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ENGINEER'S REPORT

GROUNDWATER REPLENISHMENT AND ASSESSMENT PROGRAM FOR THE GARNET HILL SUBBASIN

DESERT WATER AGENCY 2015/2016

APRIL 2015

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101-78.1
(DFS/KJL/nr)
(REPORTS/101-78P1-ENGRRPT)

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EXECUTIVE SUMMARY

Since 1973, Coachella Valley Water District (CVWD) and Desert Water Agency (DWA) have been replenishing the Whitewater River Subbasin with Colorado River water exchanged for State Water Project water. Also, since 2002, they have been replenishing the Mission Creek Subbasin with Colorado River water exchanged for State Water Project water. Through CVWD's and DWA's recharge efforts in those two subbasins, evidence the Garnet Hill Subbasin has subsequently benefited is observed by rising water levels in wells located throughout the subbasin (see **Figure 2**), indicating an increasing quantity of groundwater in underground storage.

If groundwater replenishment with imported water (artificial recharge) is excluded, annual groundwater overdraft (groundwater extractions or water production in excess of natural groundwater replenishment or recharge) within the Whitewater River, Mission Creek, and Garnet Hill Subbasins of the Upper Coachella Valley Groundwater Basin (see **Figure 1**) would have continued to increase at a steady rate, depending upon actual non-consumptive return flows. Supplementing natural groundwater replenishment resulting from rainfall and snow melt runoff with artificial recharge is therefore necessary to reduce annual and cumulative overdraft.

Increases in cumulative overdraft, without artificial recharge, 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 recharge offsets annual groundwater overdraft and the concerns associated therewith and arrests or reduces the effects of cumulative groundwater overdraft.

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 (WMP) for the Mission Creek and Garnet Hill Subbasins.

The 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 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 Subbasins 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 5**. 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 Areas of Benefit for DWA's portion of the groundwater replenishment program are those portions of the Whitewater River, Mission Creek, and Garnet Hill Subbasins 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 Areas of Benefit, aside from specifically exempted production. Production is defined as either extraction of groundwater from a subbasin and upstream tributaries, or diversion of surface water that would otherwise naturally replenish the subbasin and upstream tributaries, all within the Areas of Benefit. Producers extracting groundwater at rates of 10 acre feet per year (AF/Yr) or fewer are specifically exempted from assessment.

Since groundwater production in the Whitewater River and Mission Creek Subbasins continues to exceed groundwater replenishment (even with artificial recharge) and overdraft continues to occur, and since the Garnet Hill Subbasin relies on those two subbasins for replenishment, continued artificial recharge with available State Water Project Contract water deliveries (a proportion of full entitlements, if available, plus surplus supplies, if available) is recommended. Artificial recharge will reduce annual overdraft, retard cumulative overdraft, and reduce the resultant threat to the area's groundwater supply.

DWA has requested its maximum 2015 Table A State Water Project water allocation (formerly known as "entitlement") of 55,750 acre feet (AF) pursuant to its State Water Project Contract. CVWD plans to do the same with its maximum 2015 Table A water allocation of 138,350 AF, but the current estimated delivery from the State Water Project is 38,820 AF of Table A water to the Coachella Valley agencies.

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, it did recall 100,000 AF in 2005, but it has not recalled any water since then. According to communications with MWD staff, it is unlikely that MWD will recall any water in 2015.

In 2014, 5% of Table A allocation requests were delivered, of which 9,706 AF was allotted to the CVWD and DWA. According to the latest (as of March 2, 2015) projections for 2015, California Department of

Water Resources (CDWR) will deliver 20% of Table A water allocation requests, which would result in deliveries of approximately 38,820 AF of Table A water to the Coachella Valley agencies. The State's historic drought conditions and lower than normal reservoir levels have been the cause of lower allocations delivered by CDWR in the last two calendar years. Ordinarily, DWA requests State Water Project surplus water under the Turn-Back Water Pool Program (Pool A and Pool B) in March of each year, but it is currently unknown if any surplus water will be made available. Also, availability of water under the Yuba River Accord for 2015 is currently uncertain.

The maximum replenishment assessment rate permitted by Desert Water Agency Law for Table A water for the 2015/2016 fiscal year is $164.66/AF. Such rate is based on estimated Applicable State Water Project Charges of $7,810,013 (see **Table 3** for DWA applicable charges for 2015 and 2016) and estimated combined assessable production of 47,430 AF for the Whitewater River, Mission Creek, and Garnet Hill Subbasins (37,510 AF within the Whitewater River Subbasin, 9,680 AF within the Mission Creek Subbasin, and 240 AF within the Garnet Hill Subbasin).

The effective replenishment assessment rate is based on DWA's estimated State Water Project Allocated Charges (based on CDWR's projections for the assessment period) divided by the estimated assessable production for the assessment period (based on the assessable production for the previous calendar year), as set forth in **Table 4**.

Pursuant to the terms of the Water Management Agreement between CVWD and DWA, and based on DWA's State Water Project Allocated Charges amount of $5,335,090 and estimated assessable production of 47,430 AF for the 2014 calendar year (shown in **Table 4** as the estimated assessable production for the 2015/2016 fiscal year), the effective replenishment assessment rate component for Table A water is $112/AF for the 2015/2016 fiscal year.

DWA has elected to set the replenishment assessment rate at $102 for the 2015/2016 fiscal year (based on Proposition 218 proceedings). At that rate, MSWD's replenishment assessment for 220 AF of production within the Garnet Hill Subbasin will be about $22,440. The other producer in the Garnet Hill Subbasin, Indigo Power Plant, produced 20 AF in 2014, which will be about $2,040 in replenishment assessment.

It should be noted that since there is no independent replenishment program for the Garnet Hill Subbasin, the Garnet Hill Subbasin assessable production (240 AF) and the estimated assessments ($24,480) are included in Table 5 for the 2015/2016 fiscal year in both of the Whitewater River Subbasin and Mission

Creek Subbasin Engineer's Reports. The allocation of water to the two spreading grounds (Whitewater River and Mission Creek) is, in part, based on the relative production in the respective Areas of Benefit. In the Mission Creek/Garnet Hill Water Management Plan of 2013, it was determined that the Garnet Hill Subbasin benefits from artificial recharge in the Whitewater River and Mission Creek Subbasins. Therefore, the production quantity for the Garnet Hill Subbasin has been divided and proportionately added to the production totals for both the Whitewater River and Mission Creek Subbasins on the basis of proportionate production in the two Areas of Benefit.

In summary, the Garnet Hill Subbasin is considered to be in a condition of overdraft since it is reliant on other subbasins, which are recognized as being in overdraft. Thus, there is a continuing need for groundwater replenishment. Even though DWA has requested of the CDWR its full State Water Project Table A allocation of 55,750 AF, the CDWR expects to deliver only 20% thereof, essentially 38,820 AF, and DWA has elected to establish the groundwater replenishment assessment rate for 2015/2016 at $102.00/AF.

CHAPTER II
INTRODUCTION

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INTRODUCTION

Desert Water Agency's (DWA's) Groundwater Replenishment and Assessment Program was established to augment groundwater supplies and arrest or retard declining water table conditions within the Upper Coachella Valley, including the Whitewater River, Mission Creek, and Garnet Hill Subbasins. The Garnet Hill Subbasin is situated between the Mission Creek and Whitewater River Subbasins, and has been found to be benefiting from the replenishment activities within those subbasins (see **Figures 1 and 2**).

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 (California Department of Water Resources (CDWR) 2003). The Garnet Hill Subbasin is one of the five subbasins (Whitewater River, Garnet Hill, San Gorgonio Pass, Desert Hot Springs, and Mission Creek) of the Groundwater Basin (United States Geological Survey (USGS)1974).

DWA's groundwater replenishment program encompasses portions of four of the five subbasins (Whitewater River, Garnet Hill, San Gorgonio Pass, and Mission Creek). **Figure 2** illustrates the subbasin boundaries per the Mission Creek/Garnet Hill Subbasin Water Management Plan (MWH 2013) and DWA's Areas of Benefit of the replenishment program.

CDWR Bulletin No. 108 (1964) describes the hydrologic components of the Upper Coachella Valley Groundwater Basin differently than the USGS. For purposes of this report, the more recent USGS subbasin identifications are used.

A. WATER MANAGEMENT AGREEMENTS

The groundwater assessment and replenishment programs for the Whitewater River and Mission Creek Subbasins were implemented pursuant to Joint Water Management Agreements (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) between the Coachella Valley Water District (CVWD) and the DWA.

CVWD and DWA entered into a Settlement Agreement with the Mission Springs Water District (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. An 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.

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 Montgomery Watson Harza (MWH) to prepare the Mission Creek/Garnet Hill Water Management Plan (WMP), which was completed in January 2013. According to the 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 Recharge 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.

B. GROUNDWATER OVERDRAFT

The Water Management Agreements call for maximum importation of State Water Project Contract Table A water allocations (formerly entitlements) by CVWD and DWA for replenishment of groundwater within the basin or its subbasins within defined Water Management Areas. The Agreements also require collection of data necessary for sound management of all water resources within these same Water Management Areas.

The Water Management Agreements were developed following numerous investigations regarding the groundwater supply within the Coachella Valley; said investigations are addressed in DWA's previous Engineer's Reports (*Groundwater Replenishment and Assessment Program for the Whitewater River Subbasin* and *Groundwater Replenishment and Assessment Program for the Mission Creek Subbasin*). These investigations all concluded that groundwater overdraft (groundwater extractions or water production in excess of natural groundwater replenishment or recharge) existed within the Upper Coachella Valley Groundwater Basin.

As a part of the Upper Coachella Valley Groundwater Basin, the Garnet Hill Subbasin is presumed to be in a state of overdraft since it is reliant upon the Whitewater River and Mission Creek Subbasins for replenishment.

C. GROUNDWATER REPLENISHMENT

DWA obtains groundwater from the Whitewater River Subbasin; however, its jurisdiction extends across portions of the Garnet Hill and Mission Creek Subbasins, located northerly of the Whitewater River Subbasin. Since 1973, CVWD and DWA have been using Colorado River water exchanged for State Water Project water (Table A water allocations and supplemental water as available) to replenish groundwater in the Water Management Area for the Whitewater River Subbasin since 1973, and in the Mission Creek Subbasin since 2002. The two agencies are permitted by law to replenish 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 from groundwater replenishment.

