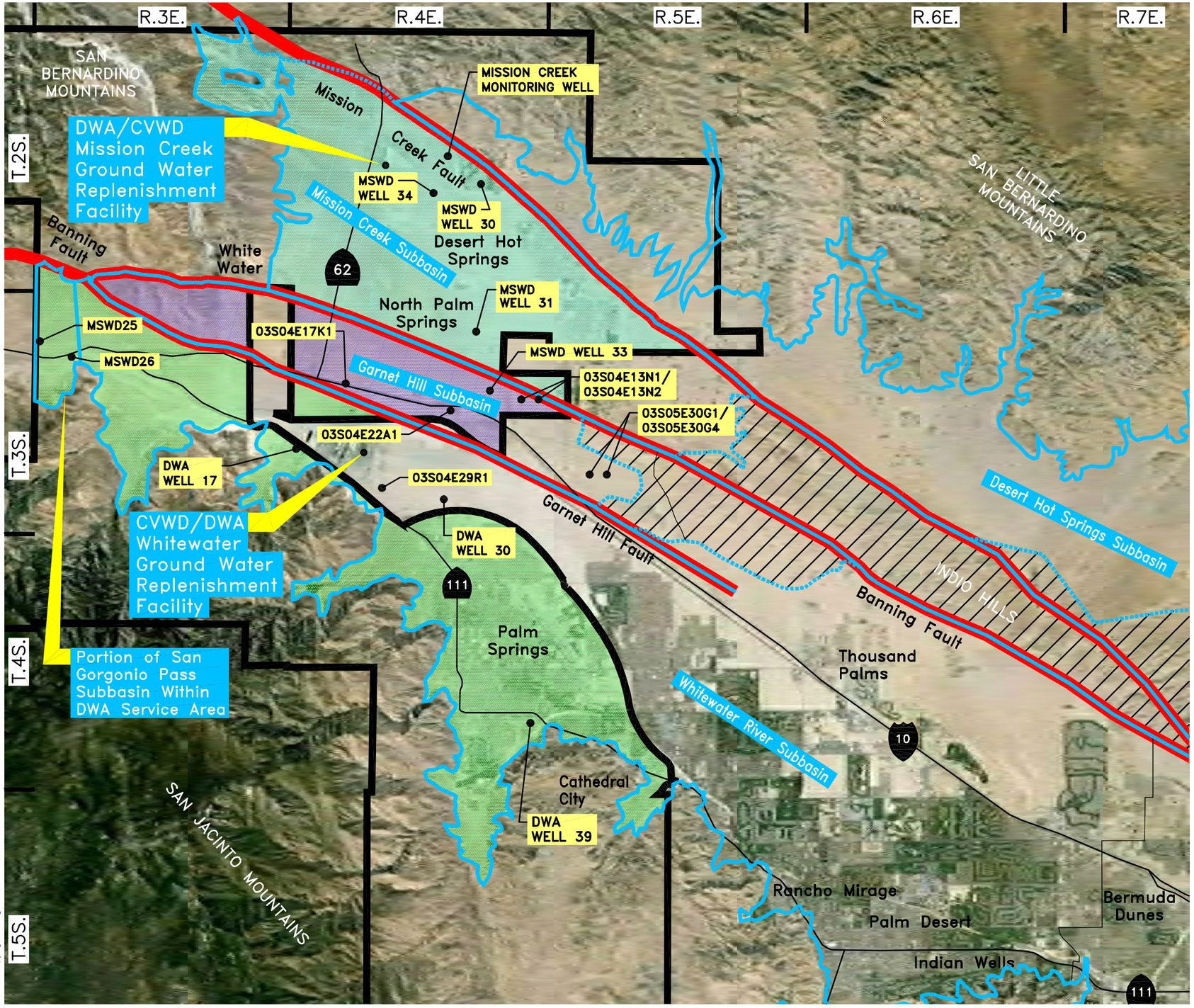


IMAGE: Copyright Google Earth Pro 2016

GROUNDWATER SUBBASIN MAP
SHOWING
GROUNDWATER RECHARGE AREAS OF BENEFIT
(EITHER DIRECT OR INDIRECT)
AND
SELECTED GROUNDWATER WELLS

LEGEND

- DWA BOUNDARY
- UPPER COACHELLA VALLEY GROUNDWATER SUBBASIN BOUNDARIES
- FAULTS

UPPER COACHELLA VALLEY GROUNDWATER SUBBASIN AREAS OF BENEFIT WITHIN DWA

- DWA WHITEWATER RIVER SUBBASIN AREA OF BENEFIT
- DWA MISSION CREEK SUBBASIN AREA OF BENEFIT
- DWA GARNET HILL SUBBASIN AREA OF BENEFIT
- INDIO HILLS (LOW PERMEABILITY)
- GROUNDWATER WELL

NOTE:

THE MANAGEMENT AREAS WITHIN THE UPPER COACHELLA VALLEY GROUNDWATER BASIN ARE DEFINED BY THE SUBBASIN BOUNDARIES SHOWN HEREON FOR THE WHITEWATER RIVER, MISSION CREEK, AND GARNET HILL SUBBASINS.

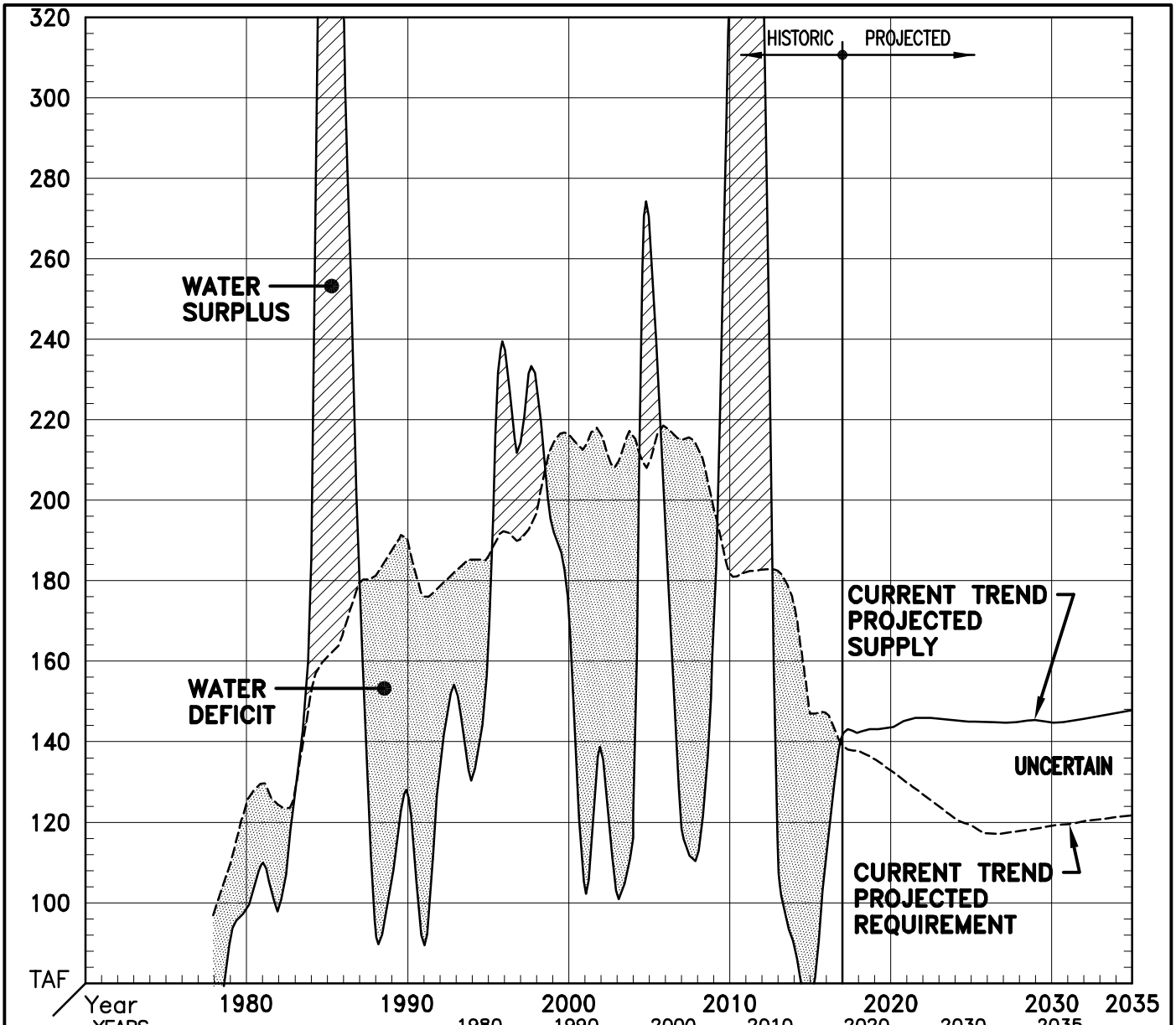
MAP SOURCE:

2016 GOOGLE EARTH PRO (AERIAL PHOTOGRAPHY), MISSION CREEK AND GARNET HILL SUBBASINS WATER MANAGEMENT PLAN FINAL REPORT, JANUARY 2013 (SUBBASIN BOUNDARIES)

SCALE: 1"=2.5 MILES

Figure 2

\101\33p41\Drawings\Figures\101-33p41f2.dwg



YEARS	1980	1990	2000	2010	2020	2030	2035
NET INFLOW (ACRE FEET)	98,500	126,300	175,900	321,200	144,600	144,700	148,500
NONCONSUMPTIVE RETURN	43,200	65,600	74,400	64,200	45,000	47,000	48,000
ARTIFICIAL RECHARGE	26,300	31,700	72,500	228,000	66,000	62,000	62,000
NATURAL INFLOW	36,000	36,000	36,000	36,000	52,000	52,000	52,000
NATURAL OUTFLOW	(7,000)	(7,000)	(7,000)	(7,000)	(18,400)	(16,300)	(13,500)

NOTES:

1. PROJECTED WATER REQUIREMENTS ARE BASED ON THE PROJECTIONS SET FORTH IN THE 2010 UPDATE TO THE COACHELLA VALLEY WATER MANAGEMENT PLAN, AND THE 2014 STATUS UPDATE (CVWD & MWH).
2. PROJECTED ARTIFICIAL RECHARGE IS BASED ON PROBABLE DELIVERIES ESTIMATED USING 58% RELIABILITY OF STATE WATER PROJECT WATER BASED ON 2013 STATE WATER PROJECT RELIABILITY REPORT AND 38% LONG-TERM AVERAGE OF MWD TRANSFERS PURSUANT TO THE 2003 EXCHANGE AGREEMENT AND ITS IMPLEMENTATION.
3. WATER SUPPLY IS BASED ON NON-CONSUMPTIVE RETURN, NATURAL INFLOW AND PROBABLE DELIVERIES DESCRIBED ABOVE.