Water levels in the Garnet Hill Subbasin declined steadily until recharge activities at the Whitewater Spreading Grounds commenced in the early 70s. Groundwater levels in the Garnet Hill Subbasin have responded rapidly and favorably to the recharge activities at the Whitewater Spreading Grounds. As shown in **Exhibit 4**, water levels in wells in the Garnet Hill Subbasin rose substantially following three large recharge events:

- 1983-1987: 792,000 acre feet (AF) (Whitewater Spreading Grounds only)
- 1995-2000: 609,000AF (Whitewater Spreading Grounds only)
- 2009-2012: 857,000 AF (Whitewater and Mission Creek Spreading Grounds)

Water levels in wells in the western and central portions of the basin (proximate to the Whitewater Spreading Grounds) increased by as much as 60 to 160 feet, and water levels in the southeastern portion of the basin (southeast of Garnet Hill) increased by approximately 40 feet. In addition, static water levels in MSWD's Production Well 33 increased an average of 15 feet from its completion in 2006 through 2014. Hydrographs of several wells within the Garnet Hill Subbasin, in comparison with recharge quantities to the Whitewater River and Mission Creek Subbasins, are shown in **Exhibit 4** and their locations are shown in **Figure 2**.

When significant quantities of water are recharged in the Whitewater River Subbasin, recharge water may increase water levels by one or more of three mechanisms, as follows:

- Increased flow from the Whitewater River Subbasin to the Garnet Hill Subbasin across the Garnet Hill Fault at the upper end and central portions of the Garnet Hill Subbasin due to high groundwater levels in the Whitewater River Subbasin;
- Decreased flow from the Garnet Hill Subbasin to the Whitewater River Subbasin across the Garnet Hill Fault at the lower end of the Garnet Hill Subbasin due to high groundwater levels in the Whitewater River Subbasin;
- Percolation of recharge water into the Garnet Hill Subbasin from the Whitewater River channel as it is being conveyed to the Whitewater Spreading Grounds from Metropolitan Water District's (MWD) turnout.

The WMP states that, based on current data, the relative contribution from the above sources to the replenishment of the Garnet Hill Subbasin is unclear and uncertain. Additional hydrologic data to be gathered in the future may provide more information as to precisely how the Garnet Hill Subbasin is replenished.

The effects of recharge on the Garnet Hill Subbasin are more pronounced with respect to recharge activities at the Whitewater Spreading Grounds than the recharge activities at the Mission Creek Spreading Grounds. However, the WMP reports that the Garnet Hill Subbasin benefits from recharge in the Mission Creek Subbasin as well as in the Whitewater River Subbasin. Outflows from the Mission Creek Subbasin into the Garnet Hill Subbasin across the Banning Fault were estimated at 2,000 acre feet per year (AF/Yr) and 4,000 AF/Yr by Tyley (1974) and Psomas (2012), based on the groundwater contours observed on either side of the Banning Fault.

Currently, no groundwater spreading facilities exist in the Garnet Hill Subbasin. There are no plans to construct or operate recharge facilities in that subbasin due to the minimal groundwater production occurring there.

D. 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 2004/2005. 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 WMP clearly demonstrates that the Garnet Hill Subbasin benefits from groundwater replenishment activities in the two adjacent subbasins, DWA can establish a groundwater assessment program for the Garnet Hill Subbasin.

Pursuant to the conditions of the Settlement Agreement and the conclusions of the WMP, the groundwater production within the Garnet Hill Subbasin (of greater than 10 AF) shall be assessed in a similar manner to the assessments within the Whitewater River and Mission Creek Subbasins.

Desert Water Agency Law requires the filing of an Engineer's Reports regarding the Replenishment Program before DWA can levy and collect groundwater replenishment assessments. The reports 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.

E. WATER MANAGEMENT AREA

Pursuant to the Water Management Agreement between CVWD and DWA, the Water Management Area encompasses the entire Garnet Hill Subbasin within DWA's boundary (see **Figure 1**).

F. AREA OF BENEFIT

The Garnet Hill Area of Benefit situated within DWA's boundaries consists of the northwesterly portion of the Garnet Hill Subbasin (see **Figure 2**) and excludes the Whitewater River channel which conveys imported water from the Colorado River Aqueduct to the Whitewater Spreading Grounds.

The WMP identifies the locations of nine groundwater wells within the Garnet Hill Subbasin. Krieger & Stewart performed a field investigation of those nine wells on January 30, 2014. With the exception of the MSWD Well 33, and the Indigo Power Plant well, no evidence of significant groundwater production was found within the Garnet Hill Subbasin, either in production records or by inspection. Krieger & Stewart inspected the production well and water meter at the Indigo Power Plant on May 27, 2014.

MSWD extracts groundwater to serve its customers, and is situated almost entirely within DWA's Mission Creek and Garnet Hill Areas of Benefit. MSWD owns and operates one production well within the Garnet Hill Subbasin, Well 33, with historic production ranging from 180 AF/Yr to 515 AF/Yr since its construction in 2006. Well 33 produced approximately 216 AF in 2014.

The Indigo Power Plant began producing groundwater for cooling purposes at the plant in 2001. The Indigo Power Plant entered into a "Well Metering Agreement" with DWA to allow DWA to install and maintain a water metering device for the purpose of recording the quantity of extracted groundwater from Indigo Power Plant's onsite groundwater well and to perform hydraulic pump tests and record data, to obtain electrical consumption data, and to measure well water levels and record data for related purposes. Since the agreement with the Indigo Power Plant was enacted, DWA has recorded the meter readings from the well when the meter was installed and during the inspection in May 2014. During the inspection, the Indigo Power Plant provided all available

production data for its well dating back to 2008. Historic production from the Indigo Power Plant ranges from approximately 12 AF/Yr to 40 AF/Yr, and the well produced approximately 23 AF in 2014. MSWD's Well 33 and Indigo Power Plant's well are the only wells known within the Garnet Hill Subbasin to produce groundwater in excess of 10 AF/Yr.

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 Whitewater River, Mission Creek, and Garnet Hill Subbasins. DWA and CVWD manage water supplies through replenishment operations within the Whitewater River and Mission Creek Subbasins.

CHAPTER III
WATER SUPPLY

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WATER SUPPLY

A. GROUNDWATER PRODUCTION

Groundwater production (or groundwater extractions) within the Garnet Hill Subbasin has been historically low, with very little residential development in the subbasin. Existing development consists primarily of power generation facilities such as wind farms, solar fields, and a natural gas-powered electrical generating plant (Indigo Power Plant). In 2007, when production from MSWD's Well 33 commenced, annual production increased significantly within the subbasin. The well serving the Indigo Power Plant, which commenced operation in 2001, produces approximately 23 AF/Yr on average.

The WMP describes the outflows from the Garnet Hill Subbasin as comprising groundwater production, evapotranspiration, and subsurface flow to the Whitewater River Subbasin. The WMP describes production data from 1947 through 2009 for various wells ranging between 4,200 AF per year in 1949 to 100 AF per year in the 1980s and 1990s. The majority of this production is associated with wells located within the Whitewater River drainage, which has been included in the Whitewater River Subbasin Area of Benefit.

Since 2007, the average annual water production within the Garnet Hill Subbasin has been approximately 340 AF/Yr (MSWD Well No. 33). Records of historic pumping data by private pumpers is not available except for the data set forth in the USGS Water Supply Paper 2027 and Water Resources Investigation 77-29 (USGS 1974 & 1978) and the WMP. Historic water production data for the Garnet Hill Subbasin (MSWD's Well No. 33 and Indigo Power Plant's well are set forth in **Exhibit 1** in **Appendix A**.

Krieger & Stewart performed a field investigation of the nine wells identified by the WMP as being located within the Garnet Hill Subbasin on January 30, 2014. The following well sites were visited: 03S04E17K1 (17K1), 03S04E22A1 (22A1), 03S4E13N1 (13N1), 03S04E13N2 (13N2), 03S04E10M1 (10M1), 03S05E30G1 (30G1), 03S05E30G4 (30G4), MSWD Well 33, and the Indigo Power Plant.

MSWD Well 33 is located along Little Morongo Road, north of Interstate 10. The well is currently active.

The Indigo Power Plant is located on 19th Avenue, north of Interstate 10. DWA has an executed agreement with the Indigo Power Plant (dated October 9, 2001) to install and read a water meter to monitor the production of the well and take water level measurements.

The 17K1 well is located within a small residential area that is currently served by MSWD, confirmed by MSWD's current Comprehensive Water Systems Master Plan (Master Plan). The well was not visually located and is assumed not to be producing groundwater in excess of 10 AF/Yr.

The 13N1 and 13N2 wells are located in close proximity to one another at the intersection of 20th Street and the Mission Creek Wash and appear to be abandoned. It is evident that there is no groundwater production from either of these two wells in excess of 10 AF/Yr.

The 22A1 well is located off Interstate 10 at Indian Avenue. At that intersection there are two gas stations and two fast food restaurants that are served water by MSWD, as confirmed by the Master Plan. The well is located near "Hole In The Wall Welding" which is not in business. There is evidence that people are residing on the property, and any groundwater production from the well is assumed not to be in excess of 10 AF/Yr. This property is not served by MSWD according to the Master Plan.

Wells 30G1 and 30G4 are located within CVWD's Area of Benefit on Palm Drive. These wells independently serve the Arco Station and a roadside convenience center across the street, consisting of a Chevron Station and Jack in the Box restaurant. Said wells are not currently assessed replenishment charges because they are considered minimal pumpers by CVWD.

Well 10M1 is located at the Whitewater Maintenance Corporation property on Karen Avenue in North Palm Springs which comprises numerous electrical wind turbines. This well was not accessed during the field inspection, but from observations of the property it appears that well production is not in excess of 10 AF/Yr.

B. NATURAL RECHARGE

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 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 Spreading Grounds. (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 current conditions).

C. NON-CONSUMPTIVE RETURN

Consumptive use in the Upper Coachella Valley is estimated to be about 65% of total water production (per USGS Water Resources Investigation No. 91-4142). 2014 production in the Garnet Hill Subbasin was 240 AF/Yr and resulted in average consumptive use of about 160 AF/Yr and average non-consumptive return of about 80 AF/Yr during the same period.

Non-consumptive return is water returned to the aquifer after use (for example, irrigation water, and septic system discharges leaching, infiltrating, and percolating into the ground). Although non-consumptive return in the Upper Coachella Valley has been estimated at approximately 35% (per USGS Water Resources Investigation No. 91-4142), there is some evidence that non-consumptive return may be higher than 35%. In their various model runs for the Mission

Creek Subbasin, Psomas (2012) made the following assumptions regarding non-consumptive return:

- MSWD and CVWD indoor water use: 97%
- MSWD and CVWD outdoor water use: 20%
- Aquaculture: 80%
- Golf Courses: 20%

For purposes of this report, the 35% non-consumptive return estimate will be used.

D. 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).

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 the Garnet Hill Subbasin's storage volume.

E. ARTIFICIAL RECHARGE

There is no direct artificial recharge within the Garnet Hill Subbasin. All recharge activities are limited to the Whitewater River Subbasin and Mission Creek Subbasin, as described within this section.

1. Historic

From 1973 through 2014, CVWD and DWA have replenished the Whitewater River and Mission Creek Subbasins with approximately 2,650,173 AF (2,508,381 AF to Whitewater River Subbasin and 141,792 AF to Mission Creek Subbasin) of exchange deliveries (Colorado River water exchanged for State Water Project water, including advance deliveries converted to exchange deliveries, but excluding advance deliveries not yet converted to exchange deliveries). Including advance deliveries not yet converted to exchange deliveries, artificial recharge with Colorado River water (exchange and advance deliveries) has approximated 3,025,415 AF (approximately 2,883,623 AF delivered to the Whitewater River Subbasin and approximately 141,792 AF delivered to the Mission Creek Subbasin). See **Exhibits 2, 3, 4, and 7** in **Appendix A**.

2. Table A Water Allocations and Deliveries

State Water Project Table A water allocations are based primarily on hydrologic conditions and legal constraints and vary considerably from year to year. In 2014, Table A water deliveries were approximately 5% of maximum Table A allocations. As of March 2, 2015, Table A water deliveries in 2015 are projected to be 20% of maximum Table A allocations. According to the 2013 *State Water Project Reliability Report,* dated December, 2014, long-term average Table A allocations are currently predicted to be approximately 58% of maximum Table A allocations.

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 35% to represent a long-term average transfer quantity with probable 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 probable Table A water allocations, including MWD transfer reduced to 35% to represent long-term average delivery reliability pursuant to the 2003 Exchange Agreement and its implementation and the 2013 *State Water Project Reliability Report*.

From 1973 through 2003, CVWD and DWA had State Water Project 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 State Water Project 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.

a. 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 Project Contractor, thus increasing its annual Table A water allocation to 33,000 AF/Yr, effective January 1, 2004.

b. 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 Project Contractors). The new exchange contract, 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 then. According to communications with MWD staff, it is unlikely that MWD will recall any water in 2015.

c. Kern County/Tulare Lake Purchase

CVWD and DWA recently 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 Project Contractors, with deliveries commencing in 2010.

3. 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 Agreement. DWA secures funds for its allocated charges for surplus water payments from its Unscheduled State Water Project Deliveries Reserve Account.

a. Turn-Back Water Pool Water

From 1996 through 2013, CVWD and DWA jointly obtained 296,710 AF of water under CDWR's Turn-Back Water Pool Program, which water was exchanged for a like quantity of Colorado River Water and delivered to the Whitewater River Recharge Basins.

There was no Turn-Back Water Pool water available in 2014.

Turn-Back Water Pool water was originally Table A water scheduled for delivery to other State Water Contractors, but those Contractors subsequently determined the water to be 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 7**.

In 2013, DWA and CVWD were allotted 230 AF of State Water Project surplus water under Turn-Back Pool Program (Pool A only) and 0 AF in 2014. Based on current projections, CVWD and DWA expect to receive approximately 0 AF of Pool A or Pool B water in 2015.

b. Flood Water

In 1997 and 1998, CVWD and DWA also jointly obtained 47,286 AF of Kaweah River, Tule River, and Kings River flood flow water, which water was also exchanged for a like quantity of Colorado River water delivered to the Whitewater River Recharge Basins. Currently, availability of flood water in 2014 is uncertain and unlikely due to existing drought.

c. 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. Currently, availability of Article 21 water in 2015 is uncertain and unlikely, and no decision to purchase Article 21 water has been made as of the date of this report.

d. Yuba River Accord and Other Water

In 2008, CVWD and DWA obtained 1,836 AF of water under the terms of the then newly-ratified Yuba River Accord. In 2009, CVWD and DWA obtained 3,482 AF of water under the Yuba River Accord and other conservation/transfer agreements. No water was obtained in 2010 and 2011 under the Yuba River Accord. 1,188 AF and 2,713 AF of Yuba River Accord water was obtained in 2012 and 2013, respectively, and 1,213 AF of Yuba River Accord water was delivered in 2014. Currently, availability of water under the Yuba River Accord in 2015 is uncertain and unlikely, and no decision to purchase Yuba River water has been made as of the date of this report.

4. Past Year

Total artificial recharge by DWA and CVWD (both Whitewater River and Mission Creek Subbasins) for 2014 was 7,858 AF (including CVWD's DMB Pacific and MWD Quantitative Settlement Agreement purchases). Of that amount, 3,533 AF and 4,325 AF of the artificial recharge delivered in 2014 was delivered to the Whitewater River and Mission Creek Subbasins, respectively (see **Exhibit 7**).

5. Current Year

The estimated total quantity of water available for artificial recharge in the Upper Coachella Valley during 2015, including the delivery of 20% of the maximum Table A allocation, approximately 38,820 AF.

6. Allocation of Recharge Quantities to Whitewater River and Mission Creek Spreading Grounds

An Addendum to the 2004 Settlement Agreement between DWA, CVWD, and MSWD states that the water available for recharge each year shall be divided between the Whitewater River and Mission Creek Management Areas proportionate to the previous year's production from within each management area.

The Garnet Hill Subbasin is dependent on recharge from both the Whitewater River Subbasin and the Mission Creek Subbasin for its groundwater replenishment, both natural and artificial; however, based on current data, it is unclear and uncertain as to the relative contribution from these sources to the replenishment of the Garnet Hill Subbasin. In the absence of such quantification, the production within the Garnet Hill Subbasin is considered herein to be making contributions proportionate to groundwater production within the Whitewater River and Mission Creek Subbasins, which in 2014 the proportionate production was 93% from the Whitewater River Subbasin and 7% from the Mission Creek Subbasin.

7. Effect on Overdraft

Increases in cumulative overdraft without artificial recharge will result in declining groundwater levels and increasing pump lifts, necessitating the lowering of pump bowls in existing wells, thereby increasing energy consumption for groundwater extraction, with extreme cumulative overdraft having the potential of causing ground surface settlement, and adversely impacting groundwater quality. Supplementing natural groundwater replenishment resulting from rainfall runoff with artificial recharge is therefore necessary to reduce the impacts of annual and cumulative overdraft.

The effectiveness of the replenishment effort can be assessed by monitoring water levels in wells throughout the Garnet Hill Subbasin. As discussed in **Section 2.C.** herein, water levels in the Garnet Hill Subbasin have increased significantly due to replenishment activities in both the Whitewater River and Mission Creek Subbasins, after a period of decline. Hydrographs of several wells within the Garnet Hill Subbasin, in comparison with recharge quantities to the Whitewater River and Mission Creek Subbasins, are shown in **Exhibit 4** and their locations are shown in **Figure 2**.

8. Adequacy of Current Supplies and Future Prospects

CVWD's and DWA's maximum Table A water allocations currently stand at 138,350 AF/Yr and 55,750 AF/Yr, respectively, for a combined total of 194,100 AF/Yr (71% CVWD and 29% DWA). With full deliveries of these Table A water allocations (with no MWD call-back or recall, and with no CDWR reduced Table A deliveries), plus natural

supply and non-consumptive return flow, annual water supply will be significantly greater than annual water requirements. With reduced deliveries of Table A water allocations (in combination with any MWD call-back or recall), annual water supply may be insufficient to meet annual water requirements without groundwater from storage.

Continuous availability of maximum Table A allocations will require complete development of the State Water Project, which currently has only about half of the water supply capacity needed to meet maximum Table A allocation obligations during droughts; 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 of *The State Water Project Reliability Report* in 2009, wherein the long-term reliability of State Water Project supplies was reduced to approximately 60% of maximum allocations. Without the construction of additional Sacramento-San Joaquin Delta facilities and of certain water storage reservoirs, the water supply capability of the State Water Project will remain limited and Contractors will have to share the reduced available supplies, especially during droughts.

The long-term reliability of State Water Project supplies is currently estimated at 58% of maximum Table A allocations. CDWR published its 2013 *State Water Project Reliability Report* in December 2014. In that draft report, the average projected delivery of Table A allocations was reduced to 58% through 2033 from 60% reported in the 2011 *State Water Project Reliability Report*.

With continued progress in the preparation of the Bay Delta Conservation Plan (BDCP), the balance between more reliable State Water Project water supplies and ecosystem restoration will be increased. The BDCP is a long-term conservation strategy designed to set forth action required for a healthy Delta that will be implemented over the next 50 years. The cost for implementation of the BDCP is currently estimated at about $20 billion. Eventually, State Water Project 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.

In addition to the existing restrictions on water supplies from the State Water Project, California is in a fourth consecutive year of severe drought. Beginning in 2012, California has experienced the driest three years on record. In response to another dry winter in 2014/2015, the governor of California issued an executive order on April 1, 2015, mandating water restrictions statewide, and demanding 25% reduction in water use. As of the date of this report, the effect this executive order will have on water deliveries from the State Water Project is uncertain.

In conclusion, the Upper Coachella Valley Groundwater Basin is in an overdraft condition and will most likely remain so, even with the importation and exchange of available State Water Project water, until a higher proportion of the maximum State Water Project 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 State Water Project supplies.

F. PRECIPITATION

The climate in the Coachella Valley is very dry and warm with an average annual precipitation of approximately 5 inches. 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 by the Riverside County Flood Control and Water Conservation District for 2014 is included in **Appendix B**.

CHAPTER IV
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 area 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 State Water Project charges, specifically the State Water Project Delta Water Charge (Delta Water Charge), the Variable Component of the State Water Project Transportation Charge (Variable Transportation Charge), and the Off-Aqueduct Power Component of the State Water Project 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).

The Area of Benefit for the 2015/2016 Groundwater Replenishment and Assessment Program for the Garnet Hill Subbasin is defined as that portion of the Garnet Hill Subbasin, situated within DWA (**Figure 2**). Those producers situated within said Area of Benefit are benefiting from the Groundwater Replenishment and Assessment Programs currently implemented for the Whitewater River and Mission Creek Subbasins, specifically from groundwater replenishment through the Whitewater River and Mission Creek recharge facilities and operations.

The groundwater replenishment assessment and the replenishment assessment rate for 2015/2016 are based on the following:

1. All groundwater production by MSWD and Indigo Power Plant is metered. There is no surface water production within the Garnet Hill watershed within DWA.

2. The Delta Water Charge, 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 State Water Project Charges.

3. The proportionate share of the Applicable State Water Project Charges allocable to CVWD and DWA in accordance with the Water Management Agreements (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) between CVWD and DWA, hereafter referred to as Allocated State Water Project Charges. Prior to the assessment of Garnet Hill Subbasin, the share of imported water was allocated to each subbasin based on the percentage of the total production in the Area of Benefit in each respective subbasin. 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 Water Management Areas.

   Since the Garnet Hill Subbasin is dependent on both the Whitewater River Subbasin and the Mission Creek Subbasin for its groundwater replenishment, the production within the Garnet Hill Subbasin is considered herein to be making contributions proportionate to groundwater production within the Whitewater River and Mission Creek Subbasins, which for 2014 was 92% from the Whitewater River Subbasin and 8% from the Mission Creek Subbasin. Groundwater production from the Garnet Hill Subbasin is currently less than 1% of the total production within DWA's jurisdiction.