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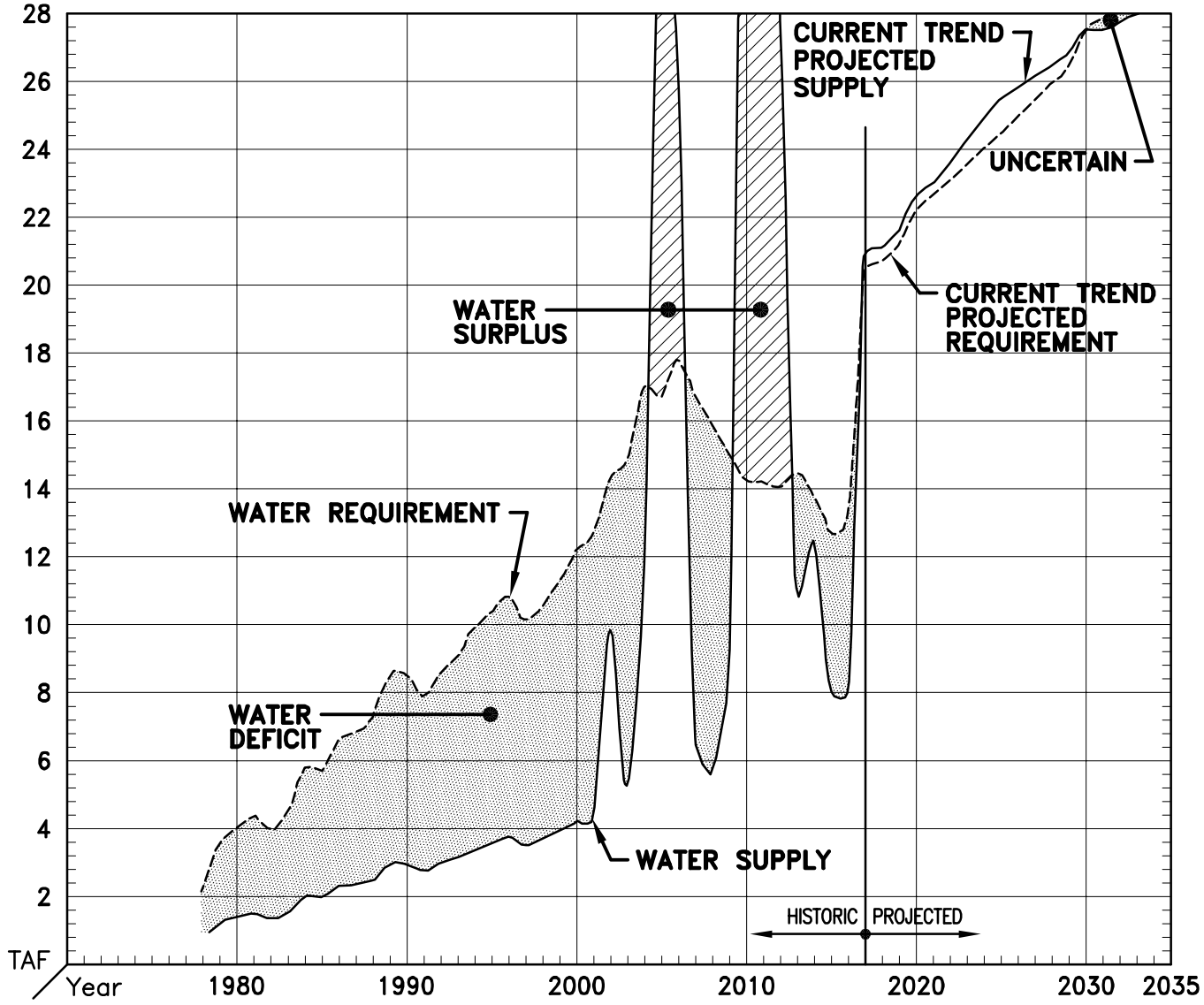
DESERT WATER AGENCY

HISTORIC AND PROJECTED WATER REQUIREMENTS AND WATER SUPPLIES FOR THE WHITEWATER RIVER SUBBASIN

FIGURE 3

SCALE: N/A DATE: 04/03/17 DRAWN BY: MRN CHECKED BY: DFS W.O.: 101-33.41

101-33p41f3.dwg



YEARS	1980	1990	2000	2010	2020	2030	2035
NET INFLOW (ACRE FEET)	1,400	2,900	4,100	39,000	21,940	26,340	27,340
NONCONSUMPTIVE RETURN	1,400	2,900	4,100	6,000	7,000	8,000	9,000
ARTIFICIAL RECHARGE	0	0	0	33,000	11,000	14,000	14,000
NATURAL INFLOW	5,500	5,500	5,500	5,500	9,340	9,340	9,340
NATURAL OUTFLOW	(5,500)	(5,500)	(5,500)	(5,500)	(5,400)	(5,000)	(5,000)

NOTES:

1. PROJECTED WATER REQUIREMENTS ARE BASED ON PROJECTIONS PER THE 2013 MISSION CREEK/GARNET HILL SUBBASIN WATER MANAGEMENT PLAN BY MWH.
2. PROJECTED ARTIFICIAL RECHARGE IS BASED ON PROBABLE DELIVERIES ESTIMATED USING 58% RELIABILITY OF STATE WATER PROJECT WATER BASED ON 2013 STATE WATER PROJECT RELIABILITY REPORT AND 38% LONG-TERM AVERAGE OF MWD TRANSFERS PURSUANT TO THE 2003 EXCHANGE AGREEMENT AND ITS IMPLEMENTATION.
3. WATER SUPPLY IS BASED ON NON-CONSUMPTIVE RETURN, NATURAL INFLOW AND PROBABLE DELIVERIES DESCRIBED ABOVE.

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DESERT WATER AGENCY

HISTORIC AND PROJECTED WATER REQUIREMENTS AND WATER SUPPLIES FOR THE MISSION CREEK SUBBASIN

FIGURE 4

SCALE: N/A DATE: 04/03/17 DRAWN BY: MRN CHECKED BY: DFS W.O.: 101-33.41

101-33p41f4.dwg

TABLES

TABLE 1
DESERT WATER AGENCY
HISTORIC REPORTED WATER PRODUCTION FOR REPLENISHMENT ASSESSMENT FOR
DESERT WATER AGENCY AND COACHELLA VALLEY WATER DISTRICT
WHITEWATER RIVER SUBBASIN (WRS) AND MISSION CREEK SUBBASIN (MCS) , AND GARNET HILL SUBBASIN (GHS) WATER MANAGEMENT AREAS

	CVWD PRODUCTION		DWA PRODUCTION					COMBINED CVWD & DWA PRODUCTION						WRS PRODUCTION PERCENTAGES		COMBINED WRS, MCS, GHS PRODUCTION PERCENTAGES		MCS PRODUCTION PERCENTAGES	
	GWE		GWE			SWD		WRS			MCS	GHS							
YEAR	WRS AF	MCS AF	WRS AF	MCS AF	GHS AF	WRS AF	COMB AF	GWE AF	SWD AF	TOTAL AF	TOTAL AF	TOTAL AF	COMB AF	CVWD	DWA	CVWD	DWA	CVWD	DWA
1978	61,172		28,100			8,530	36,630	89,272	8,530	97,802			97,802	62.55%	37.45%				
1979	72,733		29,393			7,801	37,194	102,126	7,801	109,927			109,927	66.16%	33.84%				
1980	84,142		32,092			7,303	39,395	116,234	7,303	123,537			123,537	68.11%	31.89%				
1981	86,973		33,660			7,822	41,482	120,633	7,822	128,455			128,455	67.71%	32.29%				
1982	83,050		33,382			6,512	39,894	116,432	6,512	122,944			122,944	67.55%	32.45%				
1983	84,770		33,279			6,467	39,746	118,049	6,467	124,516			124,516	68.08%	31.92%				
1984	104,477		38,121			7,603	45,724	142,598	7,603	150,201			150,201	69.56%	30.44%				
1985	111,635		39,732			7,143	46,875	151,367	7,143	158,510			158,510	70.43%	29.57%				
1986	115,185		40,965			6,704	47,669	156,150	6,704	162,854			162,854	70.73%	29.27%				
1987	125,229		44,800			5,644	50,444	170,029	5,644	175,673			175,673	71.29%	28.71%				
1988	125,122		47,593			5,246	52,839	172,715	5,246	177,961			177,961	70.31%	29.69%				
1989	129,957		47,125			5,936	53,061	177,082	5,936	183,018			183,018	71.01%	28.99%				
1990	136,869		45,396			5,213	50,609	182,265	5,213	187,478			187,478	73.01%	26.99%				
1991	126,360		42,729			4,917	47,646	169,089	4,917	174,006			174,006	72.62%	27.38%				
1992	128,390		42,493			4,712	47,205	170,883	4,712	175,595			175,595	73.12%	26.88%				
1993	131,314		41,188			6,363	47,551	172,502	6,363	178,865			178,865	73.42%	26.58%				
1994	134,223		42,115			5,831	47,946	176,338	5,831	182,169			182,169	73.68%	26.32%				
1995	134,580		41,728			5,809	47,537	176,308	5,809	182,117			182,117	73.90%	26.10%				
1996	137,410		45,342			5,865	51,207	182,752	5,865	188,617			188,617	72.85%	27.15%				
1997	137,406		43,658			5,626	49,284	181,064	5,626	186,690			186,690	73.60%	26.40%				
1998	142,620		41,385			7,545	48,930	184,005	7,545	191,550			191,550	74.46%	25.54%				
1999	157,148		44,350			6,941	51,291	201,498	6,941	208,439			208,439	75.39%	24.61%				
2000	161,834		44,458			6,297	50,755	206,292	6,297	212,589			212,589	76.13%	23.87%				
2001	159,767		44,112			4,928	49,040	203,879	4,928	208,807			208,807	76.51%	23.49%				
2002	163,185	4,371	46,004	9,597		4,221	59,822	209,189	4,221	213,410	13,968		227,378	76.47%	23.53%	73.69%	26.31%	31.29%	68.71%
2003	156,185	4,425	43,463	10,073		4,627	58,163	199,648	4,627	204,275	14,498		218,773	76.46%	23.54%	73.41%	26.59%	30.52%	69.48%
2004	159,849	4,628	48,093	11,920		4,758	64,771	207,942	4,758	212,700	16,548		229,248	75.15%	24.85%	71.75%	28.25%	27.97%	72.03%
2005	153,462	4,247	46,080	12,080		4,799	62,959	199,542	4,799	204,341	16,327		220,668	75.10%	24.90%	71.47%	28.53%	26.01%	73.99%
2006	160,239	4,757	48,967	12,608		4,644	66,219	209,206	4,644	213,850	17,365		231,215	74.93%	25.07%	71.36%	28.64%	27.39%	72.61%
2007	157,487	4,547	50,037	11,862		3,490	65,389	207,524	3,490	211,014	16,409		227,423	74.63%	25.37%	71.25%	28.75%	27.71%	72.29%
2008	161,695	4,543	45,405	11,232		3,593	60,230	207,100	3,593	210,693	15,775		226,468	76.74%	23.26%	73.40%	26.60%	28.80%	71.20%
2009	155,793	4,813	41,913	10,295		1,443	53,651	197,706	1,443	199,149	15,108		214,257	78.23%	21.77%	74.96%	25.04%	31.86%	68.14%
2010	141,481	4,484	39,352	9,820		1,582	50,754	180,833	1,582	182,415	14,304		196,719	77.56%	22.44%	74.20%	25.80%	31.35%	68.65%
2011	141,028	4,653	40,071	9,550		1,724	51,345	181,099	1,724	182,823	14,203		197,026	77.14%	22.86%	73.94%	26.06%	32.76%	67.24%
2012	141,379	4,582	39,507	9,500		2,222	51,229	180,886	2,222	183,108	14,082		197,189	77.21%	22.79%	74.02%	25.98%	32.54%	67.46%
2013	143,108	4,415	37,730	10,080		1,802	49,612	180,838	1,802	182,640	14,495		197,135	78.36%	21.64%	74.83%	25.17%	30.46%	66.78%
2014	136,027	4,154	36,372	9,680	240	1,787	48,079	172,399	1,787	174,186	13,834	240	188,261	78.09%	21.91%	74.46%	25.54%	30.03%	69.97%
2015	115,558	4,090	30,332	8,577	334	1,539	40,782	145,890	1,539	147,429	12,667	334	160,430	78.38%	21.62%	74.58%	25.42%	32.29%	67.71%
2016	115,706	4,175	30,408	9,044	297	2,031	41,780	146,114	2,031	148,145	13,219	297	161,661	78.10%	21.90%	74.16%	25.84%	31.58%	68.42%