The replenishment assessment rate comprises two components: (1) the Allocated State Water Project charges attributable to the current estimated annual Table A allocation, and (2) certain other charges or costs related to groundwater recharge, such as reimbursement for past surplus water charges for which

assessments had not been levied, or for construction and operation of facilities necessary for groundwater recharge.

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 State Water Project Charges). Due to the interdependent nature of the imported water supply for the Whitewater River and Mission Creek Subbasins, the Allocated State Water Project charges component of the replenishment assessment rate is the same for both replenishment sites.

A. ESTIMATED ASSESSABLE WATER PRODUCTION

Estimated assessable groundwater production within DWA's Garnet Hill Subbasin Area of Benefit consists of groundwater extractions from the Garnet Hill Subbasin, and is based on the prior calendar year's water production. MSWD production is metered and recorded by MSWD staff and Indigo Power Plant production is metered and recorded by the plant maintenance supervisor. Estimated assessable water production is set forth in **Table 6**.

In 2014, production within DWA's Area of Benefit within the Garnet Hill Subbasin was about 240 AF, whereas production within CVWD's Area of Benefit within the Garnet Hill Subbasin is currently 0 AF. Of the total production within the Garnet Hill Subbasin 100% has occurred within DWA.

B. WATER REPLENISHMENT ASSESSMENT RATE

The water replenishment assessment rate consists of two components, one being attributable to State Water Project 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 State Water Project Table A Water Allocation Charges

In accordance with the current Water Management Agreements, CVWD and DWA combine their State Water Project Table A 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 State Water Project 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 State Water Project Charges, it only needs to recover its share (based on relative production) of the combined Applicable State Water Project Charges for both CVWD and DWA (i.e. its Allocated State Water Project Charges). CVWD makes up the difference in accordance with the Water Management Agreements.

The Applicable State Water Project Charges for CVWD and DWA for Table A water are set forth in **Tables 1 and 2**, respectively. Unit Charges for Delta Water, Variable Transportation, and Off-Aqueduct Power Charges are based on estimates presented in Appendix B of CDWR Bulletin 132-14.

Since MWD can call-back or recall the 100,000 AF of Table A allocation it transferred to CVWD and DWA and since the CDWR has been unable to deliver maximum Table A allocations for ten of the past eleven years, the amounts of the Applicable State Water Project Charges for 2015/2016 and future years are being computed based on long-term reliability factors; effectively 58% of maximum State Water Project allocations with the MWD transfer portion being further reduced to 35% to account for possible future recalls pursuant to the 2003 Exchange Agreement.

The derivations of the Applicable State Water Project charges are set forth in **Tables 1 and 2**. The "Maximum Table A Water Allocation" shown in **Tables 1 and 2** is the currently existing Table A water allocation per CDWR Bulletin 132-14 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 35% to reflect the long-term average with probable recalls by MWD, pursuant to 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 35% for long-term average pursuant to the 2003 Exchange Agreement and its implementation.

Applicable State Water Project Charges proportioned in accordance with the Water Management Agreements, more particularly in accordance with relative production within CVWD and DWA, yield Allocated State Water Project Charges. From 2014, DWA will responsible for approximately 100% of the water produced from the Garnet Hill Subbasin for the foreseeable future.

In the past, Allocated State Water Project Charges have been apportioned to DWA and CVWD based on production from the Whitewater River Subbasin Management Area. Since 2003/2004, Allocated State Water Project Charges have been apportioned to DWA and CVWD based on production from the combined Mission Creek Subbasin and Whitewater River Subbasin Management Areas. In 2014, DWA was responsible for approximately 25.5% of the combined water production from the Whitewater River, Mission Creek and Garnet Hill Subbasins. On the assumption that DWA's relative production for 2015 and thereafter will be about the same as for 2014, DWA's share of the combined Applicable State Water Project Charges (i.e. Allocated Charges) will be as set forth in **Table 3**.

Table 3 shows that DWA's estimated Allocated Charges (its share of combined Applicable Charges for Table A water) are anticipated to decrease by about 2% between 2015 and 2016 increase by about 2% between 2016 and 2017 and increase by about 4% between 2017 and 2018. DWA's estimated Allocated Charges will change as estimates presented in future annual editions of CDWR Bulletin 132 change.

Table 3 also shows that DWA's estimated 2015 Allocated Charges are about 68% 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 2015/2016 is $164.66/AF, based on DWA's estimated Applicable Charges (Delta Water Charge, Variable Transportation Charge, and Off-Aqueduct Power Charge) of $7,810,013 (average of estimated 2015 and 2016 Applicable Charges) and estimated 2015/2016 combined assessable production of 47,430 AF within the Whitewater River Mission Creek, and Garnet Hill Subbasins.

The effective replenishment rate is based on DWA's estimated State Water Project Allocated Charges for the current year, as computed using CDWR's projected applicable State Water Project 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 4**.

According to the terms of the Water Management Agreement between DWA and CVWD, and based on DWA's estimated 2015/2016 Allocated Charges of $5,335,090 and 2014 calendar year assessable production (shown in **Table 4** as estimated 2014/2015 assessable production) of 47,430 AF within the Whitewater River and Mission Creek Subbasins, the effective replenishment assessment rate component for Table A water for the 2015/2016 fiscal year is $112/AF.

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

Charges and costs necessary for groundwater replenishment could include the costs for construction, operation, maintenance, and repair of groundwater recharge facilities, reimbursement for past State Water Project 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 State Water Project, the cost of importing and recharging water from sources other than the State Water Project, and the cost of treatment and distribution of reclaimed water.

Currently, other charges and costs for the Whitewater River and Mission Creek Subbasins are being limited to past State Water Project surplus water payments for which assessments have not been levied and construction costs for the Mission Creek Subbasin Spreading Grounds, which totaled $2,731,807 for DWA's proportionate share. To date, only $408,876 has been reimbursed by other charges or costs levied on assessable production. Such past payments for which assessments have not been levied amount to about $27 million for the Whitewater River Subbasin, and about $8 million and $2 million (spreading ground construction) for the Mission Creek Subbasin. Assessments need to be levied in order to reimburse the Unscheduled State Water Project Deliveries Reserve Account and spreading ground construction so that funds are available for future surplus water payments.

3. Proposed 2015/2016 Replenishment Assessment Rate

Proposition 218 Proceedings

DWA held Proposition 218 proceedings on October 19, 2010. Following the public hearing, the DWA Board of Directors adopted replenishment assessment rates for fiscal years 2011/2012 through 2015/2016.

The replenishment assessment rate proposed for 2015/2016 is $102/AF. A new 218 hearing will be required to issue replenishment assessment rates for 2016/2017 and on.

C. ESTIMATED WATER REPLENISHMENT ASSESSMENT FOR 2015/2016

The effective replenishment assessment rate component for Table A water for the 2015/2016 fiscal year is $112/AF, based on DWA's estimated 2015/2016 Allocated Charges of $5,335,090 and assessable production for 2014 of 47,430 AF.

Estimated water replenishment assessments for 2015/2016, based on the selected replenishment assessment rate of $102/AF and estimated assessable water production of 240 AF within the Garnet Hill Subbasin, will amount to approximately $24,480 (see **Table 6**), as part of the total replenishment charge that can be collected by DWA for combined 2014 estimated production of 47,430 AF within Whitewater River, Mission Creek, and Garnet Hill Subbasins of approximately $4,837,860 (47,430 AF at $102/AF, see **Table 6**).

MSWD and Indigo Power Plant are the major producers within the Garnet Hill Subbasin Area of Benefit, with assessable production of approximately 220 AF and 20 AF, respectively. MSWD will also be the major assessee with an estimated replenishment assessment of $22,440, while Indigo Power Plant is responsible for the remaining $2,040.

MSWD will be responsible for approximately 90% of both the estimated assessable water production and the estimated replenishment assessment in the Garnet Hill Subbasin Area of Benefit; Indigo Power Plant will be responsible for the remaining 10%.

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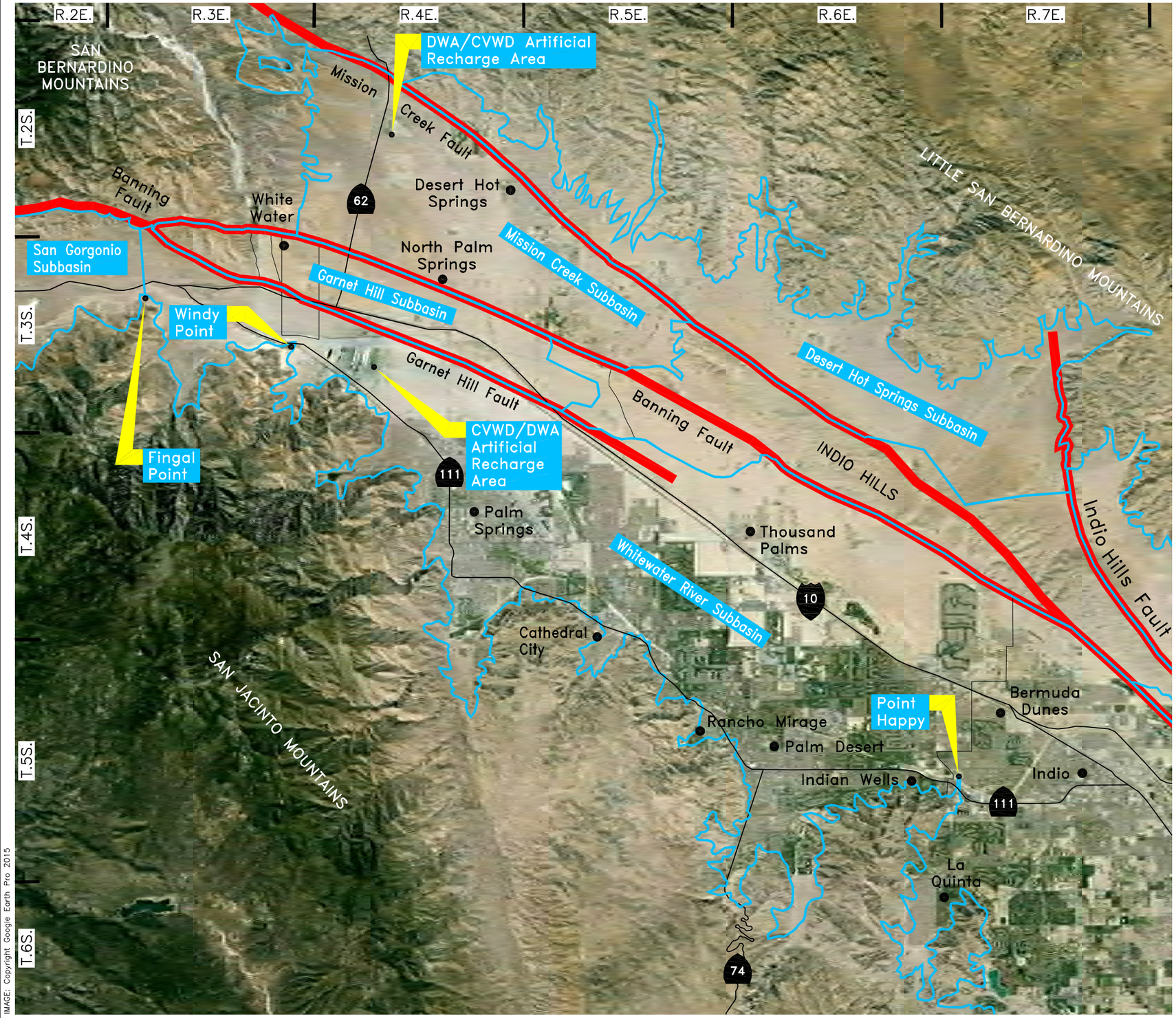
FIGURES

DESERT WATER AGENCY
GROUNDWATER REPLENISHMENT AND ASSESSMENT PROGRAM

2015–2016

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



LEGEND

- UPPER COACHELLA VALLEY GROUNDWATER SUBBASIN BOUNDARY
- FAULTS

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:

2015 GOOGLE EARTH PRO (AERIAL PHOTOGRAPHY), MISSION CREEK AND GARNET HILL SUBBASINS WATER MANAGEMENT PLAN FINAL REPORT, JANUARY 2013 (SUBBASIN BOUNDARIES)

SCALE: 1"=3 MILES

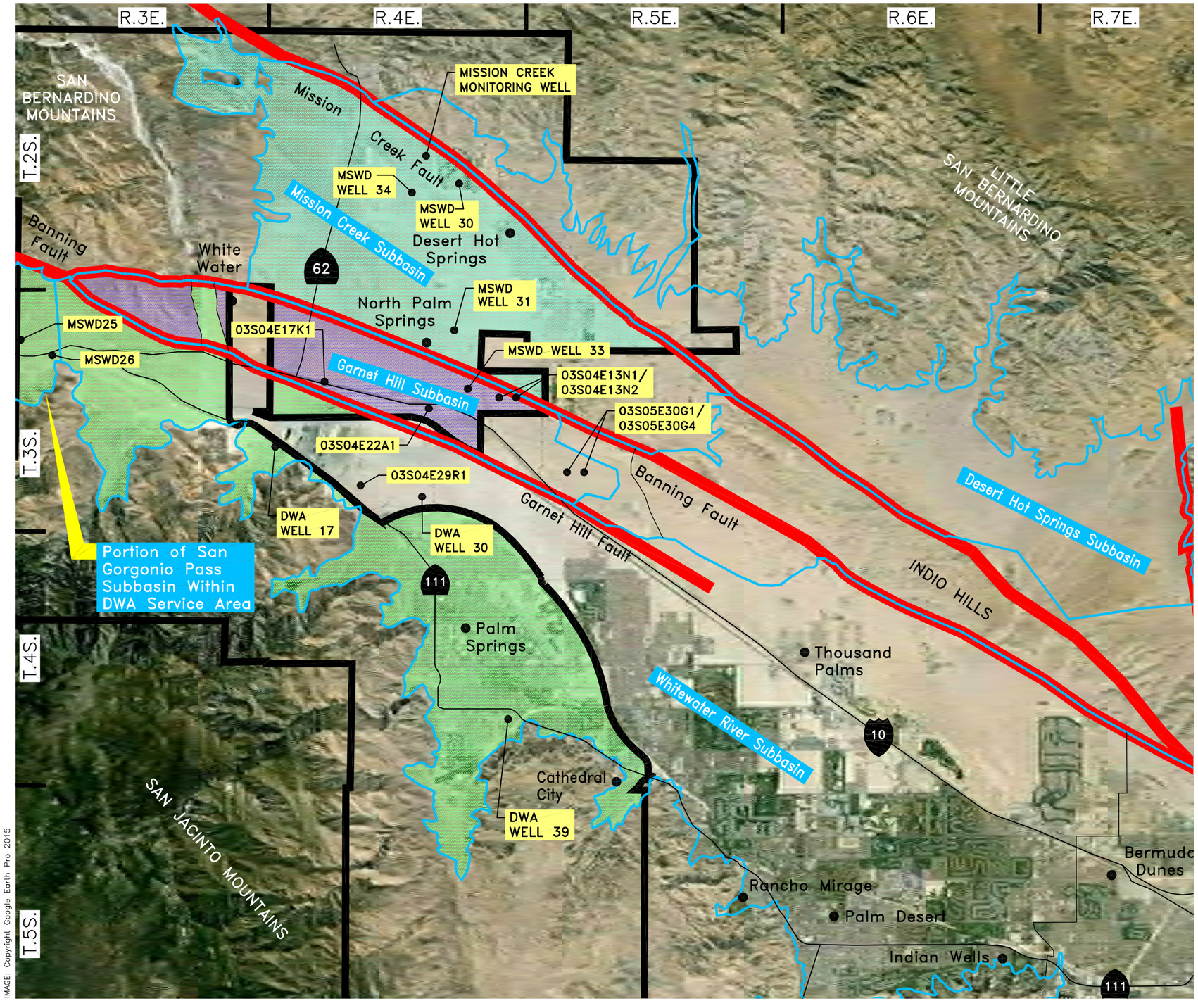
Figure 1

DESERT WATER AGENCY

GROUNDWATER REPLENISHMENT AND ASSESSMENT PROGRAM

2015–2016

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 BOUNDARY
- 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
- 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:

2015 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\78p1\Drawings\Figures\101-78p1f2a.dwg

TABLES

TABLE 1
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
2013	138,350	81,085	47,029	4,358,319	53.75	6,638,614	141.16	1,483,765	31.55	12,480,697	265.38
2014	138,350	81,085	47,029	4,358,319	53.75	10,864,640	231.02	3,689,895	78.46	18,912,854	402.15
2015	138,350	81,085	47,029	4,358,319	53.75	8,376,335	178.11	445,835	9.48	13,180,489	280.26
2016	138,350	81,085	47,029	4,358,319	53.75	8,388,092	178.36	231,383	4.92	12,977,794	275.95
2017	138,350	81,085	47,029	4,358,319	53.75	8,710,241	185.21	227,150	4.83	13,295,710	282.71
2018	138,350	81,085	47,029	4,358,319	53.75	9,401,567	199.91	91,236	1.94	13,851,122	294.52
2019	138,350	81,085	47,029	4,358,319	53.75	8,683,435	184.64	91,707	1.95	13,133,460	279.26

(1) As set forth in CDWR Bulletin 132-14, Appendix B (Appendix B).

(2) Probable Table A water allocation is based on currently existing CVWD allocation augmented by TLBWSD and KCWA transfers, with the MWD transfer portion reduced to 35% 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 the probable CVWD allocation augmented by TLBWSD and KCWA transfers, including 58% reliability of MWD transfer reduced to 35% 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.

(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 2
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
2013	55,750	48,015	27,849	2,580,806	53.75	3,931,165	141.16	1,780,665	63.94	8,292,636	297.77
2014	55,750	48,015	27,849	2,580,806	53.75	6,433,676	231.02	6,867,006	246.58	15,881,489	570.27
2015	55,750	48,015	27,849	2,580,806	53.75	4,960,185	178.11	394,063	14.15	7,935,055	284.93
2016	55,750	48,015	27,849	2,580,806	53.75	4,967,148	178.36	137,017	4.92	7,684,971	275.95
2017	55,750	48,015	27,849	2,580,806	53.75	5,157,913	185.21	134,511	4.83	7,873,230	282.71
2018	55,750	48,015	27,849	2,580,806	53.75	5,567,294	199.91	54,027	1.94	8,202,127	294.52
2019	55,750	48,015	27,849	2,580,806	53.75	5,142,039	184.64	54,306	1.95	7,777,151	279.26

(1) As set forth in CDWR Bulletin 132-14, Appendix B (Appendix B).

(2) Probable Table A water allocation is based on currently existing DWA allocation augmented by TLBWSD and KCWA transfers, with the MWD transfer portion reduced to 35% 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 the probable DWA allocation augmented by TLBWSD and KCWA transfers, including 58% reliability of MWD transfer reduced to 35% 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.

(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 3
DESERT WATER AGENCY
ESTIMATED ALLOCATED STATE WATER PROJECT CHARGES FOR TABLE A WATER
(PROPORTIONED APPLICABLE CHARGES)[1]

Year	CVWD Applicable Table A Charges $	DWA Applicable Table A Charges $	Combined Applicable Table A Charges $	CVWD Allocated Table A Charges $	DWA Allocated Table A Charges $	DWA Incremental Increase / (Decrease) $	DWA Incremental Increase / (Decrease) %
2013	12,480,697	8,292,636	20,773,333	15,467,824	5,305,509		
						3,580,966	67
2014	18,912,854	15,881,489	34,794,342	25,907,867	8,886,475		
						(3,493,565)	(39)
2015	13,180,489	7,935,055	21,115,544	15,722,634	5,392,910		
						(115,640)	(2)
2016	12,977,794	7,684,971	20,662,765	15,385,495	5,277,270		
						129,277	2
2017	13,295,710	7,873,230	21,168,940	15,762,393	5,406,547		
						225,853	4
2018	13,851,122	8,202,127	22,053,249	16,420,849	5,632,400		
						(291,830)	(5)
2019	13,133,460	7,777,151	20,910,611	15,570,041	5,340,570		

(1) Proportioned in accordance with 2014 Water Management Area production percentages; CVWD is responsible for 74.46% and DWA is responsible for 25.54% of combined production within the Whitewater River, Mission Creek, and Garnet Hill Subbasins (see Exhibit 1 in the Appendix).

TABLE 4
DESERT WATER AGENCY
PROJECTED REPLENISHMENT ASSESSMENT RATES
PURSUANT TO WATER MANAGEMENT AGREEMENT BETWEEN
COACHELLA VALLEY WATER DISTRICT AND DESERT WATER AGENCY

Year	DWA Allocated Table A Charges (Appendix B) $	Estimated Assessable Production AF	Effective Table A Assessment Rate Fiscal Year $/AF[(1)]	Rounded Table A Assessment Rate $/AF
2015/2016	5,335,090	47,430	112.48	112.00
2016/2017	5,341,909	47,430	112.63	113.00
2017/2018	5,519,474	47,430	116.37	116.00
2018/2019	5,486,485	47,430	115.68	116.00
2019/2020	5,389,240	47,430	113.63	114.00

(1) Based on allocated charges estimated in previous year.