NOTES:

Cumulative CVWD and DWA Whitewater River Subbasin production 2012 through 2016: 835,508 AF
Cumulative CVWD and DWA Mission Creek Subbasin production 2012 through 2016: 68,297 AF
Average annual CVWD and DWA Whitewater River Subbasin production 2012 through 2016: 167,100 AF
Average annual CVWD and DWA Mission Creek Subbasin production 2012 through 2016: 13,660 AF
Average annual DWA Whitewater River Subbasin production 2012 through 2016: 36,746 AF
Average annual DWA Mission Creek Subbasin production 2012 through 2016: 9,376 AF
Average DWA Whitewater River Subbasin production percentage 2012 through 2016: 21.97%
Average DWA Mission Creek Subbasin production percentage 2012 through 2016: 68.07%

ABBREVIATIONS:

GWE = Groundwater Extractions
SWD = Surface Water Diversions
COMB = Combined

/DFS
101-33P41TBLS.xlsx/Table1
(5/10/2017)

TABLE 2
DESERT WATER AGENCY
GROUNDWATER REPLENISHMENT AND ASSESSMENT PROGRAM
ESTIMATED WHITEWATER RIVER, MISSION CREEK, AND GARNET HILL SUBBASINS MANAGEMENT AREAS
WATER PRODUCTION AND ESTIMATED WATER REPLENISHMENT ASSESSMENTS
2017/2018

ESTIMATED COMBINED MANAGEMENT AREA
ASSESSABLE WATER PRODUCTION AND WATER REPLENISHMENT ASSESSMENTS

Management Area	Estimated Assessable Water Production AF	Water Replenishment Assessment Rate $/AF	Water Replenishment Assessment $	Percent
Whitewater River Subbasin	33,050	$120.00	$3,966,000	79%
Mission Creek Subbasin	8,560	$120.00	$1,027,200	20%
Garnet Hill Subbasin	300	$120.00	$36,000	1%
Combined Subbasins	41,910		$5,029,200	100%

ESTIMATED WHITEWATER RIVER, MISSION CREEK, AND GARNET HILL SUBBASINS MANAGEMENT AREA
WATER PRODUCTION AND WATER REPLENISHMENT ASSESSMENTS

Producer	2016 Water Production (1) Groundwater Extraction AF	Surface Water Diversion AF	Combined Water Production AF	Estimated 2017/2018 Assessable Water Production AF[4]	Estimated Water Replenishment Assessment @ $120/AF $	Percent
Whitewater River Subbasin						
Desert Water Agency	28,559	1,372	29,931	31,140	$3,736,800	94.22%
Desert Water Agency (Exempt)	0	659 [2]	659 [2]	0	$0	0.00%
Caltrans Rest Stop	41	0	41	40	$4,800	0.12%
Desert Oasis Golf Management - Welk Resort	667	0	667	690	$82,800	2.09%
Los Compadres	39	0	39	40	$4,800	0.12%
Mission Springs Water District (Wells 25 & 25A and 26 &26A)	145	0	145	150	$18,000	0.45%
Seven Lakes Country Club	157	0	157	160	$19,200	0.48%
Bel Air Greens	127 [3]	0	127 [3]	130	$15,600	0.39%
Escena	672	0	672	700	$84,000	2.12%
Subtotal	30,408	2,031	32,439	33,050	$3,966,000	100.00%
Mission Creek Subbasin						
Mission Springs Water District	6,792	0	6,792	6,430	$771,600	75.12%
Hidden Springs Country Club	482	0	482	460	$55,200	5.37%
Mission Lakes Country Club	1,068	0	1,068	1,010	$121,200	11.80%
Sands RV Resort	456	0	456	430	$51,600	5.02%
CPV-Sentinel	246	0	246	230	$27,600	2.69%
Subtotal	9,044.15	-	9,044	8,560	$1,027,200	100.00%
Garnet Hill Subbasin						
Mission Springs Water District	285	0	285	290	$34,800	96.67%
Indigo Power Plant	12	0	12	10	$1,200	3.33%
Subtotal	297	0	297	300	$36,000	100.00%
Total	39,749	2,031	41,780	41,910	$5,029,200	

[1] 2016 Metered water production rounded to nearest acre foot, except for Exempt Production and Estimated Production.
[2] Exempt Production (Desert Water Agency).
[3] Estimated Production (estimate based on applied water rates, past and comparable, for Bel Air Greens).
[4] Proportioned to 2013 Production minus 15% conservation, Rounded to nearest 10 AF.
* Exempt Production (10 AF or less).

TABLE 3
COACHELLA VALLEY WATER DISTRICT
APPLICABLE STATE WATER PROJECT CHARGES[1]

	Table A Water Allocation		Probable Table A Water Delivery[3]	Delta Water Charge		Variable Transportation Charge		Off-Aqueduct Power Charge		CVWD Applicable Table A Charges	
Year	Maximum AF	Probable[2] AF	AF	Amount[4] $	Unit $/AF	Amount[5] $	Unit $/AF	Amount[6] $	Unit $/AF	Amount $	Unit[7] $/AF
2016	138,350	81,085	47,029	6,099,214	75.22	7,819,512	166.27	82,771	1.76	14,001,497	297.72
2017	138,350	83,728	48,562	5,767,185	68.88	8,832,942	181.89	73,814	1.52	14,673,941	302.17
2018	138,350	83,728	48,562	7,196,422	85.95	10,494,248	216.10	87,412	1.80	17,778,081	366.09
2019	138,350	83,728	48,562	7,196,422	85.95	9,293,310	191.37	5,342	0.11	16,495,073	339.67
2020	138,350	83,728	48,562	7,196,422	85.95	9,306,422	191.64	5,342	0.11	16,508,185	339.94
2021	138,350	83,728	48,562	7,196,422	85.95	9,573,513	197.14	5,342	0.11	16,775,276	345.44
2022	138,350	83,728	48,562	7,196,422	85.95	9,472,989	195.07	5,342	0.11	16,674,753	343.37
2023	138,350	83,728	48,562	7,196,422	85.95	9,508,925	195.81	5,342	0.11	16,710,689	344.11
2024	138,350	83,728	48,562	7,196,422	85.95	9,311,278	191.74	5,342	0.11	16,513,041	340.04
2025	138,350	83,728	48,562	7,196,422	85.95	9,604,107	197.77	5,342	0.11	16,805,870	346.07
2026	138,350	83,728	48,562	7,196,422	85.95	9,006,309	185.46	5,342	0.11	16,208,072	333.76
2027	138,350	83,728	48,562	7,196,422	85.95	9,630,330	198.31	5,342	0.11	16,832,094	346.61
2028	138,350	83,728	48,562	7,196,422	85.95	9,411,316	193.80	5,342	0.11	16,613,079	342.10
2029	138,350	83,728	48,562	7,196,422	85.95	9,476,874	195.15	5,342	0.11	16,678,638	343.45
2030	138,350	83,728	48,562	7,196,422	85.95	9,229,694	190.06	5,342	0.11	16,431,457	338.36
2031	138,350	83,728	48,562	7,196,422	85.95	10,189,279	209.82	5,342	0.11	17,391,042	358.12
2032	138,350	83,728	48,562	7,196,422	85.95	8,877,619	182.81	5,342	0.11	16,079,383	331.11
2033	138,350	83,728	48,562	7,196,422	85.95	10,003,772	206.00	5,342	0.11	17,205,535	354.30
2034	138,350	83,728	48,562	7,196,422	85.95	9,031,075	185.97	5,342	0.11	16,232,839	334.27
2035	138,350	83,728	48,562	7,196,422	85.95	11,512,108	237.06	5,342	0.11	18,713,871	385.36

(1) As set forth in CDWR Bulletin 132-16, Appendix B (Appendix B).

(2) Probable Table A water allocation is based on currently existing CVWD allocation augmented by TLBWSD, KCWA, and MWD transfers, the latter reduced to 38% to reflect long-term average pursuant to the 2003 Exchange Agreement and its implementation.

(3) Probable Table A water delivery is based on 58% reliability of CVWD allocation augmented by TLBWSD, KCWA, and MWD transfers, the latter reduced to 38% for long-term average, pursuant to the 2003 Exchange Agreement and its implementation.

(4) Amount is based on probable Table A water allocation and Delta Water Charge per Table B-20 (A & B) of Appendix B. From 2017 through 2035, amount is based on State Water Contractors estimated unit charge of $85.95.

(5) Amount is based on probable Table A water delivery and applicable Variable Transportation Unit Charge per Table B-17 of Appendix B.

(6) Amount is based on probable Table A water delivery and Off-Aqueduct Power Unit Charge derived by dividing data in Table B-16B by data in Table B-5B of Appendix B.

(7) Amount of applicable Table A charges divided by probable Table A water delivery.

TABLE 4
DESERT WATER AGENCY
APPLICABLE STATE WATER PROJECT CHARGES[1]

	Table A Water Allocation		Probable Table A Water Delivery[3]	Delta Water Charge		Variable Transportation Charge		Off-Aqueduct Power Charge		DWA Applicable Table A Charges	
Year	Maximum AF	Probable[2] AF	AF	Amount[4] $	Unit $/AF	Amount[5] $	Unit $/AF	Amount[6] $	Unit $/AF	Amount $	Unit[7] $/AF
2016	55,750	48,015	27,849	3,611,688	75.22	4,630,453	166.27	90,788	3.26	8,332,929	299.22
2017	55,750	48,372	28,056	3,331,863	68.88	5,103,106	181.89	89,499	3.19	8,524,468	303.84
2018	55,750	48,372	28,056	4,157,573	85.95	6,062,902	216.10	50,501	1.80	10,270,976	366.09
2019	55,750	48,372	28,056	4,157,573	85.95	5,369,077	191.37	3,086	0.11	9,529,736	339.67
2020	55,750	48,372	28,056	4,157,573	85.95	5,376,652	191.64	3,086	0.11	9,537,311	339.94
2021	55,750	48,372	28,056	4,157,573	85.95	5,530,960	197.14	3,086	0.11	9,691,619	345.44
2022	55,750	48,372	28,056	4,157,573	85.95	5,472,884	195.07	3,086	0.11	9,633,543	343.37
2023	55,750	48,372	28,056	4,157,573	85.95	5,493,645	195.81	3,086	0.11	9,654,305	344.11
2024	55,750	48,372	28,056	4,157,573	85.95	5,379,457	191.74	3,086	0.11	9,540,117	340.04
2025	55,750	48,372	28,056	4,157,573	85.95	5,548,635	197.77	3,086	0.11	9,709,295	346.07
2026	55,750	48,372	28,056	4,157,573	85.95	5,203,266	185.46	3,086	0.11	9,363,925	333.76
2027	55,750	48,372	28,056	4,157,573	85.95	5,563,785	198.31	3,086	0.11	9,724,445	346.61
2028	55,750	48,372	28,056	4,157,573	85.95	5,437,253	193.80	3,086	0.11	9,597,912	342.10
2029	55,750	48,372	28,056	4,157,573	85.95	5,475,128	195.15	3,086	0.11	9,635,788	343.45
2030	55,750	48,372	28,056	4,157,573	85.95	5,332,323	190.06	3,086	0.11	9,492,983	338.36
2031	55,750	48,372	28,056	4,157,573	85.95	5,886,710	209.82	3,086	0.11	10,047,369	358.12
2032	55,750	48,372	28,056	4,157,573	85.95	5,128,917	182.81	3,086	0.11	9,289,577	331.11
2033	55,750	48,372	28,056	4,157,573	85.95	5,779,536	206.00	3,086	0.11	9,940,196	354.30
2034	55,750	48,372	28,056	4,157,573	85.95	5,217,574	185.97	3,086	0.11	9,378,234	334.27
2035	55,750	48,372	28,056	4,157,573	85.95	6,650,955	237.06	3,086	0.11	10,811,615	385.36

(1) As set forth in CDWR Bulletin 132-16, Appendix B (Appendix B).