TABLE 5
DESERT WATER AGENCY
GARNET HILL SUBBASIN
HISTORIC, PROPOSED, AND PROJECTED REPLENISHMENT ASSESSMENT RATES, COLLECTIONS, PAYMENTS, AND ACCOUNT BALANCE

	Assessment Rate			Assessments				Proportionate Share of State Project Payments Made	Assessments Collected Less State Project Payments Made Surplus (Deficit)	
Fiscal Year	Table A Allocation $/AF	Other Charges or Costs[1] $/AF	Total $/AF	Estimated[2] $	Levied[3] $	Collected[4] $	Delinquent[5] $	Table A $	Annual $	Cumulative[9] $
2015/2016	112.00	(10.00)	102.00 [6]	24,480 [7]	24,480	24,480 [8]	0	26,996	2,516	2,516

(1) Includes charge for DWA's proportionate share of recharge basin cost amortized at zero interest over 20 years, and discretionary reductions.
(2) Assessments Estimated are based on applicable assessment rate and estimated assessable production from annual report for that year.
(3) 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.
(4) Assessments Collected are based on payments made for Assessments Levied, except for the previous year, current year, and subsequent years where amounts remain estimated.
(5) Assessments Delinquent are based on Assessments Levied less payments made.
(6) Proposed assessment rate based on two components: 1) State Water Project Table A water, and 2) Other Charges and Costs (see note 1).
(7) For 2015/2016, Assessments Estimated are based on Proposed Assessment Rate and Estimated Assessable Production for Garnet Hill Subbasin.
(8) For 2015/2016 and beyond, Payments Made are estimated based on estimated allocated Table A charges, proportioned to Estimated Assessable Production for Garnet Hill Subbasin.
(9) Cumulative assessment balance to be used for future Delta improvements. Estimates of future assessment rates may need to be adjusted in the furure to accommodate unknown charges or expanded State Water Project facilities.

TABLE 6
DESERT WATER AGENCY
GROUNDWATER REPLENISHMENT AND ASSESSMENT PROGRAM
ESTIMATED GARNET HILL SUBBASIN MANAGEMENT AREA WATER PRODUCTION
AND ESTIMATED WATER REPLENISHMENT ASSESSMENTS
2015/2016

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 $	Water Replenishment Assessment Percent
Garnet Hill Subbasin	240	102	24,480	0.5%
Mission Creek Subbasin	9,680	102	987,360	20.4%
Whitewater River Subbasin	37,510	102	3,826,020	79.1%
Combined Subbasins	**47,430**		**4,837,860**	**100%**

ESTIMATED GARNET HILL SUBBASIN MANAGEMENT AREA WATER PRODUCTION AND WATER REPLENISHMENT ASSESSMENTS

Producer	2014 Water Production Groundwater Extraction AF	2014 Water Production Surface Water Diversion AF	2014 Water Production Combined Water Production AF	Estimated 2015/2016 Assessable Water Production AF[1]	Estimated Water Replenishment Assessment @ $102/AF $	Estimated Water Replenishment Assessment @ $102/AF Percent
Garnet Hill Subbasin						
Mission Springs Water District	216	0	216	220	22,440	92%
Indigo Power Plant	23	0	23	20	2,040	8%
Total	**239**	**0**	**239**	**240**	**24,480**	**100%**

(1) Rounded to nearest 10 Acre Feet.

APPENDIX A

EXHIBIT 1

DESERT WATER AGENCY

HISTORIC WATER PRODUCTION

FOR REPLENISHMENT ASSESSMENT FOR

DESERT WATER AGENCY AND COACHELLA VALLEY WATER DISTRICT

WHITEWATER RIVER SUBBASIN, MISSION CREEK SUBBASIN, AND GARNET HILL

WATER MANAGEMENT AREAS

	CVWD PRODUCTION		DWA PRODUCTION					COMBINED CVWD & DWA PRODUCTION					GHS PRODUCTION PERCENTAGES		COMBINED WRS, MCS, & GHS PRODUCTION PERCENTAGES	
	GWE		GWE			SWD		GWE			SWD					
	WRS	MCS	WRS	MCS	GHS	WRS	COMB	WRS	MCS	GHS	WRS	COMB				
Year	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	CVWD	DWA	CVWD	DWA
2014	136,027	4,154	36,372	9,680	240 (1)	1,787	48,080	172,400	13,834	240	1,787	188,261	0.00	100.00	74.46	25.54

ABBREVIATIONS:

GWE = GROUNDWATER EXTRACTIONS
SWD = SURFACE WATER DIVERSIONS
COMB = COMBINED
WRS = WHITEWATER RIVER SUBBASIN
MCS = MISSION CREEK SUBBASIN
GHS = GARNET HILL SUBBASIN

NOTE: ALL DATA FOR THE GARNET HILL SUBBASIN PRIOR TO 2013 WAS NOT ASSESSABLE PRODUCTION FOR REPLENIGHMSNT ASSESSMENT FEES.

(1) GARNET HILL PRODUCTION SHOWN INDLUDES ONLY MSWD WELL 33 AND INDIGO POWER PLANT PRODUCTION DATA FOR 2014.

EXHIBIT 2
METROPOLITAN WATER DISTRICT/COACHELLA VALLEY WATER DISTRICT/DESERT WATER AGENCY
WATER EXCHANGE AGREEMENT AND ADVANCE DELIVERY AGREEMENT
SUMMARY OF EXCHANGE AND ADVANCE DELIVERIES, JULY 1973 THROUGH DECEMBER 1999[1]

A. JULY 1973 THROUGH JUNE 1984

YEAR	COMBINED CVWD/DWA SWP ENTITLEMENT	CVWD/DWA DELIVERIES TO MWD (SWP)	MWD DELIVERIES TO CVWD/DWA (SPREADING GROUNDS)	ANNUAL MWD DELIVERY SURPLUS (DEFICIT)	CUMULATIVE MWD DELIVERY SURPLUS (DEFICIT)
1973 (JUL-DEC)	14,800	14,800	7,475	(7,325)	(7,325)
1974	16,400	16,400	15,396	(1,004)	(8,329)
1975	18,000	18,000	20,126	2,126	(6,203)
1976	19,600	19,600	13,206	(6,394)	(12,597)
1977	21,421	0	0	0	(12,597)
1978	23,242	25,384	0	(25,384)	(37,981)
1979	25,063	25,063	25,192	129	(37,852)
1980	27,884	27,884	26,341	(1,543)	(39,395)
1981	31,105	31,105	35,251	4,146	(35,249)
1982	34,326	34,326	27,020	(7,306)	(42,555)
1983	37,547	37,547	53,732	16,185	(26,370)
1984 (JAN-JUN)[2]	N/A	25,849	50,912	25,063	(1,307)
TOTALS:	269,388	275,958	274,651		

B. JULY 1984 THROUGH DECEMBER 1999

YEAR	COMBINED CVWD/DWA SWP ENTITLEMENT DELIVERY	TOTAL CVWD/DWA DELIVERY TO MWD (SWP)	MWD DELIVERY TO CVWD/DWA (SPREADING GROUNDS)	MWD ADVANCE DELIVERY	MWD ADVANCE DELIVERY CONVERTED TO EXCHANGE DELIVERY
1984 (JUL-DEC)[3]	40,768	14,919	32,796	16,570	---
1985	43,989	43,989	251,994	208,005	---
1986	47,210	47,210	298,201	240,991	---
1987	50,931	50,931	104,334	53,403	---
1988	54,652	54,652	1,096	---	53,556
1989	58,373	58,374	12,478	---	45,896
1990	61,200	61,200	31,721	---	29,479
1991	61,200	18,360	14	---	19,111
1992	61,200	27,624	40,870	13,330	---
1993	61,200	61,200	60,153	---	1,047
1994	61,200	37,359	36,763	---	596
1995	61,200	61,200	61,318	118	---
1996[4]	61,200	164,841	138,266	---	26,575
1997[5]	61,200	138,330	113,677	---	24,653
1998[6]	61,200	156,356	132,455	---	23,901
1999[7]	61,200	108,580	90,601	---	17,979
TOTALS:	907,923	1,105,125	1,406,737	532,417	242,793

(1) AS REPORTED BY METROPOLITAN WATER DISTRICT IN ITS MONTHLY "EXCHANGE WATER DELIVERY IN ACRE-FEET" REPORTS.

(2) ADVANCE DELIVERY AGREEMENT BETWEEN MWD AND CVWD/DWA BECAME EFFECTIVE 7/1/84; DISCREPANCIES IN EXCHANGE DELIVERIES BETWEEN MWD AND CVWD/DWA AFTER 7/1/84 ADJUSTED PER SAID AGREEMENT

(3) EFFECTIVE DATE OF ADVANCE DELIVERY AGREEMENT BETWEEN MWD AND CVWD/DWA WAS 7/1/84; 16,570 AF ADVANCE DELIVERY FIGURE REFLECTS 7/84 - 12/84 DELIVERIES TO MWD OF 14,919 AF AND 7/84 - 12/84 DELIVERIES TO CVWD/DWA OF 32,796 AF, LESS CUMULATIVE MWD DELIVERY DEFICIENCY OF 1,307 AF AS OF 7/1/84.

(4) 1996 COMBINED CVWD/DWA ENTITLEMENT AND EXCHANGE DELIVERIES INCREASED BY PURCHASE OF 103,641 AF THROUGH DWR'S 1996 TURN-BACK WATER POOL PROGRAM (SPECIFICALLY POOL B WATER).

(5) 1997 COMBINED CVWD/DWA ENTITLEMENT AND EXCHANGE DELIVERIES INCREASED BY PURCHASE OF 50,000 AF THROUGH DWR'S 1997 TURN-BACK WATER POOL PROGRAM (SPECIFICALLY POOL B WATER) AND BY PURCHASE OF 27,130 AF OF KAWEAH RIVER AND TULE RIVER FLOOD FLOW WATER.

(6) 1998 COMBINED CVWD/DWA ENTITLEMENT AND EXCHANGE DELIVERIES INCREASED BY PURCHASE OF 75,000 AF THROUGH DWR'S 1998 TURN-BACK WATER POOL PROGRAM (SPECIFICALLY POOL B WATER) AND BY PURCHASE OF 20,156 AF OF KAWEAH, TULE, AND KINGS RIVERS RIVER FLOOD FLOW WATER.

(7) 1999 COMBINED CVWD/DWA ENTITLEMENT AND EXCHANGE DELIVERIES INCREASED BY PURCHASE OF 47,380 AF THROUGH DWR's 1999 TURN-BACK WATER POOL PROGRAM (SPECIFICALLY POOL B WATER).

NOTE: ALL FIGURES ARE IN ACRE FEET

EXHIBIT 3
METROPOLITAN WATER DISTRICT/COACHELLA VALLEY WATER DISTRICT/DESERT WATER AGENCY
WATER EXCHANGE AGREEMENT AND ADVANCE DELIVERY AGREEMENT
SUMMARY OF EXCHANGE AND ADVANCE DELIVERIES, JANUARY 2000 THROUGH DECEMBER 2011[1]

YEAR	TOTAL CVWD/DWA EXCHANGE DELIVERY TO MWD (SWP) AF	MWD EXCHANGE DELIVERY TO CVWD/DWA RECHARGE BASINS AF	MWD ADVANCE DELIVERY TO CVWD/DWA RECHARGE BASINS AF	MWD ADVANCE DELIVERY CONVERTED TO EXCHANGE DELIVERY TO CVWD/DWA AF
2000[2]	100,557	72,450	---	28,107
2001[3]	24,110	707	---	23,403
2002[4]	44,395	38,168	---	6,227
2003[5]	38,262	961	---	37,301
2004[6]	36,655	18,788	---	17,867
2005[7]	91,608	190,277	98,669	0
2006[8]	171,100	118,860	---	52,240
2007[9]	103,462	17,020	---	102,442
2008[10]	64,872	0	---	64,872
2009[11]	64,285	52,368	---	11,917
2010[12]	108,382	241,404	133,022	0
2011[13]	132,458	148,102	25,644	0
TOTALS:	980,146	899,105	257,335	344,376
			CUMULATIVE MWD ADVANCE DELIVERIES, 7/84 THROUGH 12/11:	789,752
			CUMULATIVE MWD ADVANCE DELIVERIES CONVERTED TO EXCHANGE DELIVERIES, 7/84 THROUGH 12/11:	587,169

(1) AS REPORTED BY METROPOLITAN WATER DISTRICT IN ITS MONTHLY "EXCHANGE DELIVERY SUMMARY IN ACRE-FEET" REPORTS AND ANNUAL SCHEDULES OF WATER DELIVERED TO DWA AND CVWD.

(2) 2000 CVWD/DWA EXCHANGE DELIVERY TO MWD CONSISTS OF 55,080 AF OF TABLE A WATER (90% ALLOCATION), 9,837 AF OF DWR'S 2000 TURN-BACK WATER POOL PROGRAM (SPECIFICALLY POOL B) WATER AND 35,640 AF OF INTERRUPTIBLE (ARTICLE 21) WATER.

(3) 2001 CVWD/DWA EXCHANGE DELIVERY TO MWD CONSISTS OF 23,868 AF OF TABLE A WATER (39% ALLOCATION), AND 242 AF OF DWR'S 2001 TURN-BACK WATER POOL PROGRAM (SPECIFICALLY POOL B) WATER.

(4) 2002 CVWD/DWA EXCHANGE DELIVERY TO MWD CONSISTS OF 42,840 AF OF TABLE A WATER (70% ALLOCATION), 1,255 AF OF DWR'S 2002 TURN-BACKWATER POOL PROGRAM (436 AF OF POOL A AND 819 AF OF POOL B) WATER, AND 300 AF OF ARTICLE 21 WATER.

(5) 2003 CVWD/DWA EXCHANGE DELIVERIES TO MWD CONSIST OF 37,213 AF OF TABLE A WATER (90% ALLOCATION = 55,080 AF. LESS 17,867 NOT DELIVERED BY MWD AND CREDITED TO DWA AND CVWD IN 2004), 515 AF OF DWR'S 2003 TURN-BACK WATER POOL PROGRAM (457 AF OF POOL A AND 58 AF OF POOL B) WATER, AND 532 AF OF ARTICLE 21 WATER.

(6) 2004 CVWD/DWA EXCHANGE DELIVERIES TO MWD CONSIST OF 18,597 AF OF TABLE A WATER (30% ALLOCATION), 191 AF OF DWR'S 2004 TURN-BACK WATER POOL PROGRAM WATER (ALL FROM POOL B). 17,867 AF CREDITED TO DWA/CVWD FOR QUANTITY NOT DELIVERED BY MWD IN 2003.

(7) 2005 CVWD/DWA EXCHANGE DELIVERIES TO MWD CONSIST OF 87,770 AF OF TABLE A WATER (50% ALLOCATION), AND 3,838 AF OF DWR'S 2005 TURN-BACK WATER POOL PROGRAM (585 AF OF POOL A AND 3,253 AF OF POOL B) WATER.

(8) 2006 CVWD/DWA EXCHANGE DELIVERIES TO MWD CONSIST OF 171,100 AF OF TABLE A WATER (100% ALLOCATION).

(9) 2007 CVWD/DWA EXCHANGE DELIVERIES TO MWD CONSIST OF 102,660 AF OF TABLE A WATER (60% ALLOCATION), AND 802 AF OF DWR'S 2007 TURN-BACK WATER POOL PROGRAM WATER (ALL FROM POOL A). MWD DELIVERED AN ADDITIONAL 16,000 AF TO THE WHITEWATER SPREADING BASINS PER ITS 12/23/03 QUANTIFICATION SETTLEMENT WITH CVWD.

(10) 2008 CVWD/DWA EXCHANGE DELIVERIES TO MWD CONSIST OF 59,885 AF OF TABLE A WATER (35% ALLOCATION), AND 151 AF OF DWR'S 2007 TURN-BACK WATER POOL PROGRAM WATER (ALL FROM POOL A), 3,000 AF OF WATER PURSUANT TO THE GLORIOUS LAND AGREEMENT BETWEEN MWD AND CVWD, AND 1,836 AF OF WATER PURSUANT TO THE YUBA ACCORD. MWD DELIVERED 8,008 AF OF WATER TO THE WHITEWATER SPREADING BASINS PURSUANT TO CVWD'S PVID CREDIT AND 503 AF OF WATER TO THE MISSION CREEK SPREADING BASIN PURSUANT TO THE CPV-SENTINEL AGREEMENT, NEITHER OF WHICH PERTAIN TO THE DWCV ADVANCE DELIVERY ACCOUNT.

(11) 2009 CVWD/DWA EXCHANGE DELIVERIES TO MWD CONSIST OF 57,710 AF OF TABLE A WATER (34\% ALLOCATION), AND 93 AF OF DWR'S 2009 TURN-BACK WATER POOL PROGRAM WATER (35 AF OF POOL A AND 58 AF OF POOL B), 3,000 AF OF WATER PURSUANT TO THE GLORIOUS LAND AGREEMENT BETWEEN MWD AND CVWD, AND 3,482 AF OF WATER PURSUANT TO THE YUBA ACCORD AND OTHERS. MWD DELIVERED 7,992 AF OF WATER TO THE WHITEWATER SPREADING BASINS PURSUANT TO CVWD'S PVID CREDIT AND 754 AF OF WATER TO THE MISSION CREEK SPREADING BASIN PURSUANT TO THE CPV-SENTINEL AGREEMENT, NEITHER OF WHICH PERTAIN TO THE ADVANCE DELIVERY ACCOUNT AND ARE THEREFORE NOT INCLUDED HEREIN.

(12) 2010 CVWD/DWA EXCHANGE DELIVERIES TO MWD CONSIST OF 97,050 AF OF TABLE A WATER (57% ALLOCATION), 10,730 AF OF CARRYOVER WATER FROM 2009, AND 602 AF OF DWR'S 2010 TURN-BACK WATER POOL PROGRAM WATER (66 AF OF POOL A AND 536 AF OF POOL B). MWD DELIVERED 18,393 AF OF WATER TO THE WHITEWATER SPREADING BASINS PURSUANT DMB PACIFIC LLC AND MWD QSA PURCHASES, AND 1,743 AF OF WATER TO THE MISSION CREEK SPREADING BASIN PURSUANT TO THE CPV-SENTINEL AGREEMENT, NONE OF WHICH PERTAIN TO THE ADVANCE DELIVERY ACCOUNT AND ARE THEREFORE NOT INCLUDED HEREIN.

(13) 2011 CVWD/DWA EXCHANGE DELIVERIES TO MWD CONSIST OF 124,156 AF OF TABLE A WATER (64% ALLOCATION), 0 AF OF CARRYOVER WATER FROM 2010, AND 2,502 AF OF DWR'S 2011 TURN-BACK WATER POOL PROGRAM WATER (836 AF OF POOL A AND 1,666 AF OF POOL B), AND 5,800 AF OF ARTICLE 21 WATER. MWD DELIVERED 105,000 AF OF WATER TO THE WHITEWATER SPREADING BASINS PURSUANT TO THE DMB PACIFIC LLC AND MWD QSA PURCHASES, AND 5,350 AF OF WATER TO THE MISSION CREEK SPREADING BASIN PURSUANT TO THE CPV-SENTINEL AGREEMENT, NONE OF WHICH PERTAIN TO THE ADVANCE DELIVERY ACCOUNT AND ARE THEREFORE NOT INCLUDED HEREIN.

EXHIBIT 4
METROPOLITAN WATER DISTRICT/COACHELLA VALLEY WATER DISTRICT/DESERT WATER AGENCY
WATER EXCHANGE AGREEMENT AND ADVANCE DELIVERY AGREEMENT
SUMMARY OF EXCHANGE AND ADVANCE DELIVERIES, JANUARY 2012 THROUGH DECEMBER 2013[1]

YEAR	TOTAL CVWD/DWA EXCHANGE DELIVERY TO MWD (SWP) AF	MWD EXCHANGE DELIVERY TO CVWD/DWA RECHARGE BASINS AF	MWD ADVANCE DELIVERY TO CVWD/DWA RECHARGE BASINS AF	MWD ADVANCE DELIVERY CONVERTED TO EXCHANGE DELIVERY TO CVWD/DWA AF
2012[2]	158,909	280,673	117,764	0
2013[3]	70,879	28,998	0	60,889
2014[3]	10,919	7,858	0	11,609
TOTALS:	240,707	317,529	117,764	72,498