(2) Probable Table A water allocation is based on currently existing DWA allocation augmented by TLBWSD, KCWA, and MWD transfers, the latter reduced to 38% to reflect long-term average pursuant to the 2003 Exchange Agreement and its implementation.

(3) Probable Table A water delivery is based on 58% reliability of DWA allocation augmented by TLBWSD, KCWA, and MWD transfers, the latter reduced to 38% for long-term average, pursuant to the 2003 Exchange Agreement and its implementation.

(4) Amount is based on probable Table A water allocation and Delta Water Charge per Table B-20 (A & B) of Appendix B. From 2017 through 2035, amount is based on State Water Contractors estimated unit charge of $85.95.

(5) Amount is based on probable Table A water delivery and applicable Variable Transportation Unit Charge per Table B-17 of Appendix B.

(6) Amount is based on probable Table A water delivery and Off-Aqueduct Power Unit Charge derived by dividing data in Table B-16B by data in Table B-5B of Appendix B.

(7) Amount of applicable Table A charges divided by probable Table A water delivery.

TABLE 5
DESERT WATER AGENCY
ESTIMATED ALLOCATED STATE WATER PROJECT CHARGES FOR TABLE A WATER
(PROPORTIONED APPLICABLE CHARGES)[1]

Year	CVWD Applicable Table A Charges[2] $	DWA Applicable Table A Charges[3] $	Combined Applicable Table A Charges $	CVWD Allocated Table A Charges $	DWA Allocated Table A Charges $	DWA Incremental Increase/(Decrease) $	DWA Incremental Increase/(Decrease) %
2015	12,856,459	8,135,846	20,992,305	15,567,894	5,424,412		
						346,804	6
2016	14,001,497	8,332,929	22,334,426	16,563,210	5,771,216		
						223,253	4
2017	14,673,941	8,524,468	23,198,409	17,203,940	5,994,469		
						1,253,407	21
2018	17,778,081	10,270,976	28,049,057	20,801,181	7,247,876		
						(523,065)	(7)
2019	16,495,073	9,529,736	26,024,810	19,299,999	6,724,811		
						5,345	0
2020	16,508,185	9,537,311	26,045,497	19,315,340	6,730,156		
						108,890	2
2021	16,775,276	9,691,619	26,466,896	19,627,850	6,839,046		
						(40,982)	(1)
2022	16,674,753	9,633,543	26,308,296	19,510,232	6,798,064		
						14,650	0
2023	16,710,689	9,654,305	26,364,994	19,552,279	6,812,714		
						(80,578)	(1)
2024	16,513,041	9,540,117	26,053,158	19,321,022	6,732,136		
						119,383	2
2025	16,805,870	9,709,295	26,515,165	19,663,646	6,851,519		
						(243,715)	(4)
2026	16,208,072	9,363,925	25,571,997	18,964,193	6,607,804		
						254,406	4
2027	16,832,094	9,724,445	26,556,539	19,694,329	6,862,210		
						(89,290)	(1)
2028	16,613,079	9,597,912	26,210,991	19,438,071	6,772,920		
						26,728	0
2029	16,678,638	9,635,788	26,314,426	19,514,778	6,799,648		
						(100,773)	(1)
2030	16,431,457	9,492,983	25,924,440	19,225,565	6,698,875		
						391,211	6
2031	17,391,042	10,047,369	27,438,412	20,348,326	7,090,086		
						(534,747)	(8)
2032	16,079,383	9,289,577	25,368,960	18,813,620	6,555,339		
						459,118	7
2033	17,205,535	9,940,196	27,145,731	20,131,274	7,014,457		
						(396,556)	(6)
2034	16,232,839	9,378,234	25,611,072	18,993,171	6,617,901		
						1,011,485	15
2035	18,713,871	10,811,615	29,525,486	21,896,100	7,629,386		

(1) Proportioned in accordance with 2016 Water Management Area production percentages; CVWD is responsible for 74.16% and DWA is responsible for 25.84% of total combined production for the Whitewater River, Mission Creek, and Garnet Hill Subbasins (see **Table 1**).
(2) From Table 3.
(3) From Table 4.

TABLE 6
DESERT WATER AGENCY
PROJECTED EFFECTIVE REPLENISHMENT ASSESSMENT RATES
PURSUANT TO WATER MANAGEMENT AGREEMENTS BETWEEN
COACHELLA VALLEY WATER DISTRICT AND DESERT WATER AGENCY

Year	DWA Allocated Table A Charges [1] $	Estimated Assessable Production[2] AF	Estimated Effective Table A Assessment Rate[3] Fiscal Year $/AF	Rounded Table A Assessment Rate $/AF
2017/2018	6,621,173	41,910	157.99	158.00
2018/2019	6,986,344	41,711	167.49	167.00
2019/2020	6,727,484	41,682	161.40	161.00
2020/2021	6,784,601	41,558	163.26	163.00
2021/2022	6,818,555	41,237	165.35	165.00
2022/2023	6,805,389	40,915	166.33	166.00
2023/2024	6,772,425	40,593	166.84	167.00
2024/2025	6,791,828	40,394	168.14	168.00
2025/2026	6,856,865	40,322	170.05	170.00
2026/2027	6,735,007	40,498	166.30	166.00
2027/2028	6,817,565	40,917	166.62	167.00
2028/2029	6,786,284	41,335	164.18	164.00
2029/2030	6,749,262	41,934	160.95	161.00
2030/2031	6,894,481	42,489	162.27	162.00
2031/2032	6,822,713	42,819	159.34	159.00
2032/2033	6,784,898	43,149	157.24	157.00
2033/2034	6,816,179	43,477	156.78	157.00
2034/2035	7,123,644	43,804	162.63	163.00

(1) From Table 5.
(2) Projections based on model runs for Coachella Valley 2010 Water Management Plan and 2014 Water Management Plan Status Update.
(3) Necessary to pay DWA's estimated Allocated Table A Charges.

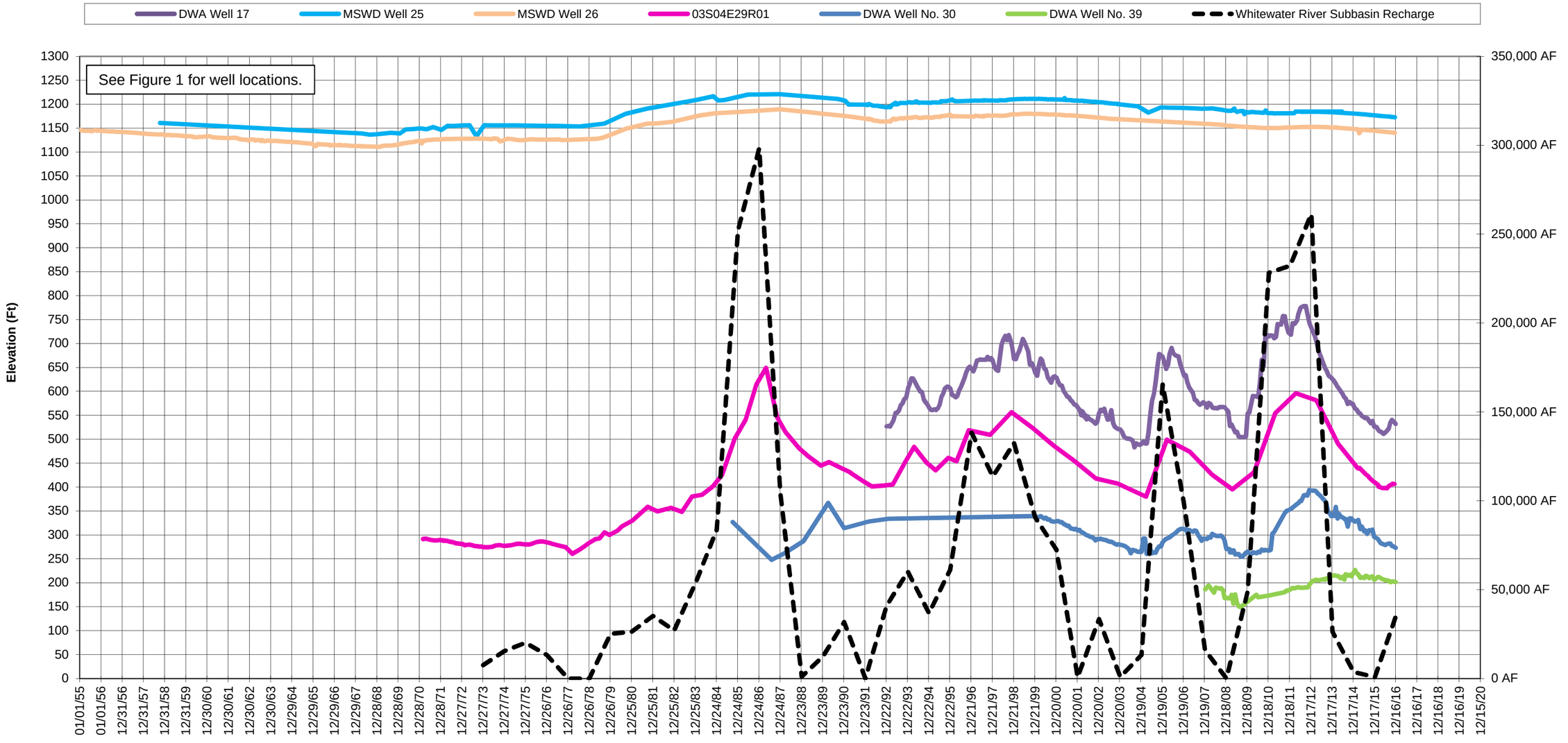
TABLE 7
DESERT WATER AGENCY
WHITEWATER RIVER, MISSION CREEK AND GARNET HILL SUBBASINS
HISTORIC AND PROPOSED REPLENISHMENT ASSESSMENT RATES

	Assessment Rate							Assessments										Payments Made	Surplus (Deficit)	
		WRS		MCS		GHS		Estimated[3] $			Levied[4] $			Collected[5] $			Delinquent[6] $					
Fiscal Year	Table A Allocation $/AF	Other Charges or Costs[1] $/AF	Total[2] $/AF	Other Charges or Costs[1] $/AF	Total[2] $/AF	Other Charges or Costs[1] $/AF	Total[2] $/AF	WRS	MCS	GHS	WRS	MCS	GHS	WRS	MCS	GHS	TOTAL	WRS	MCS	GHS	Table A $	Annual $	Cumulative[7] $
78/79	6.81	0.00	6.81					226,245			199,004			199,004			199,004	0			267,193	(68,189)	(68,189)
79/80	9.00	0.00	9.00					282,405			309,225			309,225			309,225	0			267,125	42,100	(26,089)
80/81	9.50	0.00	9.50					317,482			355,925			355,925			355,925	0			347,491	8,434	(17,655)
81/82	10.50	0.00	10.50					378,838			406,160			406,160			406,160	0			414,086	(7,926)	(25,581)
82/83	21.00	0.00	21.00					800,499			770,871			770,871			770,871	0			891,544	(120,673)	(146,254)
83/84	36.50	0.00	36.50					1,331,374			1,452,317			1,452,317			1,452,317	0			492,329	959,988	813,734
84/85	37.50	0.00	37.50					1,375,762			1,577,125			1,577,125			1,577,125	0			381,713	1,195,412	2,009,146
85/86	31.00	0.00	31.00					1,309,750			1,363,239			1,363,239			1,363,239	0			637,841	725,398	2,734,544
86/87	21.00	0.00	21.00					911,673			912,583			912,583			912,583	0			876,544	36,039	2,770,583
87/88	22.50	0.00	22.50					994,749			1,099,130			1,099,130			1,099,130	0			934,920	164,210	2,934,793
88/89	20.00	0.00	20.00					970,000			965,811			965,811			965,811	0			748,195	217,616	3,152,409
89/90	23.50	0.00	23.50					1,175,002			1,105,446			1,105,446			1,105,446	0			888,979	216,467	3,368,876
90/91	26.00	0.00	26.00					1,313,000			1,207,593			1,207,593			1,207,593	0			784,369	423,224	3,792,100
91/92	31.75	0.00	31.75					1,524,000			1,408,108			1,408,108			1,408,108	0			439,549	968,559	4,760,659
92/93	31.75	0.00	31.75					1,412,875			1,389,641			1,389,641			1,389,641	0			902,273	487,368	5,248,027
93/94	31.75	0.00	31.75					1,397,000			1,411,406			1,411,406			1,411,406	0			1,508,408	(97,002)	5,151,025
94/95	31.75	0.00	31.75					1,412,875			1,384,996			1,384,996			1,384,996	0			2,291,661	(906,665)	4,244,360
95/96	31.75	0.00	31.75					1,425,575			1,434,798			1,434,798			1,434,798	0			2,282,379	(847,581)	3,396,779
96/97	31.75	0.00	31.75					1,409,700			1,517,690			1,517,690			1,517,690	0			1,153,620	364,070	3,760,849
97/98	31.75	0.00	31.75					1,527,175			1,368,789			1,368,789			1,368,789	0			1,560,592	(191,803)	3,569,046
98/99	31.75	0.00	31.75					1,463,675			1,510,078			1,510,078			1,510,078	0			2,663,096	(1,153,018)	2,416,028
99/00	31.75	0.00	31.75					1,436,370			1,530,344			1,530,344			1,530,344	0			2,137,145	(606,801)	1,809,227
00/01	33.00	0.00	33.00					1,576,080			1,506,011			1,506,011			1,506,011	0			1,993,058	(487,047)	1,322,180
01/02	33.00	0.00	33.00					1,563,870			1,559,325			1,559,325			1,559,325	0			273,679	1,285,646	2,607,826
02/03	35.00	0.00	35.00					1,627,500			1,636,783			1,636,783			1,636,783	0			1,226,335	410,448	3,018,274
03/04	35.00	0.00	35.00	0.00	35.00			1,679,300	336,000		1,719,646	397,708		1,719,646	397,708		2,117,354	0	0		4,199,358	(2,082,004)	936,270
04/05	34.00	11.00	45.00	12.00	46.00			2,069,100	464,140		2,160,536	529,108		2,160,536	529,108		2,689,644	0	0		3,813,947	(1,124,303)	(188,033)
05/06	38.00	12.00	50.00	12.00	50.00			2,527,500	596,000		2,463,500	635,562		2,463,500	635,562		3,099,062	0	0		5,791,887	(2,692,825)	(2,880,858)
06/07	51.00	12.00	63.00	12.00	63.00			3,058,020	761,040		3,350,191	789,471		3,343,330	789,471		4,132,801	6,861	0		6,087,627	(1,954,826)	(4,835,684)
07/08	83.00	(34.00)	63.00	(34.00)	49.00			3,230,010	794,430		3,049,824	720,025		3,043,745	720,025		3,763,770	6,079	0		9,131,044	(5,367,274)	(10,202,958)
08/09	65.00	(6.00)	72.00	(6.00)	59.00			3,682,800	876,240		3,074,133	778,029		3,040,146	778,029		3,818,175	33,987	0		6,936,896	(3,118,721)	(13,321,679)
09/10	72.00	0.00	72.00	0.00	72.00			3,605,140	802,800		3,007,319	718,452		2,932,949	718,452		3,651,401	74,370	0		6,236,894	(2,585,493)	(15,907,172)
10/11	99.00	(17.00)	82.00	(17.00)	82.00			3,527,640	828,200		3,376,216	616,632		3,297,080	616,632		3,913,712	79,136	0		4,174,012	(260,300)	(16,167,472)
11/12	115.00	(33.00)	82.00	(33.00)	82.00			3,302,140	805,240		3,347,596	820,179		3,275,308	820,179		4,095,487	72,288	0		7,005,049	(2,909,562)	(19,077,034)
12/13	117.00	(25.00)	92.00	(25.00)	92.00			3,788,326	878,600		3,690,594	888,405		3,689,937	888,405		4,578,342	656	0		8,169,744	(3,591,402)	(22,668,436)
13/14	111.00	(19.00)	92.00	(19.00)	92.00			3,779,360	785,587		3,809,930	785,587		3,809,930	785,587		4,595,517	0	0		6,078,542	(1,483,025)	(24,151,461)
14/15	106.00	(4.00)	102.00	(4.00)	102.00			3,684,919	756,041		3,684,919	561,213		3,684,919	561,213		4,246,132	0 [10]	0		3,798,705	447,427	(23,704,034)
15/16	112.00	(10.00)	102.00	(10.00)	102.00	(10.00)	102.00	3,846,970	989,318	24,480	3,243,582	711,876	0	3,243,582	711,876	0	3,955,458	0	0	0	7,304,465	(3,349,007)	(27,053,041)
16/17	137.00	(35.00)	102.00	(35.00)	102.00	(35.00)	102.00	3,443,112	892,273	31,235	3,443,112	892,273	31,235	1,930,158	403,681	0	2,333,839	0	0	0	3,782,326	(1,448,487)	(1,448,487)
17/18	158.00	(38.00)	120.00	(38.00)	120.00	(38.00)	120.00	3,410,450	1,583,978	34,771	3,410,450 [8]	1,583,978	34,771	3,410,450	1,583,978	34,771	5,029,200	0	0	0	6,621,173 [11]	(1,591,973)	(3,040,459)
18/19	167.00	(26.00)	141.00	(26.00)	141.00	(26.00)	141.00	3,945,591	1,894,970	40,749	3,945,591	1,894,970	40,749	3,945,591	1,894,970	40,749	5,881,310	0			6,986,344	(1,105,033)	(4,145,493)
19/20	161.00	(10.00)	151.00	(10.00)	151.00	(10.00)	151.00	4,152,066	2,098,250	43,639	4,152,066	2,098,250	43,639	4,152,066	2,098,250	43,639	6,293,954	0			6,727,484	(433,529)	(4,579,022)
20/21	163.00	0.00	163.00	0.00	163.00	0.00	163.00	4,385,580	2,341,332	47,107	4,385,580	2,341,332	47,107	4,385,580	2,341,332	47,107	6,774,019	0			6,784,601	(10,582)	(4,589,603)
21/22	165.00	2.53	167.53	2.53	167.53	2.53	167.53	4,403,578	2,456,381	48,416	4,403,578	2,456,381	48,416	4,403,578	2,456,381	48,416	6,908,375	0			6,818,555	89,820	(4,499,784)
22/23	166.00	2.53	168.53	2.53	168.53	2.53	168.53	4,325,365	2,521,276	48,705	4,325,365	2,521,276	48,705	4,325,365	2,521,276	48,705	6,895,346	0			6,805,389	89,957	(4,409,826)
23/24	167.00	2.53	169.53	2.53	169.53	2.53	169.53	4,245,882	2,586,768	48,994	4,245,882	2,586,768	48,994	4,245,882	2,586,768	48,994	6,881,643	0			6,772,425	109,218	(4,300,608)
24/25	168.00	2.53	170.53	2.53	170.53	2.53	170.53	4,186,164	2,652,904	49,283	4,186,164	2,652,904	49,283	4,186,164	2,652,904	49,283	6,888,352	0			6,791,828	96,524	(4,204,084)
25/26	170.00	2.53	172.53	2.53	172.53	2.53	172.53	4,170,201	2,736,738	49,861	4,170,201	2,736,738	49,861	4,170,201	2,736,738	49,861	6,956,800	0			6,856,865	99,936	(4,104,149)
26/27	170.00	2.53	172.53	2.53	172.53	2.53	172.53	4,146,540	2,790,702	49,861	4,146,540	2,790,702	49,861	4,146,540	2,790,702	49,861	6,987,103	0			6,735,007	252,096	(3,852,053)
27/28	170.00	2.53	172.53	2.53	172.53	2.53	172.53	4,164,847	2,844,666	49,861	4,164,847	2,844,666	49,861	4,164,847	2,844,666	49,861	7,059,374	0			6,817,565	241,809	(3,610,244)
28/29	170.00	2.53	172.53	2.53	172.53	2.53	172.53	4,183,090	2,898,630	49,861	4,183,090	2,898,630	49,861	4,183,090	2,898,630	49,861	7,131,581	0			6,786,284	345,297	(3,264,947)
29/30	170.00	2.53	172.53	2.53	172.53	2.53	172.53	4,201,064	2,983,957	49,861	4,201,064	2,983,957	49,861	4,201,064	2,983,957	49,861	7,234,883	0			6,749,262	485,621	(2,779,326)
30/31	170.00	2.53	172.53	2.53	172.53	2.53	172.53	4,218,769	3,061,966	49,861	4,218,769	3,061,966	49,861	4,218,769	3,061,966	49,861	7,330,596	0			6,894,481	436,115	(2,343,210)
31/32	170.00	2.53	172.53	2.53	172.53	2.53	172.53	4,236,393	3,101,294	49,861	4,236,393	3,101,294	49,861	4,236,393	3,101,294	49,861	7,387,548	0			6,822,713	564,836	(1,778,375)
32/33	170.00	2.53	172.53	2.53	172.53	2.53	172.53	4,253,954	3,140,622	49,861	4,253,954	3,140,622	49,861	4,253,954	3,140,622	49,861	7,444,438	0			6,784,898	659,540	(1,118,835)
33/34	170.00	2.53	172.53	2.53	172.53	2.53	172.53	4,271,278	3,179,950	49,861	4,271,278	3,179,950	49,861	4,271,278	3,179,950	49,861	7,501,090	0			6,816,179	684,911	(433,924)
34/35	170.00	2.53	172.53	2.53	172.53	2.53	172.53	4,288,428	3,219,278	49,861	4,288,428	3,219,278	49,861	4,288,428	3,219,278	49,861	7,557,567	0			7,123,644	433,924	0

(1) Includes discretionary reductions and charges for recovery of past shortfalls.
(2) Recommended assessment rate based on two components: 1) State Water Project Table A water Allocation, and 2) Other Charges or Costs.
(3) Assessments Estimated are based on applicable assessment rate and estimated assessable production from annual report for that year.
(4) Assessments Levied are based on applicable assessment rate and actual assessable production, except for the previous year, current year, and subsequent years where amounts remain estimated.
(5) Assessments Collected are based on payments made for Assessments Levied, except for the previous year, current year, and subsequent years where amounts remain estimated.
(6) Assessments Delinquent are based on Assessments Levied less payments made.
(7) Cumulative assessment balance to be used for future Delta improvements. Estimates of future assessment rates may need to be adjusted in the future to accommodate unknown charges for expanded State Water Project Facilities.
(8) For 2017/2018 and beyond, Assessments Estimated are based on Proposed Assessment Rate and Estimated Assessable Production.
(9) Assessments Levied and Collected are estimated based on first, second and third quarters of assessment period.
(10) Delinquent assessment is estimated based on first, second and third quarters of assessment period.
(11) For 2017/2018 and beyond, Payments Made are estimated based on estimated allocated Table A charges.

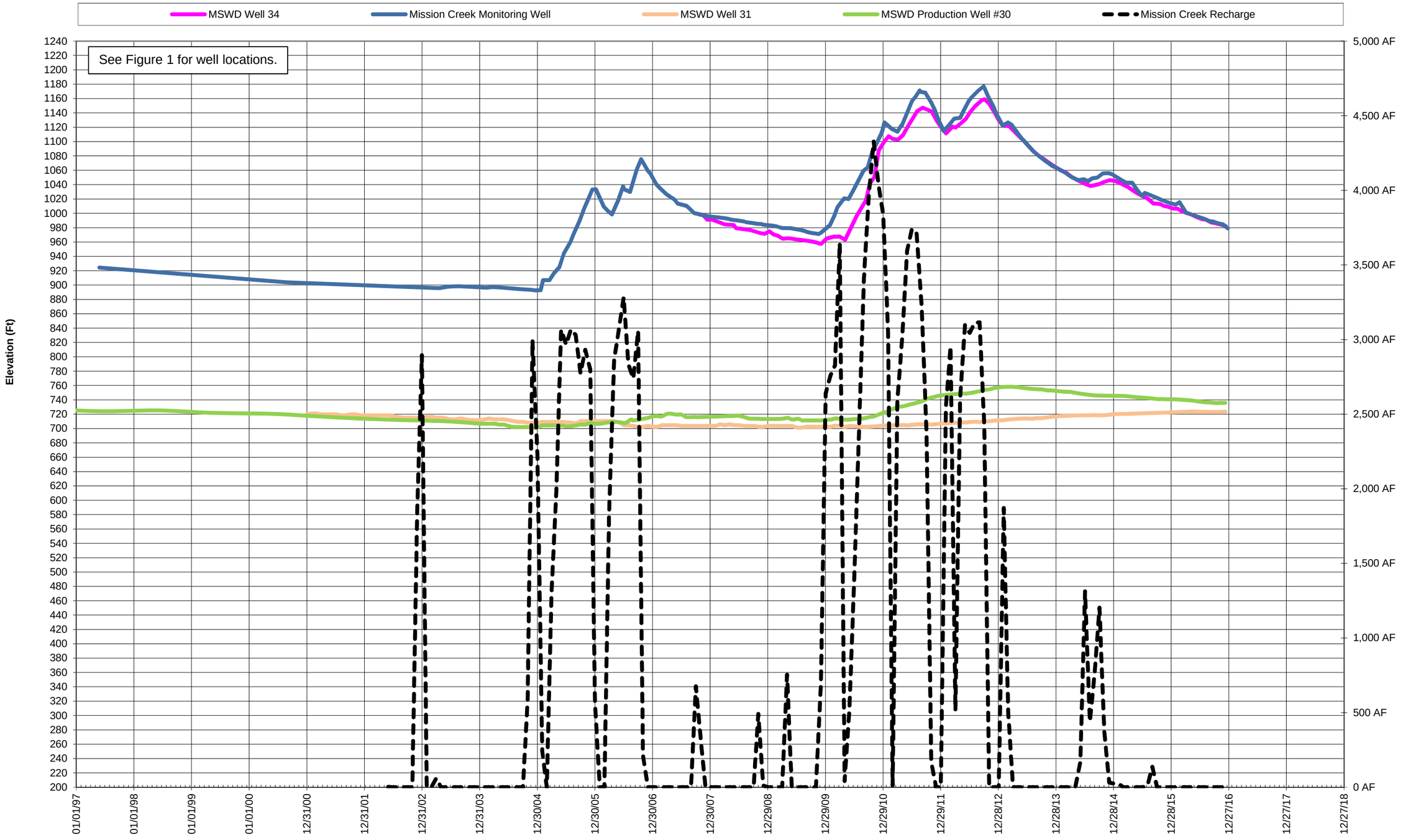
EXHIBITS

EXHIBIT 1
DESERT WATER AGENCY
WHITEWATER RIVER SUBBASIN
RECHARGE QUANTITIES AND GROUNDWATER WELL HYDROGRAPHS



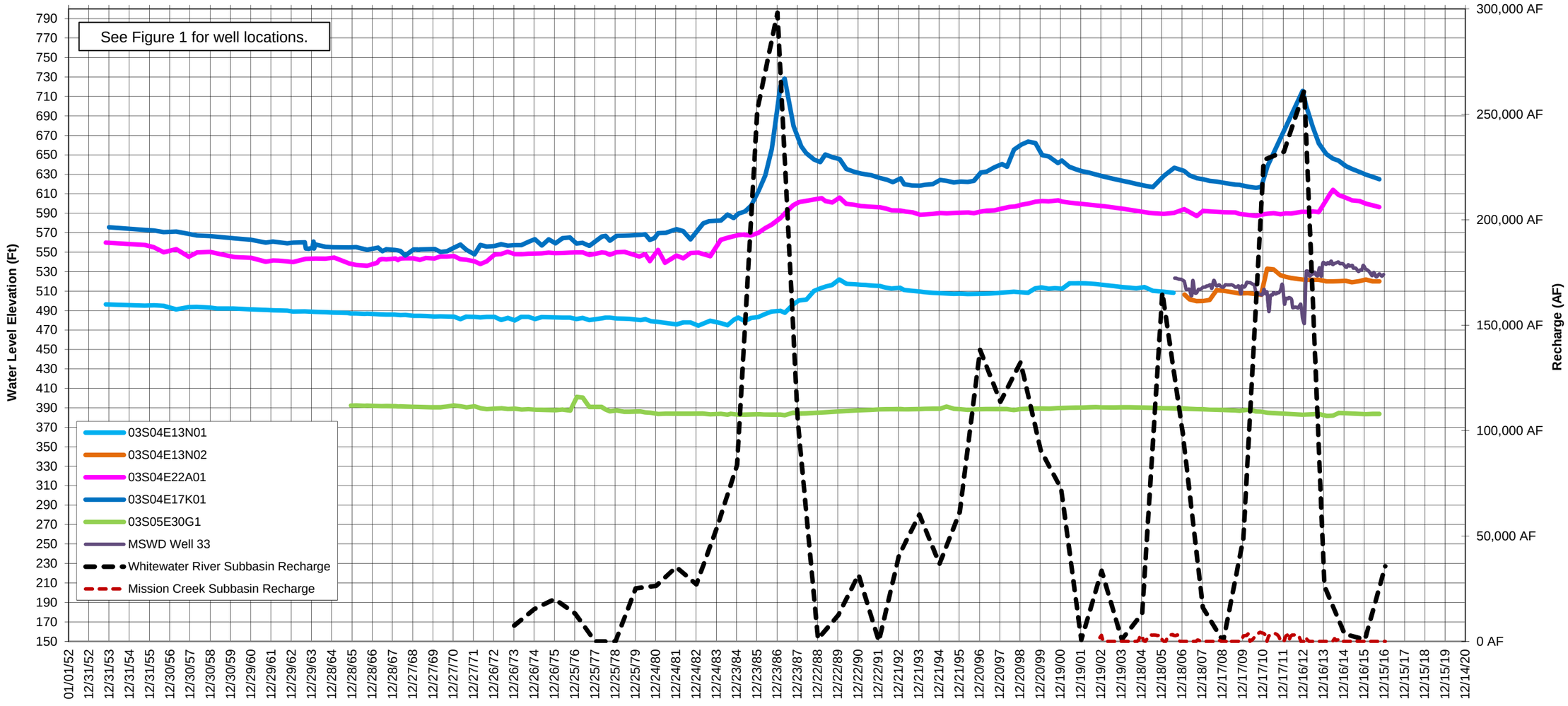
/DFS
101-33P41TBLS.xlsx/Exhibit1
(5/10/2017)

EXHIBIT 2
DESERT WATER AGENCY
MISSION CREEK SUBBASIN
RECHARGE QUANTITIES AND GROUNDWATER WELL HYDROGRAPHS



/DFS
101-33P41TBLS.xlsx/Exhibit2
(5/10/2017)

EXHIBIT 3
GARNET HILL SUBBASIN GROUNDWATER WELL HYDROGRAPHS AND
GROUNDWATER RECHARGE QUANTITIES AT WHITEWATER RIVER AND MISSION CREEK SUBBASINS



/DFS
101-33P41TBLS.xlsx/Exhibit3
(5/10/2017)

EXHIBIT 4
DESERT WATER AGENCY
MISSION CREEK SUBBASIN[1]
HISTORIC VOLUME OF GROUNDWATER IN STORAGE[2]

TIME PERIOD	PRE-1955	1955 - 1978	1979 - 1997	1998 - 2016	**1955 - 2016**
Number of Years		24	19	18	**61**
Water Level Decline, FT[3]		20	30	9	**59**
Period Reduction in Storage, AF		71,200	106,800	32,040	**210,040**
Annual Reduction in Storage, AF/Yr		3,000	5,600	1,800	**3,400**
Change in Storage		0.047	0.074	0.024	**0.139**
Remaining Storage, AF	1,511,800	1,440,600	1,333,800	1,301,760	**1,301,760**

(1) Northwest three-quarters of subbasin: GTC (1979) & SLADE (2000)
(2) Storage loss of 3,560 AF/FT of water level decline: GTC (1979) & SLADE (2000)
(3) Mission Springs Water District Data

EXHIBIT 5
DESERT WATER AGENCY
COMPARISON OF WATER PRODUCTION AND GROUNDWATER REPLENISHMENT
UPPER WHITEWATER RIVER SUBBASIN (WRS) AND MISSION CREEK SUBBASIN (MCS)

PRODUCTION[1]

	WRS AF		MCS AF		TOTAL AF		RATIO OF PRODUCTION	
YEAR	ANNUAL	CUMULATIVE	ANNUAL	CUMULATIVE	ANNUAL	CUMULATIVE	WRS/TOTAL	MCS /TOTAL
2002	213,410	213,410	13,968	13,968	227,378	227,378	93.9%	6.1%
2003	204,275	417,685	14,498	28,466	218,773	446,151	93.4%	6.6%
2004	212,700	630,385	16,548	45,014	229,248	675,399	92.8%	7.2%
2005	204,341	834,726	16,327	61,341	220,668	896,067	92.6%	7.4%
2006	213,850	1,048,576	17,365	78,706	231,215	1,127,282	92.5%	7.5%
2007	211,014	1,259,590	16,409	95,115	227,423	1,354,705	92.8%	7.2%
2008	210,693	1,470,283	15,775	110,890	226,468	1,581,173	93.0%	7.0%
2009	199,149	1,669,432	15,108	125,998	214,257	1,795,430	92.9%	7.1%
2010	182,415	1,851,847	14,304	140,302	196,719	1,992,149	92.7%	7.3%
2011	182,823	2,034,670	14,203	154,505	197,026	2,189,175	92.8%	7.2%
2012	183,108	2,217,778	14,082	168,587	197,189	2,386,364	92.9%	7.1%
2013	182,640	2,400,418	14,495	183,082	197,135	2,583,499	92.6%	7.4%
2014	174,186	2,574,604	13,834	196,916	188,021	2,771,520	92.6%	7.4%
2015	147,429	2,722,033	12,667	209,583	160,096	2,931,616	92.1%	7.9%
2016	148,145	2,870,178	13,219	222,802	161,364	3,092,980	91.8%	8.2%

RECHARGE (TOTAL)

	WRS AF		MCS AF		TOTAL AF		RATIO OF RECHARGE	
YEAR	ANNUAL	CUMULATIVE	ANNUAL	CUMULATIVE	ANNUAL	CUMULATIVE	WRS/TOTAL	MCS/TOTAL
2002	33,435	33,435	4,733	4,733	38,168	38,168	14.2%	14.2%
2003	902	34,337	59	4,792	961	39,129	14.0%	6.5%
2004	13,224	47,561	5,564	10,356	18,788	57,917	70.4%	29.6%
2005	165,554	213,115	24,723	35,079	190,277	248,194	87.0%	13.0%
2006	98,959	312,074	19,901	54,980	118,860	367,054	83.3%	16.7%
2007	16,009	328,083	1,011	55,991	17,020	384,074	94.1%	5.9%
2008	8,008	336,091	503	56,494	8,511	392,585	94.1%	5.9%
2009	57,024	393,115	4,090	60,584	61,114	453,699	93.3%	6.7%
2010	228,330	621,445	33,210	93,794	261,540	715,239	87.3%	12.7%
2011	232,214	853,659	26,238	120,032	258,452	973,691	89.8%	10.2%
2012	257,267	1,110,926	23,406	143,438	280,673	1,254,364	91.7%	8.3%
2013	26,620	1,137,546	2,379	145,817	28,999	1,283,363	91.8%	8.2%
2014	3,533	1,141,079	4,325	150,142	7,858	1,291,221	45.0%	55.0%
2015	865	1,141,944	171	150,313	1,036	1,292,257	83.5%	16.5%
2016	35,699	1,177,643	0	150,313	35,699	1,327,956	100.0%	0.0%

RECHARGE (SWP EXCHANGE ONLY)

	WRS AF		MCS AF		TOTAL AF		RATIO OF RECHARGE	
YEAR	ANNUAL	CUMULATIVE	ANNUAL	CUMULATIVE	ANNUAL	CUMULATIVE	WRS/TOTAL	MCS/TOTAL
2002	33,435	33,435	4,733	4,733	38,168	38,168	14.2%	14.2%
2003	902	34,337	59	4,792	961	39,129	14.0%	6.5%
2004	13,224	47,561	5,564	10,356	18,788	57,917	70.4%	29.6%
2005	165,554	213,115	24,723	35,079	190,277	248,194	87.0%	13.0%
2006	98,959	312,074	19,901	54,980	118,860	367,054	83.3%	16.7%
2007	9	312,083	1,011	55,991	1,020	368,074	0.9%	99.1%
2008	0	312,083	0	55,991	0	368,074	n/a	n/a
2009	46,032	358,115	3,336	59,327	49,368	417,442	93.2%	6.8%
2010	209,937	568,052	31,467	90,794	241,404	658,846	87.0%	13.0%
2011	127,214	695,266	20,888	111,682	148,102	806,948	85.9%	14.1%
2012	253,267	948,533	23,406	135,088	276,673	1,083,621	91.5%	8.5%
2013	24,112	972,645	2,379	137,467	26,491	1,110,112	91.0%	9.0%
2014	0	972,645	4,325	141,792	4,325	1,114,437	0.0%	100.0%
2015	0	972,645	171	141,963	171	1,114,608	0.0%	100.0%
2016	699	973,344	0	141,963	699	1,115,307	100.0%	0.0%

(1) Production in both DWA and CVWD service areas.

EXHIBIT 6
DESERT WATER AGENCY
SUMMARY OF DELIVERIES TO METROPOLITAN WATER DISTRICT (MWD)
AND TO GROUNDWATER BASINS (AF)[1]

BEFORE EXCHANGE AGREEMENT (JULY 1973 - JUNE 1984)

		Delivery to MWD																				Delivery to DWA/CVWD Recharge Facilities									MWD Delivery Surplus/(Deficit) Prior to Exchange and Delivery Agreement	
		SWP Contract Water													Non-SWP Contract Water									From SWP Exchange Account			From Other Accounts						
						SWP Surplus Water									CVWD						DWA												
Year	Table A DWA/CVWD Combined Allocation	Table A Allocation Delivered to MWD	% Delivery to MWD	Carry-Over	Pool A	Pool B	Multi-Year Pool	Article 21	Flood	Yuba	Other	Total	SWP Total	DMB Pacific	Glorious Land Rosedale	Colorado River Credit	Needles	MWD QSA	CPV-Sentinel	Total	WRSRF[2]	MCSRF[3]	Total	WRSRF[2]	MCSRF[3]	Total	Total WRSRF	Total MCSRF	Grand Total	Annual	Cumulative
1973 (Jul-Dec)	14,800	14,800	100%										14,800							14,800	7,475		7,475				7,475		7,475	(7,325)	(7,325)
1974	16,400	16,400	100%										16,400							16,400	15,396		15,396				15,396		15,396	(1,004)	(8,329)
1975	18,000	18,000	100%										18,000							18,000	20,126		20,126				20,126		20,126	2,126	(6,203)
1976	19,600	19,600	100%										19,600							19,600	13,206		13,206				13,206		13,206	(6,394)	(12,597)
1977	21,421	0	0%										0							0	0		0				0		0	0	(12,597)
1978	23,242	25,384	109%										25,384							25,384	0		0				0		0	(25,384)	(37,981)
1979	25,063	25,063	100%										25,063							25,063	25,192		25,192				25,192		25,192	129	(37,852)
1980	27,884	27,884	100%										27,884							27,884	26,341		26,341				26,341		26,341	(1,543)	(39,395)
1981	31,105	31,105	100%										31,105							31,105	35,251		35,251				35,251		35,251	4,146	(35,249)
1982	34,326	34,326	100%										34,326							34,326	27,020		27,020				27,020		27,020	(7,306)	(42,555)
1983	37,547	37,547	100%										37,547							37,547	53,732		53,732				53,732		53,732	16,185	(26,370)
1984 (Jan-Jun)[4]	N/A	25,849	N/A										*25,849*							*25,849*	*50,912*		*50,912*				*50,912*		*50,912*	25,063	(1,307)
1984 Total	40,768	40,768	100%										40,768							40,768	83,708		83,708				83,708		83,708		

WITH EXCHANGE AGREEMENT (JULY 1984 - 2016)

		Delivery to MWD																				Delivery to DWA/CVWD Recharge Facilities									MWD Exchange and Advance Deliveries				
		SWP Contract Water													Non-SWP Contract Water									From SWP Exchange Account			From Other Accounts									
						SWP Surplus Water									CVWD						DWA																
Year	Table A DWA/CVWD Combined Allocation	Table A Allocation Delivered to MWD	% Delivery to MWD	Carry-Over	Pool A	Pool B	Multi-Year Pool	Article 21	Flood	Yuba	Other	Total	SWP Total	DMB Pacific	Glorious Land Rosedale	Colorado River Credit	Needles	MWD QSA	CPV-Sentinel	Total	WRSRF[2]	MCSRF[3]	Total	WRSRF[2]	MCSRF[3]	Total	Total WRSRF	Total MCSRF	Grand Total	Exchange Deliveries	Advance Deliveries	Advance Deliveries Converted to Exchange Deliveries	Advance Delivery Account[5] Credit/(Debit) Annual	Advance Delivery Account[5] Credit/(Debit) Balance
1984 (Jul-Dec)[5]	N/A	14,919	N/A										*14,919*							*14,919*	*32,796*		*32,796*				*32,796*		*32,796*	32,796	16,570		16,570 [6]	16,570
1985	43,989	43,989	100%										43,989							43,989	251,994		251,994				251,994		251,994	251,994	208,005		208,005	224,575
1986	47,210	47,210	100%										47,210				10,000 [7]			57,210	288,201		288,201	10,000 [7]		10,000	298,201		298,201	288,201	240,991		240,991	465,566
1987	50,931	50,931	100%										50,931							50,931	104,334		104,334				104,334		104,334	104,334	53,403		53,403	518,969
1988	54,652	54,652	100%										54,652							54,652	1,096		1,096				1,096		1,096	1,096			53,556	(53,556)	465,413
1989	58,373	58,373	100%										58,373							58,373	12,478		12,478				12,478		12,478	12,478			45,895	(45,895)	419,518
1990	61,200	61,200	100%										61,200							61,200	31,721		31,721				31,721		31,721	31,721			29,479	(29,479)	390,039
1991	61,200	18,360	30%										18,360							18,360	14		14				14		14	14			18,346	(18,346)	371,693
1992	61,200	27,624	45%										27,624							27,624	40,870		40,870				40,870		40,870	40,870	13,246			13,246	384,939
1993	61,200	61,200	100%										61,200							61,200	60,153		60,153				60,153		60,153	60,153			1,047	(1,047)	383,892
1994	61,200	37,359	61%										37,359							37,359	36,763		36,763				36,763		36,763	36,763			596	(596)	383,296
1995	61,200	61,200	100%										61,200							61,200	61,318		61,318				61,318		61,318	61,318	118			118	383,414
1996	61,200	61,200	100%				103,641					103,641	164,841							164,841	138,266		138,266				138,266		138,266	138,266			26,575	(26,575)	356,839
1997	61,200	61,200	100%				50,000			27,130		77,130	138,330							138,330	113,677		113,677				113,677		113,677	113,677			24,653	(24,653)	332,186
1998	61,200	61,200	100%				75,000			20,156		95,156	156,356							156,356	132,455		132,455				132,455		132,455	132,455			23,901	(23,901)	308,285
1999	61,200	61,200	100%				47,380					47,380	108,580							108,580	90,601		90,601				90,601		90,601	90,601			17,979	(17,979)	290,306
2000	61,200	55,080	90%				9,837	35,640			1 [8]	45,478	100,558							100,558	72,450		72,450				72,450		72,450	72,450			28,108	(28,108)	262,198
2001	61,200	23,868	39%				242					242	24,110							24,110	707		707				707		707	707			23,403	(23,403)	238,795
2002	61,200	42,840	70%			436	819	300				1,555	44,395							44,395	33,435	4,733	38,168				33,435	4,733	38,168	38,168			6,227	(6,227)	232,568
2003	61,200	55,080	90%	(17,867)	457	58		532			2 [8]	1,049	38,262							38,262	902	59	961				902	59	961	961			37,301	(37,301)	195,267
2004	61,200	18,597	30%	17,867		191						191	36,655							36,655	13,224	5,564	18,788				13,224	5,564	18,788	18,788			17,867	(17,867)	177,400
2005	171,100	60,152	35%	27,618	585	3,253						3,838	91,608							91,608	165,554	24,723	190,277				165,554	24,723	190,277	190,277	98,669			98,669	276,069
2006	171,100	171,100	100%									0	171,100							171,100	98,959	19,901	118,860				98,959	19,901	118,860	118,860			52,240	(52,240)	223,829
2007	171,100	102,660	60%		802							802	103,462			16,000 [9] *				119,453	9	1,011	1,020	16,000		16,000	16,009	1,011	17,020	1,020			102,442	(102,442)	121,387
2008	171,100	59,885	35%		151					1,833		1,984	61,869		3,000	8,008 [9] *			8,350 *	81,218	0	0	0	8,008	503	8,511	8,008	503	8,511	0			64,869	(64,869)	56,518
2009	171,100	57,710	34%		35	58				2,982	500 [10]	3,575	61,285		3,000 *	7,992 [9] *				72,268	46,032	3,336	49,368	10,992	754	11,746	57,024	4,090	61,114	49,368			11,917	(11,917)	44,601
2010	194,100	97,050	50%	10,730	66	536						602	108,382	8,393 *				10,000 *		126,775	209,937	31,467	241,404	18,393	1,743	20,136	228,330	33,210	261,540	241,404	133,022		133,022	177,623
2011	194,100	124,156	64%		836	1,666		5,800				8,302	132,458					105,000 *		237,458	127,214	20,888	148,102	105,000	5,350	110,350	232,214	26,238	258,452	148,102	25,644 [7]		25,644	203,267
2012	194,100	126,166	65%	31,124	431					967		1,398	158,688		4,000 *					162,688	253,267	23,406	276,673	4,000		4,000	257,267	23,406	280,673	276,673	117,985		117,985	321,252
2013	194,100	67,936	35%		230					2,664		2,894	70,830		16,500			2,508 *		89,838	24,112	2,379	26,491	2,508		2,508	26,620	2,379	28,999	26,491			60,839	(60,839)	260,413
2014	194,100	9,706	5%							1,213		1,213	10,919		5,000			3,549		19,468	0	4,325	7,858	3,533		3,533	3,533	4,325	11,391	7,858			11,610	(11,610)	248,803
2015	194,100	38,820	20%				67			426		493	39,313		9,500			865 *		49,678	0	171	171	865		865	865	171	1,036	171			48,642	(48,642)	200,161
2016	194,100	74,249	38%				566					566	74,815		16,500			64,135		155,450	699	0	699	35,000 **		35,000	35,699	0	35,699	699			119,751	(119,751)	80,410
TOTALS[11]:	3,697,511	2,242,830	---	69,472	4,029	292,681	633	42,272	47,286	10,085	503	397,489	2,709,791	8,393	57,500	32,000	10,000	186,057	8,350	3,012,064	2,717,889	141,963	2,863,385	214,299	8,350	222,649	2,932,188	150,313	3,086,034	2,863,385	907,653	827,243	---	---

NOTES:

(1) As reported by Metropolitan Water District in its monthly "Exchange Water Delivery in Acre-Feet" reports.
(2) Whitewater River Subbasin Replenishment Facility
(3) Mission Creek Subbasin Replenishment Facility
(4) The Advance Delivery Agreement between MWD and CVWD/DWA became effective on 7/1/84; discrepancies in exchange deliveries between MWD and CVWD/DWA after 7/1/84 are adjusted per said agreement.
(5) The effective date of the Advance Delivery Agreement between MWD and CVWD/DWA was 7/1/84.
(6) The first advance delivery figure of 16,570 AF is equal to 32,796 AF of deliveries to CVWD/DWA from 7/84 - 12/84, minus 14,919 AF of deliveries to MWD from 7/84 - 12/84, minus cumulative MWD delivery deficiency of 1,307 AF as of 7/1/84.
(7) 10,000 AF of Needles Water delivered to CVWD in 1986 was credited to the Advance Delivery Account in 2011.
(8) Adjustment for rounding error to reconcile MWD Advance Delivery Account Balance
(9) CVWD's PVID credit
(10) Drought Water Bank
(11) Since 1973
* Not deducted from the Advance Delivery Account
** Added to the Advance Delivery Account
Not included in DWR Bulletin 132-16 Appendix B Table B-5B

EXHIBIT 7
DESERT WATER AGENCY AND COACHELLA VALLEY WATER DISTRICT
COMPARISON OF HISTORIC AND PROPOSED GROUNDWATER REPLENISHMENT
ASSESSMENT RATE FOR THE WHITEWATER RIVER AND MISSION CREEK SUBBASIN MANAGEMENT AREA

	DWA		CVWD WHITEWATER		CVWD MISSION CREEK	
YEAR	$/AF	% INCREASE	$/AF	% INCREASE	$/AF	% INCREASE
78/79	$6.81	---	No Assessment	---	No Assessment	---
79/80	$9.00	32%	No Assessment	---	No Assessment	---
80/81	$9.50	6%	$5.66	---	No Assessment	---
81/82	$10.50	11%	$7.43	31%	No Assessment	---
82/83	$21.00	100%	$19.82	167%	No Assessment	---
83/84	$36.50	74%	$33.23	68%	No Assessment	---
84/85	$37.50	3%	$34.24	3%	No Assessment	---
85/86	$31.00	-17%	$21.81	-36%	No Assessment	---
86/87	$21.00	-32%	$19.02	-13%	No Assessment	---
87/88	$22.50	7%	$19.55	3%	No Assessment	---
88/89	$20.00	-11%	$15.96	-18%	No Assessment	---
89/90	$23.50	18%	$19.66	23%	No Assessment	---
90/91	$26.00	11%	$23.64	20%	No Assessment	---
91/92	$31.75	22%	$25.66	9%	No Assessment	---
92/93	$31.75	0%	$28.23	10%	No Assessment	---
93/94	$31.75	0%	$31.05	10%	No Assessment	---
94/95	$31.75	0%	$34.16	10%	No Assessment	---
95/96	$31.75	0%	$37.58	10%	No Assessment	---
96/97	$31.75	0%	$37.58	0%	No Assessment	---
97/98	$31.75	0%	$42.09	12%	No Assessment	---
98/99	$31.75	0%	$47.14	12%	No Assessment	---
99/00	$31.75	0%	$52.80	12%	No Assessment	---
00/01	$33.00	4%	$59.14	12%	No Assessment	---
01/02	$33.00	0%	$66.24	12%	No Assessment	---
02/03	$35.00	6%	$72.86	10%	$59.80	---
03/04	$35.00	0%	$72.86	0%	$59.80	0%
04/05	$45.00	29%	$78.86	8%	$59.80	0%
05/06	$50.00	11%	$78.86	0%	$59.80	0%
06/07	$63.00	26%	$83.34	6%	$65.78	10%
07/08	$63.00	0%	$91.67	10%	$72.36	10%
08/09	$72.00	14%	$93.78	2%	$76.60	6%
09/10	$72.00	0%	$102.45	9%	$87.56	14%
10/11	$82.00	14%	$102.45	0%	$89.75	3%
11/12	$82.00	0%	$107.57	5%	$98.73	10%
12/13	$92.00	12%	$110.26	3%	$98.73	0%
13/14	$92.00	0%	$110.26	0%	$98.73	0%
14/15	$102.00	11%	$110.26	0%	$98.73	0%
15/16	$102.00	0%	$112.00	2%	$112.00	13%
16/17	$102.00	0%	$145.60	30%	$123.20	10%
17/18	$120.00 *	18%	$189.28 *	30%	$135.52 *	10%

* Proposed replenishment assessment rate

APPENDIX A

APPENDIX A
UPPER COACHELLA VALLEY
MONTHLY AND ANNUAL RECORDED PRECIPITATION DATA
(INCHES)
2016

STATION NAME	WHITEWATER NORTH	SNOW CREEK	DESERT HOT SPRINGS	TACHEVAH DAM	TRAM VALLEY	CATHEDRAL CITY	THOUSAND PALMS	PALM SPRINGS SUNRISE	EDOM HILL
STATION NUMBER	**233**	**207**	**57**	**216**	**224**	**34**	**222**	**442**	**436**
JANUARY	4.45	3.27	1.94	2.57	3.55	1.90	1.57	2.30	1.88
FEBRUARY	0.51	1.52	0.20	0.26	1.32	0.05	0.01	0.28	0.06
MARCH	1.55	2.51	0.20	0.00	0.42	0.00	0.00	0.03	0.01
APRIL	1.92	0.35	0.24	0.10	1.06	0.13	0.09	0.17	0.12
MAY	0.02	0.03	0.00	0.00	0.01	0.00	0.01	0.02	0.00
JUNE	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00
JULY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGUST	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEPTEMBER	0.31	0.37	0.78	0.74	0.86	0.72	0.64	1.07	0.65
OCTOBER	0.22	0.42	0.38	0.12	0.65	0.11	0.17	0.12	0.15
NOVEMBER	1.38	1.52	0.18	0.13	0.65	0.09	0.06	0.20	0.09
DECEMBER	4.08	4.44	1.48	1.75	3.25	1.38	1.34	1.53	1.08
TOTAL	**14.44**	**14.43**	**5.40**	**5.67**	**11.77**	**4.38**	**3.91**	**5.72**	**4.04**
AVERAGE	**7.75**								

NOTE: DATA SHOWN HEREIN WAS PROVIDED BY RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT.

APPENDIX B

ADDENDUM TO SETTLEMENT AGREEMENT
MANAGEMENT AREA DELIVERIES

The Settlement Agreement between Coachella Valley Water District (CVWD), Desert Water Agency (DWA) and Mission Springs Water District (MSWD) dated December 7, 2004 shall be supplemented by the following Addendum, and thus shall be deemed a part thereof:

The Mission Creek Groundwater Replenishment Agreement provides for the delivery to the Mission Creek Subbasin, for groundwater replenishment, of a proportionate share of the imported water delivered to CVWD and DWA for replenishment of the Upper Coachella Valley Groundwater Basin. To ensure that the Mission Creek Subbasin receives its proportionate share of that water, as set forth in the Mission Creek Replenishment Agreement, and to provide for the monitoring thereof, the following procedures shall be applied:

Each year CVWD and DWA shall calculate the combined total quantity of water produced during the previous year from the Whitewater River Management Area and the Mission Creek Management Area, and from sources tributary to those Management Areas, and shall determine from that the percentages of the total production from those Management Areas and their sources.

Water supplies available to CVWD and DWA each year, through their respective State Water Project Contracts, for the replenishment of those Management Areas will be allocated and delivered to the Management Areas for groundwater replenishment in the same percentages, subject to delivery capability and operational constraints in any particular year.

In the event that additional subbasins benefit from recharge programs within CVWD and DWA boundaries, the respective production and recharge delivery percentages from those management areas in those subbasins shall be included in the above described calculations, allocations, and deliveries.

Production and recharge quantities shall be reviewed by the parties to the Management Committee (MSWD, CVWD and DWA) through the Management Committee process. CVWD and DWA will endeavor to accomplish annual proportionate management area deliveries; however, when constrained by operating limitations, they may over deliver or under deliver water to the management areas from year to year as necessary to obtain as much imported water as may be available. Cumulative water deliveries between or among management areas shall be balanced as and when determined by the Management Committee, but no later than 20 years from the date of the settlement agreement and each 20 years thereafter.

The provisions of this Addendum may be enforced by any party hereto.

IN WITNESS WHEREOF, The Parties have caused this Addendum to be executed by their duly authorized representatives on the date first above written.

MSWD:

Mission Springs Water District,
a California county water district

By _____

Its: President

By _____

Its: Vice President

DWA:

Desert Water Agency,
a public agency of the State of California

By _____

Its: President

By _____

Its: Vice President

CVWD:

Coachella Valley Water District,
a California county water district

By _____

Its: President

By _____

Its: Vice President