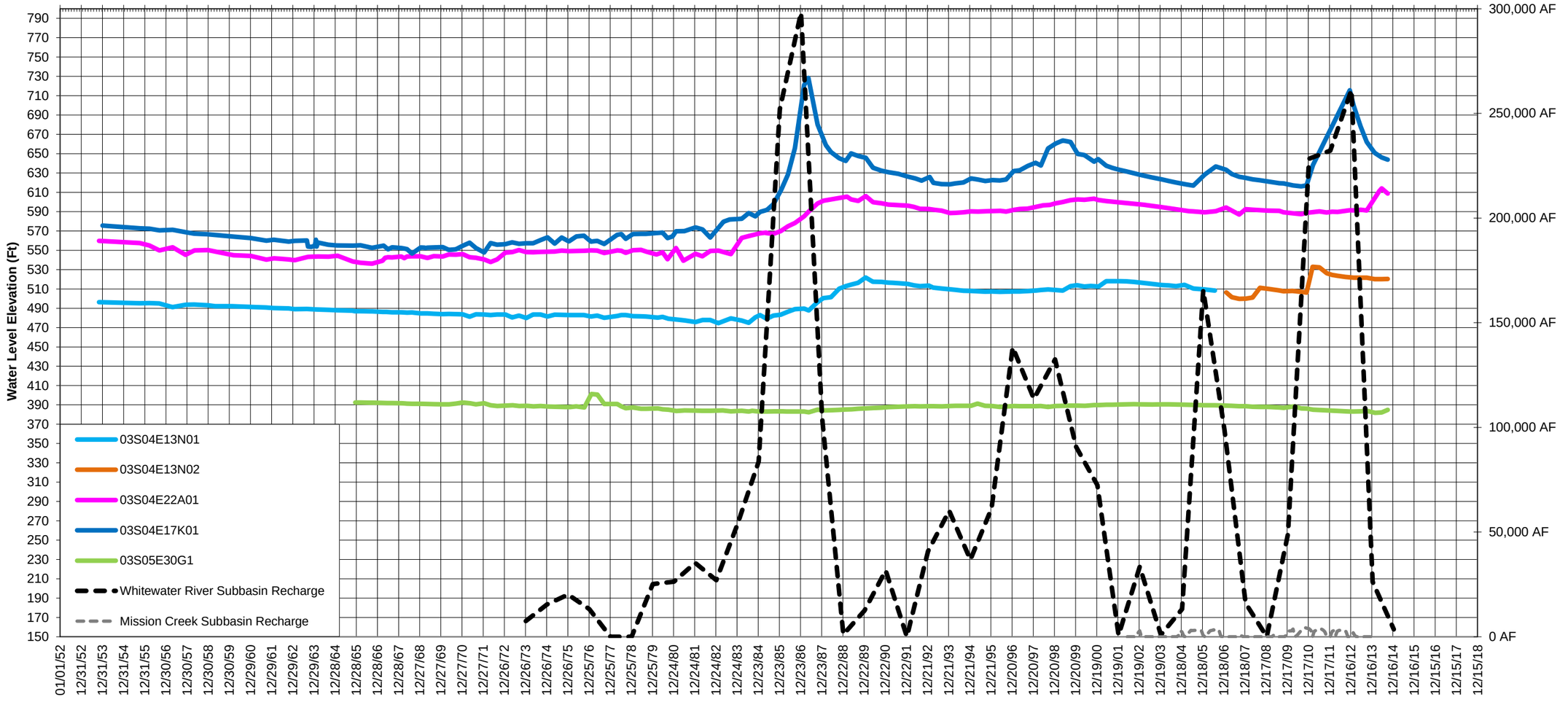
CUMULATIVE MWD ADVANCE DELIVERIES, 7/84 THROUGH 12/14:	907,516
CUMULATIVE MWD ADVANCE DELIVERIES CONVERTED TO EXCHANGE DELIVERIES, 7/84 THROUGH 12/14:	659,667
BALANCE OF MWD ADVANCE DELIVERIES AVAILABLE TO BE CONVERTED TO EXCHANGE DELIVERIES:	247,849
ARTIFICIAL RECHARGE THROUGH EXCHANGE DELIVERIES AND ADVANCE DELIVERIES SINCE 1973:	2,898,022
ARTIFICIAL RECHARGE THROUGH EXCHANGE DELIVERIES SINCE 1973:	2,650,173

(1) AS REPORTED BY METROPOLITAN WATER DISTRICT IN ITS MONTHLY "EXCHANGE DELIVERY SUMMARY IN ACRE-FEET" REPORTS AND ANNUAL SCHEDULES OF WATER DELIVERED TO DWA AND CVWD.

(2) 2013 CVWD/DWA EXCHANGE DELIVERIES TO MWD CONSIST OF 26,824 AF OF TABLE A WATER (35% ALLOCATION), 0 AF OF CARRYOVER WATER FROM 2012, AND 230 AF OF DWR'S 2013 TURN-BACK WATER POOL PROGRAM WATER (230 AF OF POOL A AND 0 AF OF POOL B), 0 AF OF ARTICLE 21 WATER, 16,500 AF OF WATER PURSUANT TO THE GLORIOUS LAND AGREEMENT BETWEEN CVWD AND MWD, 2,508 AF OF THE SECOND SUPPLENMENT AGREEMENT BETWEEN CVWD AND MWD, AND 2,713 AF OF WATER PURSUANT TO THE YUBA ACCORD AND OTHERS. MWD DELIVERED 0 AF OF WATER TO THE MISSION CREEK SPREADING BASIN PURSUANT TO THE CPV-SENTINEL AGREEMENT, WHICH DOES NOT PERTAIN TO THE ADVANCE DELIVERY ACCOUNT AND IS THEREFORE NOT INCLUDED HEREIN.

(2) 2014 CVWD/DWA EXCHANGE DELIVERIES TO MWD CONSIST OF 9,706 AF OF TABLE A WATER (5% ALLOCATION), 0 AF OF CARRYOVER WATER FROM 2012, AND 0 AF OF DWR'S 2013 TURN-BACK WATER POOL PROGRAM WATER (0 AF OF POOL A AND 0 AF OF POOL B), 0 AF OF ARTICLE 21 WATER, 5,000 AF OF WATER PURSUANT TO THE GLORIOUS LAND AGREEMENT BETWEEN CVWD AND MWD, 3,549 AF OF THE SECOND SUPPLENMENT AGREEMENT BETWEEN CVWD AND MWD, AND 1,213 AF OF WATER PURSUANT TO THE YUBA ACCORD AND OTHERS. MWD DELIVERED 0 AF OF WATER TO THE MISSION CREEK SPREADING BASIN PURSUANT TO THE CPV-SENTINEL AGREEMENT, WHICH DOES NOT PERTAIN TO THE ADVANCE DELIVERY ACCOUNT AND IS THEREFORE NOT INCLUDED HEREIN.

EXHIBIT 5
GARNET HILL SUBBASIN WATER LEVEL ELEVATIONS AND
GROUNDWATER RECHARGE QUANTITIES AT WHITEWATER RIVER AND MISSION CREEK SUBBASINS



KJL
101-78P1-TBLS.xlsx/Exhibit5 (4/10/2015)

EXHIBIT 6
DESERT WATER AGENCY
COMPARISON OF WATER PRODUCTION AND GROUNDWATER REPLENISHMENT
WHITEWATER RIVER SUBBASIN (WRS), MISSION CREEK SUBBASINS (MCS), AND GARNET HILL SUBBASIN (GHS)

PRODUCTION (1)

	WRS AF		MCS AF		GHS AF		TOTAL AF		RATIO MCS/WRS		RATIO GHS/WRS	
YEAR	ANNUAL	CUMULATIVE	ANNUAL	CUMULATIVE	ANNUAL	CUMULATIVE	ANNUAL	CUMULATIVE	ANNUAL	CUMULATIVE	ANNUAL	CUMULATIVE
2002	213,410	213,410	13,968	13,968			227,378	227,378	6.5%	6.5%		
2003	204,275	417,685	14,498	28,466			218,773	446,151	7.1%	6.8%		
2004	212,700	630,385	16,548	45,014			229,248	675,399	7.8%	7.1%		
2005	204,341	834,726	16,327	61,341			220,668	896,067	8.0%	7.3%		
2006	213,850	1,048,576	17,365	78,706			231,215	1,127,282	8.1%	7.5%		
2007	211,014	1,259,590	16,409	95,115			227,423	1,354,705	7.8%	7.6%		
2008	210,693	1,470,283	15,775	110,890			226,468	1,581,173	7.5%	7.5%		
2009	199,149	1,669,432	15,108	125,998			214,257	1,795,430	7.6%	7.5%		
2010	182,415	1,851,847	14,304	140,302			196,719	1,992,149	7.8%	7.6%		
2011	182,823	2,034,670	14,203	154,505			197,026	2,189,175	7.8%	7.6%		
2012	183,108	2,217,778	14,082	168,587			197,190	2,386,365	7.7%	7.6%		
2013	182,640	2,400,418	14,495	183,082			197,135	2,583,500	7.9%	7.6%		
2014	174,187	2,574,605	13,834	196,916	240	240	188,261	2,771,761	7.9%	7.6%	0.1%	0.0%

RECHARGE (2)

	WRS AF		MCS AF		GHS AF		TOTAL AF		RATIO MCS/WRS	
YEAR	ANNUAL	CUMULATIVE	ANNUAL	CUMULATIVE	ANNUAL	CUMULATIVE	ANNUAL	CUMULATIVE	ANNUAL	CUMULATIVE
2002	33,435	33,435	4,733	4,733	0	0	38,168	38,168	14.2%	14.2%
2003	902	34,337	59	4,792	0	0	961	39,129	6.5%	14.0%
2004	13,224	47,561	5,564	10,356	0	0	18,788	57,917	42.1%	21.8%
2005	165,554	213,115	24,723	35,079	0	0	190,277	248,194	14.9%	16.5%
2006	98,959	312,074	19,901	54,980	0	0	118,860	367,054	20.1%	17.6%
2007	16,009	328,083	1,011	55,991	0	0	17,020	384,074	6.3%	17.1%
2008	8,008	336,091	0	55,991	0	0	8,008	392,082	0.0%	16.7%
2009	60,024	396,115	3,336	59,327	0	0	63,360	455,442	5.6%	15.0%
2010	228,330	624,445	31,467	90,794	0	0	259,797	715,239	13.8%	14.5%
2011	232,214	856,659	20,888	111,682	0	0	253,102	968,341	9.0%	13.0%
2012	261,267	1,117,926	23,272	134,954	0	0	284,539	1,252,880	8.9%	12.1%
2013	26,619	1,144,545	2,379	137,333	0	0	28,998	1,281,878	8.9%	12.0%
2014	3,533	1,148,078	4,323	141,656	0	0	7,856	1,289,734	122.4%	12.3%

(1) PRODUCTION IN BOTH DWA AND CVWD SERVICE AREAS.
(2) RECHARGE CURRENTLY ONLY WITHIN THE WHITEWATER RIVER AND MISSION CREEK SUBBASINS.

APPENDIX B

APPENDIX B
UPPER COACHELLA VALLEY
MONTHLY AND ANNUAL RECORDED PRECIPITATION
2014

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	0.31	0.26	0.00	0.00	1.13	0.00	0.00	0.00	0.00
FEBRUARY	3.31	5.25	0.52	1.35	0.70	0.40	0.24	0.97	0.38
MARCH	0.25	0.39	0.00	0.00	0.24	0.00	0.01	0.02	0.01
APRIL	1.03	0.88	0.06	0.06	0.00	0.00	0.00	0.03	0.03
MAY	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
JUNE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULY	0.00	0.00	0.01	0.00	0.83	0.19	0.10	0.12	0.03
AUGUST	0.46	2.02	0.13	0.11	0.78	0.40	0.13	0.36	0.24
SEPTEMBER	0.46	3.09	0.17	0.07	1.24	0.00	0.54	0.34	2.22
OCTOBER	0.03	0.55	0.02	0.00	0.46	0.00	0.00	0.00	0.00
NOVEMBER	0.02	0.94	0.08	0.05	0.26	0.10	0.13	0.11	0.09
DECEMBER	4.41	5.47	1.19	1.33	0.00	0.35	0.34	1.04	0.42
TOTAL	**10.35**	**18.85**	**2.18**	**2.97**	**5.64**	**1.44**	**1.49**	**2.99**	**3.46**

NOTE: DATA SHOWN HEREON WAS PROVIDED BY THE RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT.