2015 URBAN WATER MANAGEMENT PLAN

PUBLIC DRAFT

City of Coachella

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EXECUTIVE SUMMARY

The City of Coachella (City) was incorporated on November 26, 1946, with John W. Westerfield as the first mayor. Shortly after incorporation, in the summer of 1951, low water pressure in the area prevented local businesses from operating efficiently, thereby causing the formation of the City's Water Department. In 1954, the City passed a bond to purchase and consolidate three private water companies: Abdelnous Water Company, Coachella Water Works, and Highway Water Company. The City Water Department, Coachella Water Authority (CWA), was established in 1957, and is administered and managed by the Utilities General Manager under direct supervision of the City Manager. While the City is responsible for the water supply for its residents, the City pays a replenishment charge to Coachella Valley Water District (CVWD). In accordance with the Quantification Settlement Agreement, CVWD entered into water transfer agreements with Metropolitan Water District and Imperial Irrigation District that increase CVWD's Colorado River supplies ensuring a reliable regional supply of water. These additional supplies are used to replenish the East Whitewater River Subbasin Area of Benefit.

ES 1 - INTRODUCTION AND OVERVIEW

An Urban Water Management Plan (UWMP or Plan) is prepared by a water purveyor to conduct long-term water supply and water resource planning and ensure reliability in water service sufficient to meet the needs of its customer base. The Urban Water Management Planning Act (UWMP Act) of 1983 was established by Assembly Bill 797 (AB 797) on September 21, 1983. The law requires water suppliers in California, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 AFY of water, to prepare and adopt an UMWP every five years in the years ending in zero and five. The City has prepared this 2015 UWMP update to meet the requirements of the UWMP Act and Water Conservation Act of 2009 (SBx7-7).

As shown in **Sections 5.6** and **5.7**, CWA's 2015 actual per capita water use was 142 gallons per capita per day (GPCD), which exceeds both the 2015 Interim Water Use Target of 204 GPCD and the 2020 Water Use Target of 200 GPCD, as established in its 2010 UWMP. As such, CWA has met the CWC requirements to be eligible for DWR administered water grants or loans.

ES 2 - PLAN PREPARATION

CWA is a retail public water supplier that meets this definition with over 8,000 municipal water service connections and supplying over 2,128 million gallons (MG) of water to customers in their service area in 2015. CWA participates in the Coachella Valley Regional Water Management Group (CVRWMG) and in the completion of the Coachella Valley Integrated Regional Water Management Plan to derive benefits of regional planning that include water supply reliability, improved water quality, increased regional self-reliance, and reduced conflict over resources. However, CWA and all other CVRWMG agencies elected to develop individual UWMPs to highlight their respective agency's service area, needs, goals and objectives, and planning efforts; while relying on many of the same water management tools identified in the regional plan.

CWA is a retail water supplier, having prepared this 2015 UWMP using calendar years and million gallons (MG) as the units of water volume measure throughout. CWA does not rely on a wholesale supplier to meet demand. CWA meets demand through their own groundwater supplies, see **Section 6.2**.

Per the California Water Code, during preparation of the 2015 UWMP, CWA coordinated the development of the UWMP within the City. Interagency activities included the exchange of data, draft plan review, and incorporation of the agencies' comments to the City's Final 2015 UWMP, as appropriate. In addition to notifying cities and counties within their service area more than 60 days before the public hearing of the UWMP, CWA coordinated with other local agencies and the community in the development of the City's 2015 UWMP.

ES 3 - SYSTEM DESCRIPTION

The City of Coachella is a desert community of approximately 44,000 people located at the eastern end of the Coachella Valley, in Riverside County, California. The City is located southeast of the San Gorgonio Pass, east of the San Jacinto and Santa Rosa Mountains, north of the Salton Sea 68 feet below sea level. The current City limits encompass over 20,000 acres and the sphere of influence encompasses approximately 13,000 additional acres around the City.

CWA's existing water system consists of different pressure zones, groundwater wells, storage reservoirs, booster pumping stations, and distribution facilities. The current water system is divided into two (2) pressure zones, the Low Zone and the 150 Zone. CWA has one principal source of water supply, local groundwater pumped from CWA owned and operated wells. There are currently six (6) wells within the City's distribution system; of which, all six (6) wells are currently operational. The total pumping capacity of active wells is approximately 11,400 gallons per minute (gpm) or 16.5 million gallons per day (MGD). CWA has three (3) storage reservoirs within the City, with a total reservoir storage capacity of approximately 10.5 MG. In addition, CWA operates two booster pumping stations. CWA's distribution system network consists of approximately 120 miles of pipeline, which range from 4-inches to 36-inches in diameter.

The City is not near built out, with large undeveloped parcels and agricultural areas, mostly east of Highway 86. Agricultural areas are not served by CWA's water system and rely on Coachella Canal water and privately owned and operated wells. As undeveloped and agricultural lands are developed into residential or other land uses, they will be served by CWA and become part of CWA's service area. For the purpose of developing baselines and targets, discussed in **Section 5**, CWA delineated the existing water service area based on the existing distribution system. **Figure 3-1** highlights the existing water service area, City boundaries, and Sphere of Influence.

ES 3.1 - Service Area Population and Demographics

The population of the small, stable community has a young median age. While development carried a rapid pace in the Coachella Valley in the early to mid-2000s, it has slowed significantly since the beginning of the economic recession. Total water demand had increased by over 50 percent up to 2007, but has since generally been on the decline. The City has several planned development projects;

however, those are expected to stay in the planning stages until local economies begin to show recovery.

CWA's water service area (WSA) population is expected to increase substantially in the future. Currently, the WSA lies within the City's boundaries, serving the more densely populated areas to the west and commercial/resort areas to the north. The WSA covers approximately 32 percent of the City Limits with a total of area of 6,057 acres or 9.5 square miles. In order to calculate the current water service area population, the DWR population tool was used by uploading electronic maps that reflected the boundaries for the 2010 census year, the total number of past and current service connections, and SBx7-7 baseline information. With this information, the DWR population tool calculated the 2015 WSA population as 40,208. To calculate the projected WSA population, the percent changes across given time periods from the City's 2015 General Plan Update were used. These percent changes in growth were then applied to project future populations up to 2035. **Table 3-3** shows CWA's water service area population since 2010 along with the City's 2015 General Plan Update population projections. The projected populations are shown through the year 2035 in five-year increments based on the assumed buildout of the proposed projects by the year 2035.

ES 4 - SYSTEM WATER USE

CWA tracks the following water use sectors: single family, multi-family, commercial/institutional, industrial, and landscape irrigation. **Table 4-1** shows CWA's historical water service connections by water use sector. From 2005 to 2015 to total number of water service connections increased from 6,823 to 8,037 for an increase of 17.7 percent. However, between 2010 and 2015 the increase was only 1.8 percent, likely a result of the recent economic downturn. Since 2005, total single-family residential water service connections increased from 80.6 percent to 88.1 percent.

CWA's historic water uses by sector, are shown in **Table 4-2**. Overall, water use has declined from 2,315 MG in 2005 to 2,128 MG in 2015 or by 8.1 percent. A more significant reduction in water use occurred from 2010 to 2015, decreasing water use by 21 percent overall; attributable to continued implementation of Demand Management Measures (DMMs) and State water reduction mandates. In 2015, single family water use accounts for 57.3 percent of total water use and commercial/institutional water use accounts for 13.9 percent of total water use.

The projected (next 20 years) water use for the City is generally expected to increase at a similar rate to that of the projected population increase within the City and its SOI; provided, however, that per capita water use reductions achieved pursuant to SBx7-7, further discusses in **Section 5**, may be expected to affect the relationship between increased population and increases in total water use. The City Development Services Department show active processing for several proposed and recently approved development projects, ranging in size from 10 residential units to mixed-use developments with over 7,500 residential units. The total number of proposed residential units associated with these entitlement applications is approximately 20,000. These units are included in the City's SOI, which is not anticipated for full build out until after 2050. Thus, many of these development projects are either in the preliminary planning stages or may have been put on hold by applicants for various reasons. Projected water use for 2020 through 2035 in five-year increments is provided in **Table 4-4**. In addition,

Table 4-5 shown future water demand projections by water use sector over the next 20-years. These demand projections are based on projected service area population, presented in **Section 3**, and per capita water use, presented in the City's 2010 UWMP and **Section 5** herein. As presented in the City's 2010 UWMP, the water use is currently 210 gallons per capita per day (gpcd), with a reduction to 205 gpcd by 2015 and 200 gpcd by 2020 and beyond; again, further discussed in **Section 5** herein. Since **Table 4-4** relies on 5-year average per capita water use baselines and targets, a planning number, CWA's 2010 and 2015 actual water demands are lower than those presented. Note, these planning estimates provide a more conservative outlook in water supply planning and do not account for savings from codes, standards, ordinances, or transportation and land use plans.

ES 5 - BASELINES AND TARGETS

The Water Conservation Bill of 2009 (SBX7-7) set forth requirements for each water supplier to include baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use in the 2015 UWMP. The goal of SBX7-7 is to achieve a 20 percent reduction in water use per capita, statewide, by 2020.

In CWA's 2010 UWMP, the target method chosen for calculating baselines and targets, Method 3: Hydrologic Region, remained the same in the 2015 UWMP. Furthermore, data for population projections used in the 2010 UWMP came from 2000 and 2010 Census data and again covered in **Section 4**. Therefore, no updates were made to the calculations from the 2010 UWMP. In order to stay consistent with the baseline periods used in the 2010 UWMP, the 10-Year Baseline period and the 5-Year Baseline period were kept the same. As such, the higher of the two resulted in the average baseline daily per capita water use (in gallons per capita per day (GPCD)) for the 5-Year Baseline is 210 GPCD. Following Method 3, 95 percent of the regional target results in a per capita water use target for the City of 200 GPCD. Additionally, since 95 percent of the 5-year base daily per capita water use, 210 GPCD, is in essence equal to the regional target, 200 GPCD, the per capita water use target was set at 200 GPCD. Finally, the 2015 Interim Target GPCD, was calculated by finding the midpoint between the 10-Year Baseline GPCD and the 2020 Target GPCD. Thus, the 2015 Interim Target GPCD is 204. In order to demonstrate compliance with the 2015 Interim Target GPCD of 204 GPCD, the actual 2015 GPCD was calculated. CWA's actual 2015 water use is 142 GPCD. Therefore, CWA is in compliance with the targeted reduction for 2015 and the 2020 goal, exceeding both.

ES 6 - SYSTEM SUPPLIES

CWA produces all of its water supplies from the Coachella Valley Groundwater Basin, specifically, the East Whitewater River Subbasin, which is continuously replenished at the local and regional level pursuant to a variety of water supply projects and programs. The East Whitewater River Subbasin is regionally managed by CVWD, CWA, Desert Water Agency, and Indio Water Authority. CVWD has statutory authority to replenish local groundwater supplies and collect assessments necessary to support a groundwater replenishment program. The Coachella Valley groundwater basin area serves as an expansive conjunctive use resource that is capable of ensuring a sufficient and sustainable water supply to serve existing uses and projected growth during normal, single-dry and multiple-dry years over an extended planning horizon, currently established as the year 2045. Not only does the basin contain vast reserves of local groundwater (approximately 30 million AF at 1,000 foot depth), it has substantial

available storage space that has been utilized and will continue to be utilized to store millions of acre-feet of supplemental supplies that become available during normal and above-normal years. Those surplus supplies are recharged to the basin for later use during dry periods.

The Whitewater River Subbasin underlies a major portion of the valley floor and encompasses approximately 400 square miles. Beginning approximately one mile west of the junction of State Highway 111 and Interstate 10, the Subbasin extends southeast approximately 70 miles to the Salton Sea. It is bordered on the southwest by the Santa Rosa and San Jacinto Mountains and is separated from other basins by the Garnet Hill and San Andreas faults. As stated, CWA currently produces all of their groundwater from the Whitewater River Subbasin.

CWA's total groundwater production from the East Whitewater River Subbasin has averaged 2,473 MG over the last 5-years. As growth occurs in the City, CWA will increase groundwater production to meet the new demands. CWA will continue to use the Whitewater River Subbasin to meet its urban water demands. In addition, CWA has several water conservation measures that restricts the water use of new developments, described in **Section 9**.

ES 7 - WATER SUPPLY RELIABILITY

CWA evaluated reliability for an average year, single dry year, and multiple dry year periods, as described below. The historical supply availability during these years is used as an assumption for future reliability. The average year represents a year or an averaged range of years that most closely represents the typical water supply available to CWA. The single dry year is the year that represents the lowest water supply available to CWA. The multiple dry year period is the period that represents the lowest average water supply availability to CWA for a consecutive multi year period (three years or more).

CWA relies on one source, groundwater, to meet demand. CWA's ability to meet demands during the three type of year scenarios described above is determined by an analysis of the available water supplies within CWA's water service area in each scenario. Considering the groundwater basin management efforts presented throughout this UWMP, the historical groundwater supply availability during these scenarios is assumed to be fully reliable and an accurate assumption for future reliability. A summary of water the basis of water year data is presented in **Table 7-1**.

CWA's urban water supply is from the East Whitewater River Subbasin in the Coachella Valley. The East Whitewater River Subbasin is replenished on an ongoing basis by Coachella replenishment program. The Whitewater River (Indio) Subbasin storage will be used in dry years to support potential differences between demands and supply. The groundwater basin has a capacity of approximately 28.8 million acre-feet and currently contains about 25 million acre-feet, simulating the benefits of a very large conjunctive use reservoir. It is capable of meeting the water demands of the CWA for extended periods during normal, single-dry and multiple-dry year conditions, as presented in **Section 7**.

The effects of a local drought are not immediately recognized since CWA relies on the East Whitewater River Subbasin for its sole source for urban water supplies, again simulating a large conjunctive use reservoir. Even though localized drought conditions should not affect supply, CWA participates in

several ongoing water conservation measures, basin-wide recharge plan with CVWD through Replenishment Assessment Charges (RAC), and has a water shortage contingency plan to put into action as appropriate to reduce the demand during critical drought years.

Tables 7-2, 7-3, and 7-4 compares the projected water supply and customer demands from 2020 to 2035, in five-year increments, for average/normal year, single dry year, and multiple dry year scenatios, respectively. As shown, CWA can meet each demand scenario as the local water supplies (groundwater) is 100 percent reliable and supply is driven by demand.

ES 8 - WATER SHORTAGE CONTINGENCY PLANNING

Water Shortage is defined as a condition in which the existing or projected water supply available to CWA is not anticipated to meet the ordinary requirements of the Water Department. During a water shortage period, the City has the ability to meet its demands through increased groundwater pumping and implementation of water use efficiency programs, including implementation of Water Shortage Plan Stages. Increased groundwater pumping would serve as a critical component of the shortage strategy through groundwater supplied from the Basin. **Table 8-1** shows water shortage stages and the reduction objectives. The responsibility for declaring each stage falls to the City Manager who is closely supported by the Utilities General Manager. Once a shortage has been declared then CWA will be responsible for performing field audits to ensure residents comply with the reduction goals shown below.

Due to the State of California's drought crisis that began in 2012, water purveyors are working hard at reducing water demand. In the last year, Coachella Water Authority (CWA) experienced a 20 percent reduction in water demand than the previous year. The water demand reduction can be attributable to their continued efforts in water conservation and the passage of the following two local ordinances.

The City of Coachella adopted Resolution No. WA-2014-01 on February 26, 2014 titled, "A Resolution of the Board of Directors of Coachella Water Authority Calling for 20% Voluntary water Usage Reduction." The City has not hit a critical level of shortage where the Authority is unable to meet the demands of its customers and will not be evoking their water shortage contingency plan. It is however, asking its customers to voluntarily reduce water usage by 20 percent. A copy of this is available in **Appendix E**.

In January 17, 2014, the Governor declared a state of emergency due to the drought conditions and asked all Californians to reduce water usage by 20 percent. As a response, the City adopted Resolution No. WA-2014-05 on October 8, 2014 titled, "Resolution No. WA-2014-05 of the Board of Directors of the Coachella Water Authority, to Implement its State II Water Shortage Contingency Plan." The City enacted their water shortage contingency plan Stage II that calls for 10% mandatory water use in conjunction with other water use restrictions. A copy of this ordinance is available in **Appendix E**.

ES 9 - DEMAND MANAGEMENT MEASURES

The City recognizes water use efficiency as an integral component of its current and future water strategy for the service area. Demand management measures (DMM) refer to policies, programs, rules, regulation and ordinances, and the use of devices, equipment and facilities that, over the long term,

have been generally justified and accepted by the industry as providing a "reliable" reduction in water demand. Demand management is as important to insuring water supply reliability as is providing a new water supply. The City of Coachella has aggressively pursued conservation in an effort to reduce demand. The following DMMs have been implemented by the City:

- Water waste prevention ordinances
- Metering
- Conservation pricing
- Public education and outreach
- Programs to assess and manage distribution system losses
- Water Conservation Program Coordination and Staffing Report
- Other Demand Management Measures
    - Water Survey Programs for Single-Family Residential and Multi-Family Residential Customers
    - Residential Plumbing Retrofit
    - Large Landscape Conservation Programs and Incentives
    - Conservation Programs for Commercial, Industrial, and Institutional Accounts
    - Wholesale Agency Assistance Program
    - Residential ULFT Replacement Programs

The City is committed to conservation as a means to provide a sustainable supply of water to its service area, and plans to continue its conservation program during the next five years. The conservation program was initiated in 2012. **Section 9.2** covers the City's best understanding of the nature and extent of these programs over the past five years.

ES 10 - PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

CWA's 2015 UWMP includes the water use and planning data for the entire year of 2015. In addition, CWA has notified cities, counties, stakeholders, and the community of their intent to update their UWMP and the notice of public hearing on May 27, 2016. The list of stakeholders notified is shown on **Table 2-4A**. Following adoption by board resolution and submittal to DWR, the 2015 UWMP will be made publicly available on the City's website.

SECTION 1 - INTRODUCTION AND OVERVIEW

The City of Coachella (City) was incorporated on November 26, 1946, with John W. Westerfield as the first mayor. Shortly after incorporation, in the summer of 1951, low water pressure in the area prevented local businesses from operating efficiently, thereby causing the formation of the City's Water Department. In 1954, the City passed a bond to purchase and consolidate three private water companies: Abdelnous Water Company, Coachella Water Works, and Highway Water Company. The City Water Department, Coachella Water Authority (CWA), was established in 1957, and is administered and managed by the Utilities General Manager under direct supervision of the City Manager. While the City is responsible for the water supply for its residents, the City pays a replenishment charge to Coachella Valley Water District (CVWD). In accordance with the Quantification Settlement Agreement, CVWD entered into water transfer agreements with Metropolitan Water District and Imperial Irrigation District that increase CVWD's Colorado River supplies ensuring a reliable regional supply of water. These additional supplies are used to replenish the East Whitewater River Subbasin Area of Benefit.

1.1 BACKGROUND AND PURPOSE

An Urban Water Management Plan (UWMP or Plan) is prepared by a water purveyor to conduct long-term water supply and water resource planning and ensure reliability in water service sufficient to meet the needs of its customer base. The Urban Water Management Planning Act (UWMP Act) of 1983 was established by Assembly Bill 797 (AB 797) on September 21, 1983. The law requires water suppliers in California, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 AFY of water, to prepare and adopt an UMWP every five years in the years ending in zero and five. The City has prepared this 2015 UWMP update to meet the requirements of the UWMP Act and Water Conservation Act of 2009 (SBx7-7).

1.2 UWMP UPDATE AND THE CALIFORNIA WATER CODE

Several amendments have guided the UWMP Act over the years, the most recent significant amendment was the Water Conservation Act of 2009, also known as SBx7-7, which calls for a statewide 20 percent reduction in urban water use by the year 2020 and required water agencies are required to establish water use targets for 2015 and 2020; and track progress in meeting those targets.

1.2.1 Changes to the Water Code Since 2010

Since 2010, the UWMP Act has undergone several amendments. Below is a summary of significant changes in the UWMP Act since 2010:

- CWC § 10631(f)(1)(A) requires plans by retail water suppliers to include a narrative description that addresses the nature and extent of each water demand management measure (DMM) implemented over the past five years. The narrative must describe the water DMMs that the supplier plans to implement to achieve its water use targets pursuant to CWC § 10608.20. Additionally, per CWC § 10631(f)(1)(B) the narrative must also include descriptions of the following water DMMs: water waste prevention ordinances, metering, conservation pricing, public education and outreach, programs to assess and manage distribution system real loss, water conservation program coordination and staffing support, and other DMMs that have a

significant impact on water use as measured in gallons per capita per day (GPCD), including innovative measures, if implemented.

- California Water Code (CWC) § 10621(d) changed the deadline for urban water suppliers to update and submit their 2015 UWMPs to the Department of Water Resources (DWR) by July 1, 2016.
- CWC § 10644(a)(2) requires urban water suppliers to submit plans or amendments to plans electronically and to include any standardized forms, tables, or displays specified by DWR.
- CWC § 10631(e)(1)(J) adds distribution system water loss to the list of past, present, and projected future water uses that UWMP must quantify to the extent that records are available and over the same 5-year increments described in Water Code § 10631(a). In addition, for 2015 UWMPs, per CWC § 10631(e)(3)(A), the distribution system water loss must be quantified for the most recent 12-month period available. For all subsequent updates, the distribution system water loss must be quantified for each of the five years preceding the plan update. Lastly, per CWC § 10631(e)(3)(B), the distribution system water loss quantification must be reported in accordance with a worksheet approved or developed by DWR through a public process. The water loss quantification worksheet shall be based on the water system balance methodology developed by the American Water Works Association (AWWA).
- CWC § 10631(e)(4)(A) stipulates that if available and applicable to an urban water supplier, water use projections may display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area. In addition, CWC § 10631(e)(4)(B) states that to the extent that an urban water supplier reports the information described in subparagraph (A), an urban water supplier shall do both of the following: (i) provide citations of the various codes, standards, ordinances, or transportation and land use plans used in making the projections; and (ii) indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall note that fact.
- CWC § 10631.2(a) adds that UWMPs may, but are not required to, include any of the following information: an estimate of the amount of energy used: (1) to extract or divert water supplies; (2) to convey water supplies to water treatment plants or distribution systems; (3) to treat water supplies; (4) to distribute water supplies through the distribution system; (5) for treated water supplies in comparison to the amount used for non-treated water supplies; and (6) to place water into or to withdraw water from storage; and (7) any other energy-related information the urban water supplier deems appropriate. Also, CWC § 10631.2(b) states that DWR shall include in its UWMP guidance a methodology for the voluntary calculation or estimation of the energy intensity of urban water systems.

1.3 UWMP IN RELATION TO OTHER PLANNING EFFORTS

The CWA is currently updating their water system master plan that will focus on capital improvements required to ensure demand is reliably met over the next 20 years. In addition, the CWA relies on water resources planning documents prepared by CVWD and Coachella Valley Regional Water Management Group (CVRWMG) in updating this UWMP, including:

- 2010 Coachella Valley Water Management Plan Update (adopted in January 2012)
- 2015 CVWD Urban Water Management Plan (Final Draft June 2015)
- 2014 Report Card for the 2010 Coachella Valley Water Management Plan Update
- 2014 Coachella Valley Integrated Regional Water Management Plan Update

1.4 FUNDING ELIGIBILITY

The CWC requires urban water suppliers to have a current UWMP, deemed sufficient at addressing the CWC requirements by DWR, on file with DWR in order for the urban water suppliers to be eligible for any water management grant or loan administered by DWR. In addition, the UWMP Act requires a retail water agency to meet its 2015 Interim Urban Water Use Target and report compliance in the 2015 UWMP. As shown in **Sections 5.6** and **5.7**, CWA's 2015 actual per capita water use was 142 gallons per capita per day (GPCD), which exceeds both the 2015 Interim Water Use Target of 204 GPCD and the 2020 Water Use Target of 200 GPCD, as established in its 2010 UWMP. As such, CWA has met the CWC requirements to be eligible for DWR administered water grants or loans.

SECTION 2 - PLAN PREPARATION

This section will provide information on CWA's process for developing the UWMP, including efforts in coordination and outreach.

2.1 BASIS FOR PREPARING A PLAN

Per CWC § 10617 an "urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems. CWA is a retail public water supplier that meets this definition with over 8,000 municipal water service connections and supplying over 5,900 acre-feet (AF) or 2,128 million gallons (MG) of water to customers in their service area in 2015; see table below.

Table 2-1: Public Water Systems

Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015 (MG)
1	Coachella Water Authority	8,037	2,128
	TOTAL	8,037	2,128
NOTES: Units are in Million Gallons (MG)			

2.2 INDIVIDUAL OR REGIONAL PLANNING AND COMPLIANCE

CWA participates in the Coachella Valley Regional Water Management Group (CVRWMG) and in the completion of the Coachella Valley Integrated Regional Water Management Plan to derive benefits of regional planning that include water supply reliability, improved water quality, increased regional self-reliance, and reduced conflict over resources. However, CWA and all other CVRWMG agencies elected to develop individual UWMPs to highlight their respective agency's service area, needs, goals and objectives, and planning efforts; while relying on many of the same water management tools identified in the regional plan; see **Table 2-2** presented in **Appendix B**.

2.3 FISCAL OR CALENDAR YEAR AND UNITS OF MEASURE

As described, CWA is a retail water supplier, having prepared this 2015 UWMP using calendar years and million gallons (MG) as the units of water volume measure throughout; see **Table 2-3** presented in **Appendix B**.

Table 2-2: Coordination and Public Involvement						
Entities	Coordination and Public Involvement Actions					
	Participated in UWMP Development	Commented on Draft UWMP	Used Entity Data for Source of Information	Received Copy of the Draft UWMP	Sent Notice of Public Hearing	Attended Public Meetings
City of Coachella Utilities Dept.	X				X	
City of Coachella Engineering	X				X	
City of Coachella Services Dept.					X	
CVWD					X	
Desert Water Agency					X	
City of Indio					X	
Indio Water Authority					X	
Mission Springs Water District					X	
Riverside Flood Control					X	
General Public					X	
Torres Martinez Desert Cahuilla Indians					X	
Agustine Band of Cahuilla Indians					X	
Twenty-Nine Palms Band of Mission Indians					X	

2.4 COORDINATION AND OUTREACH

2.4.1 Wholesale and Retail Coordination

In accordance with CWC § 10631(j) an urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as

required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c). CWA does not rely on a wholesale supplier to meet demand. CWA meets demand through their own groundwater supplies, see **Section 6.2**. In addition, see **Table 2-4** presented in **Appendix B**.

2.4.2 Coordination with Other Agencies and the Community

Per CWC § 10620(d)(2) and 10642, during preparation of the 2015 UWMP, CWA coordinated the development of the UWMP within the City. Interagency activities included the exchange of data, draft plan review, and incorporation of the agencies' comments to the City's Final Draft 2015 UWMP, as appropriate. **Table 2-2** lists the entities that CWA coordinated with in the development of the City's 2015 UWMP.

SECTION 3 - SYSTEM DESCRIPTION

This section will provide information on the Coachella Valley regional setting, CWA's service area, population and demographics.

3.1 GENERAL DESCRIPTION

The City of Coachella is a desert community of approximately 44,000 people located at the eastern end of the Coachella Valley, in Riverside County, California. The City is located southeast of the San Gorgonio Pass, east of the San Jacinto and Santa Rosa Mountains, north of the Salton Sea 68 feet below sea level.[1] The current City limits encompass over 20,000 acres and the sphere of influence encompasses approximately 13,000 additional acres around the City. The City's regional setting and water service are area described in detail below.

3.1.1 Regional General Description

The City is located within the Coachella Valley in Southern California. The Coachella Valley in almost entirely within Riverside County, with portion reaching into both the northern Imperial and northern San Diego Counties. The Coachella Valley is generally bound by the Santa Rosa, San Jacinto, and San Bernardino Mountains on the north and west sides, the Little San Bernardino Mountains on the east, and the Salton Sea in the south. The Coachella Valley is part of the northernmost extent of the Salton Trough, which includes the Salton Sea, the Imperial Valley, and the Gulf of California. It is approximately 15-miles wide along most of its length, with the San Andreas Fault crossing the northern portion of the valley from the Chocolate Mountains in the southeast, along the centerline of the Little San Bernardino Mountains.

The Coachella Valley is divided into two geographic regions, the West Valley and the East Valley. The boundary line between the valleys extends from Washington Street and Point Happy northeast to the Indio Hills near Jefferson Street. The City is within the East Valley, which is considered the area southeast of the boundary line. The geographical divide between the valleys is widely used for water resource planning purposed, because the geology varies between the two. Some southeast portions of the East Valley are generally underlain by several impervious clay layers (an aquitard) that impedes groundwater recharge.[2] In addition, the East Valley generally consists of an agricultural-based economy relying on both groundwater and imported Colorado River water to meet demand.

The Coachella Valley encompasses the Whitewater River watershed, with the Whitewater River as the main watercourse that drains most of the valley. In addition, the Coachella Valley Groundwater Basin underlays a majority of the valley. The Coachella Valley Groundwater Basin is divided into five sub-basins, including the San Gorgonio Pass, Whitewater River (Indio), Garnet Hill, Mission Creek, and Desert Hot Springs. The largest being the Whitewater River Sub-basin and the City's primary water supply source. DWR refers to the Whitewater River subbasin as the Indio Subbasin which is designated Basin

[1] Coachella General Plan Update, 2015, p. 01-3

[2] 2014 Coachella Valley Integrated Regional Water Management Plan, Final Volume I, pp. 2-1 to 2-2

No. 7-21.01 in DWR's Bulletin 118 (DWR, 2003a). The basin has a storage capacity of approximately 30 million acre-feet (AF) at a depth of 1,000 feet (DWR, 1964).[3]

The City is a member of the Coachella Valley Regional Water Management Group (CVRWMG). The CVRWMG is a collaborative effort between the Coachella Valley Water District, Desert Water Agency, City of Indio/Indio Water Authority, Mission Springs Water District, Valley Sanitary District, and City/CWA to develop an Integrated Regional Water Management (IRWM) Plan to address the water resources planning needs of the Coachella Valley. The Coachella Valley IRWM Plan presents an integrated regional approach for addressing water management issues through a process that identifies and involves water management stakeholders from the Coachella Valley.[4] The IRWMP provides regional water supply planning in support of CWA's 2015 UWMP. The IRWM Plan:

- Defines the Coachella Valley IRWM Region and water systems,
- Identifies regional water management goals and objectives,
- Establishes objectives and measurable targets for the Region,
- Identifies water management issues and needs,
- Identifies stakeholder involvement and agency coordination processes,
- Identifies and evaluates resource management strategies,
- Assesses the integration of projects based on objectives,
- Establishes a project evaluation and prioritization process based on regional priorities, and
- Establishes a framework for implementation of projects.[5]

3.1.2 CWA General Description

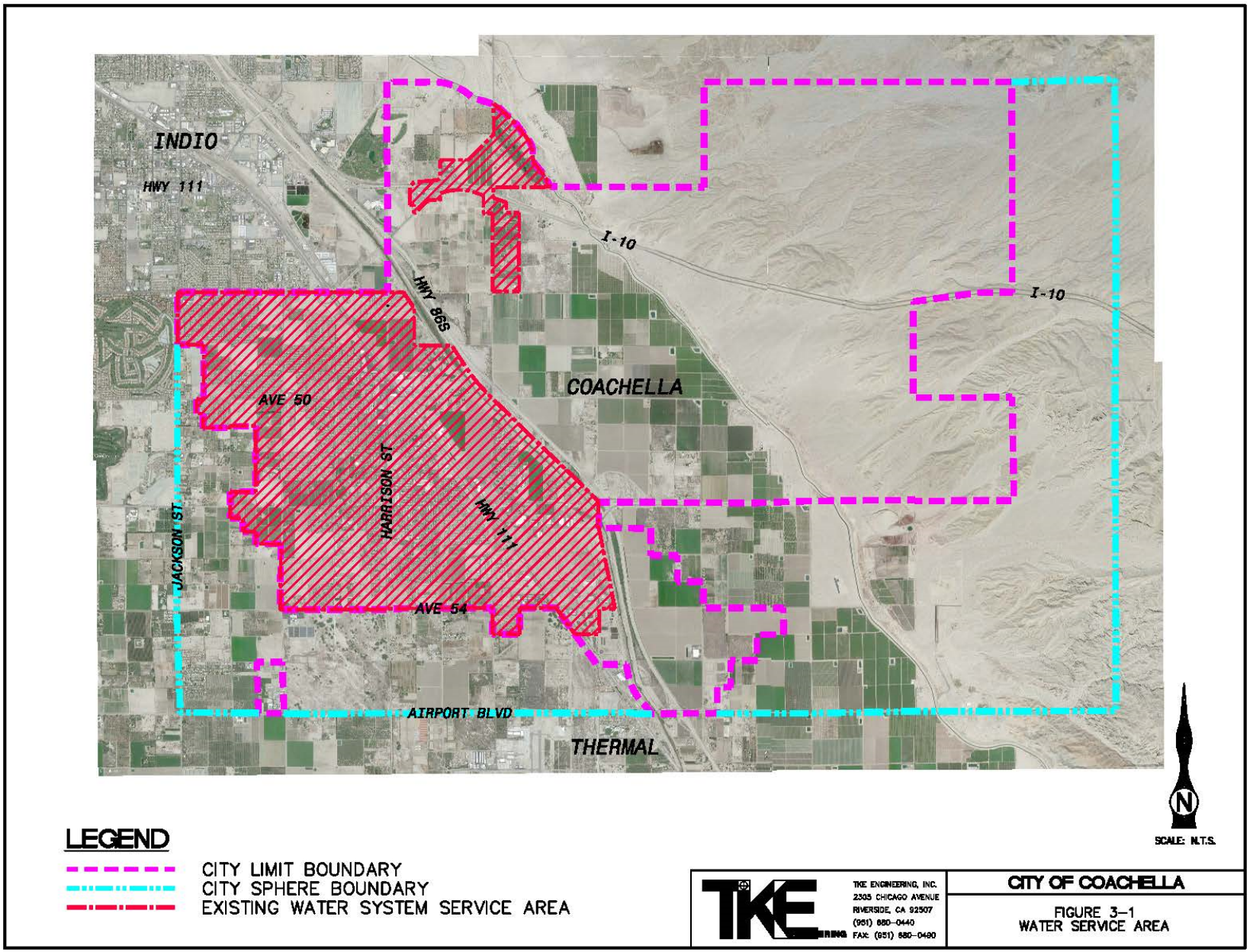
The City, incorporated in 1946, is a desert community of approximately 44,000 people that encompasses over approximately 30 square miles in Riverside County. As described above, the area is known as the East Coachella Valley. Existing land uses within the City consists primarily of single and multi-family homes. There is a commercial/light industrial zone along the freeway corridor, agricultural zone east of Highway 86/111, and a heavier industrial zone in the southern part of the City. Full buildout of the City's sphere of influence (SOI), for a total service area of approximately 53 square miles, is not anticipated until sometime after 2050.

The City of Coachella provides the following water-related services: domestic water delivery, wastewater collection and reclamation, and local drainage control. In addition, the City manages the Coachella Sanitary District that operates a 4.5 MGD secondary treatment wastewater facility. The City also plans to develop a recycled water system in the future. Currently, the City is participating in a Coachella Valley wide recycled water feasibility study spearheaded by the CVRWMG as part of the Coachella Valley IRWM Plan.

CWA's current water supply source is the Whitewater River Sub-basin produced from CWA owned and operated wells, which is continually replenished by CVWD. Currently, the City limits extend beyond CWA's current water distribution service area. However, the report study area takes into account the

[3] Coachella Valley Water Management Plan 2010 Update, pp. 1-4 to 1-5
[4] 2014 Coachella Valley Integrated Regional Water Management Plan, Final Volume I, p. 1-1
[5] 2014 Coachella Valley Integrated Regional Water Management Plan, Final Volume I, p. 1-1

entire City limits and its sphere of influence when considering potential growth and demand. The existing service area, City boundaries, and Sphere of Influence are shown on **Figure 3-1**. See **Section 3.2** for additional service area information.


INDIO
HWY 111
I-10
I-10
HWY 86S
COACHELLA
AVE 50
HARRISON ST
HWY 111
JACKSON ST
AVE 54
AIRPORT BLVD
THERMAL
N
SCALE: N.T.S.
LEGEND
CITY LIMIT BOUNDARY
CITY SPHERE BOUNDARY
EXISTING WATER SYSTEM SERVICE AREA
TKE ENGINEERING, INC.
2305 CHICAGO AVENUE
RIVERSIDE, CA 92507
(951) 680-0440
FAX: (951) 680-0490
CITY OF COACHELLA
FIGURE 3-1
WATER SERVICE AREA

3.1.3 CWA Water System Description

CWA's existing water system consists of different pressure zones, groundwater wells, storage reservoirs, booster pumping stations, and distribution facilities. The current water system is divided into two (2) pressure zones, the Low Zone and the 150 Zone. The Low Zone Area is generally south of 48th Avenue, bounded by Van Buren on the west, the Coachella Valley Storm Channel on the east, and 54th Avenue on the south. The Low Zone provides water service to the majority of the City and as the City continues to grow, the Low Zone will extend further east. The 150 Zone service area is generally north of 48th Avenue and supplies primarily commercial and light industrial users along Interstate 10 freeway corridor.

As described, CWA has one principal source of water supply, local groundwater pumped from the CWA-owned wells. There are currently six (6) wells within the City's distribution system; of which, all six (6) wells are currently operational. The total pumping capacity of active wells is approximately 11,400 gallons per minute (gpm) or 16.5 million gallons per day (MGD).

There are three (3) storage reservoirs within the City, the 1.5 MG Dillion Road Reservoir, the 3.6 MG Mecca Reservoir, and the 5.4 MG Well 18 Reservoir. CWA has a total reservoir storage capacity of approximately 10.5 MG; of which, approximately 1.5 MG lies within the 150 Zone.

CWA operates two booster pumping stations, the Mecca Reservoir booster pump station (Well 12 Booster) and the Well 18 Reservoir booster pump station (Well 18 Booster). The Well 12 Booster supplies the Low Zone and takes suction from the 3.6 MG Mecca Reservoir and the Well 18 Booster supplies both the 150 Zone and Low Zone, and takes suction from the 5.4 MG Well 18 Reservoir.

CWA's distribution system network consists of approximately 120 miles of pipeline, which range from 4-inches to 36-inches in diameter. Approximately 65 percent of the distribution system network consists of 6-inch and 8-inch diameter pipes, while 26 percent of the distribution system network is comprised of pipes that are 12 inches in diameter. All pipes that have a diameter of 16-inch and greater are defined as transmission mains and comprise approximately 3.5 percent of the distribution system network. The City currently requires new pipelines to be at least 8-inches in diameter. It is estimated that a majority of pipes in the City's water distribution system network were installed between year 1940 and year 1990. The older pipes reside in the southerly section of the lower zone and the newer pipes are up to the northerly section. Asbestos cement (AC) is the most common pipeline material in the City, according to operations staff; with the remaining pipelines being either polyvinyl chloride (PVC) or ductile iron (DI) and lined steel.

3.2 SERVICE AREA BOUNDARY MAPS

The City is not near built out, with large undeveloped parcels and agricultural areas, mostly east of Highway 86. Agricultural areas are not served by CWA's water system and rely on Coachella Canal water and privately owned and operated wells. As undeveloped and agricultural lands are developed into residential or other land uses, they will be served by CWA and become part of CWA's service area. For the purpose of developing baselines and targets, discussed in **Section 5**, CWA delineated the existing

water service area based on the existing distribution system. **Figure 3-1** highlights the existing water service area, City boundaries, and Sphere of Influence.

3.3 SERVICE AREA CLIMATE

The City's climate is arid with the majority of precipitation occurring as rainfall in the winter months between November and March. The average rainfall for the Coachella area is approximately 4-inches per year. The only known measurable snowfall occurred on January 31, 1979. Winter temperatures are generally between the low 40's and the mid 70's. Summer temperatures are generally between mid-70's and the low 100's. **Table 3-1** shows the average monthly ETo, rainfall, and temperature for the City of Coachella area.

Table 3-1: City of Coachella Area Climate

Month	Monthly Average ETo[a] (inches)	Average Temperature[b] (degrees F)		Average Rainfall[b] (inches)
		Max	Min	
January	2.98	70.6	39.2	0.64
February	3.53	74.9	44.3	0.51
March	6.28	80.0	50.4	0.31
April	8.39	87.0	57.4	0.11
May	10.55	93.7	64.4	0.05
June	10.95	102.3	71.9	0.01
July	10.78	106.9	77.8	0.012
August	9.66	105.7	76.9	0.25
September	8.25	101.5	70.3	0.31
October	5.85	91.9	59.4	0.20
November	3.63	80.2	46.7	0.26
December	2.62	71.7	39.4	0.54
Average:	6.96	88.9	58.2	0.27

NOTES:
[a] California Irrigation Management Information System, Department of Water Resources, Office of Water Use Efficiency, Monthly Average ETo Report for Station 200, Indio 2, Imperial/Coachella Valley – all other nearby stations are inactive or too new; [on-line] http://wwwcimis.water.ca.gov/UserControls/Reports/MonthlyEtoReportViewer.aspx
[b] Western Regional Climate Center (WRCC), Desert Research Institute, Reno, Nevada [on-line] http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca4259 (WRCC program administered by the National Oceanic and Atmospheric Administration (NOAA); data extracted from monitoring Station 044259 at Palm Springs, CA, Average 3/01/1894 through 06/10/16)

3.4 SERVICE AREA POPULATION AND DEMOGRAPHICS

The population of the small, stable community has a young median age. While development carried a rapid pace in the Coachella Valley in the early to mid-2000s, it has slowed significantly since the beginning of the economic recession. Total water demand had increased by over 50 percent up to 2007, but has since generally been on the decline. The City has several planned development projects; however, those are expected to stay in the planning stages until local economies begin to show recovery.

3.4.1 Service Area Population

CWA's water service area (WSA) population is expected to increase substantially in the future. Currently, the WSA lies within the City's boundaries, serving the more densely populated areas to the west and commercial/resort areas to the north. The WSA covers approximately 32 percent of the City Limits with a total of area of 6,057 acres or 9.5 square miles. In order to calculate the current water service area population, the DWR population tool was used by uploading electronic maps that reflected the boundaries for the 2010 census year, the total number of past and current service connections, and SBx7-7 baseline information. With this information, the DWR population tool calculated the 2015 WSA population as 40,208. The population tool worksheets are included in **Appendix C**.

To calculate the projected WSA population, the percent changes across given time periods from the City's 2015 General Plan Update were used. According to the City's 2015 General Plan Update, the 2010 population was 40,704 and is expected to grow to an estimated 70,200 by 2020 and 128,700 by 2035. Using these projected population estimates, the percent change was calculated as 7.25 percent between 2010 and 2020 and 5.56 percent between 2020 and 2035. These percent changes in growth were then applied to project future populations up to 2035, see **Table 3-1** below.

Table 3-2: Population - Current and Projected

Population Served	2015	2020	2025	2030	2035	2040*(opt)*
	40,947	55,783	71,278	91,078	116,377	

The City Development Services Department has plans for several proposed development projects, ranging in size from 10 residential units to mixed-use developments with over 7,500 residential units. These units are included in the City's SOI, which is not anticipated for full build out until after 2050. Therefore, population projections remain in the City's current service area through the year 2035, which is consistent with the location of water demand through 2035. However, since development has slowed significantly since 2007, development plans are expected to stay in the planning stages until local economies begin to show recovery.

Table 3-3 shows CWA's water service area population since 2010 along with the City's 2015 General Plan Update population projections. The projected populations are shown through the year 2035 in five-year increments based on the assumed buildout of the proposed projects by the year 2035.

Table 3-3: Coachella Population Projections						
Population Area	2010	2015	2020	2025	2030	2035
City Limits	40,704	-	70,200	-	-	128,700
CWA Service Area	40,208	40,947	55,783	71,278	91,078	116,377
NOTES: [a] City of Coachella General Plan Update, Adopted 2015 [b] DWR Population Tool WUEdata, http://www.census.gov/						

3.4.2 Water-Use-Related Demographics

The City has received development applications for several projects (including specific plans) of various sizes. The total number of proposed residential units associated with these projects is approximately 24,000 units, as presented in the Coachella 2015 General Plan Update. These units are included in the City's SOI, which is not anticipated for full build out until after 2050. Given the changes in the housing market and other economic and demographic changes, many of the projects are undergoing amendments.[6] The following is a brief summary of the nature and status of the City's larger development projects. Project locations are shown on **Figure 3-2**.

3.4.2.1 La Entrada

The La Entrada Specific Plan, approximately 2,200 acres on the eastern edge of the City, south of Interstate 10 and northeast of the All American Canal, provides for approximately 7,800 residential units, 135 acres of mixed-use, elementary schools, 343.8 acres of parks, multi-purpose trails and 556.9 acres of open space. The La Entrada development has completed environmental review and is undergoing City development review. Construction is expected to follow the City's approval process.

3.4.2.2 Coachella Vineyard

The Coachella Vineyard Specific Plan provides for 807 units in the southeastern area of the City. The Coachella Vineyard development is currently undeveloped and located east of State Route 86.

3.4.2.3 Brandenburg Butters Specific Plan

The Brandenburg Butters project provides for 71.5 acres of commercial uses and 1,381 dwelling units. The project has been approved by City Council and Planning Commission; however, no units have been constructed to date. This development is centrally located, east of State Route 86.

[6] Coachella General Plan Update, 2015, Section 4, Specific Plans

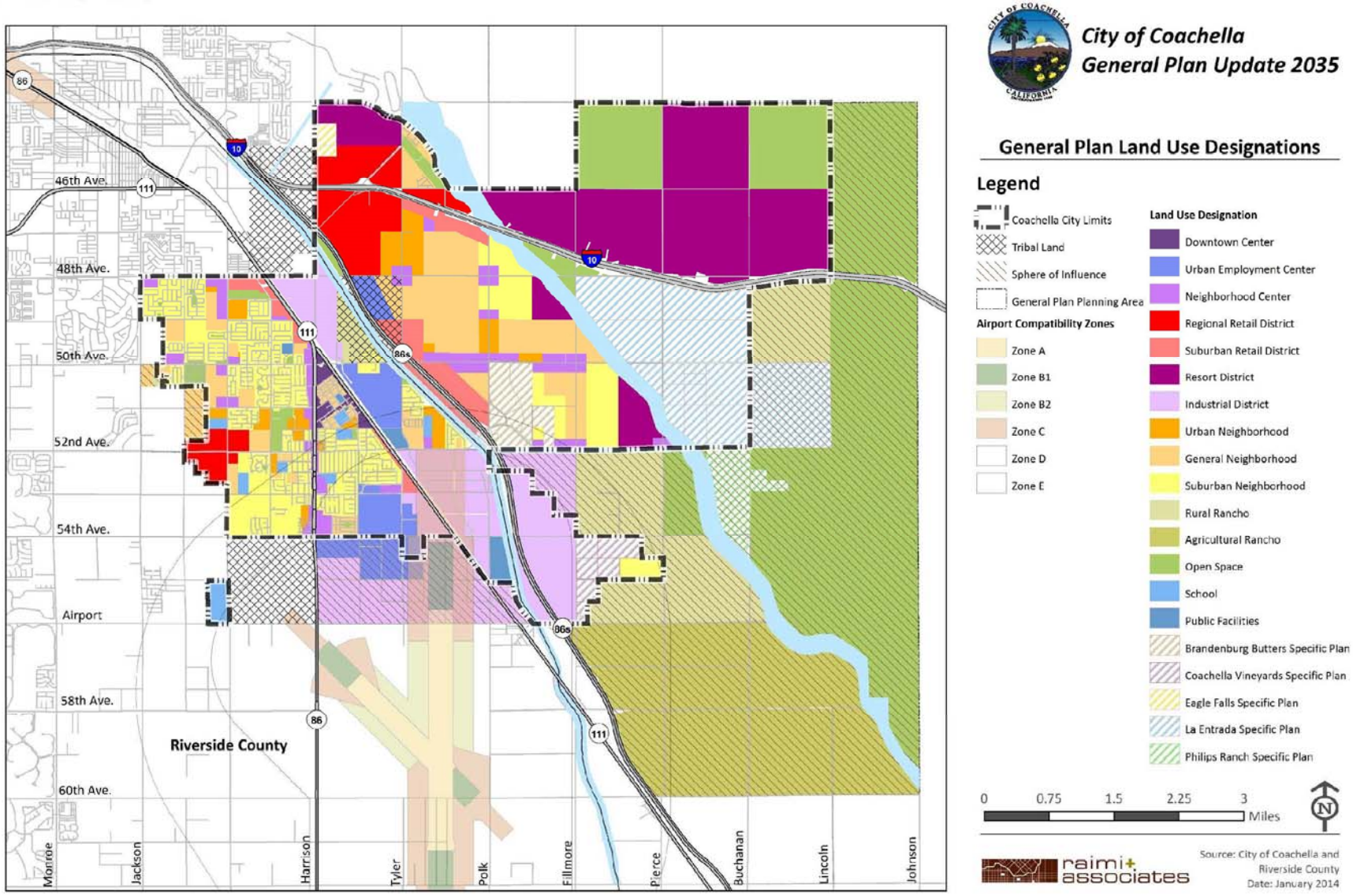


Figure 3-2 – General Plan Land Use Map

3.4.2.4 Eagle Falls

The Eagle Falls Specific Plan resides in both Coachella (60 acres) and Indio (30 acres) on a 90-acre site. The project includes 295 units, of which 202 units will be within the City of Coachella. The Specific Plan provides for a gated golf course community and is included as a part of the Cabazon Band of Mission Indians Fantasy Springs Master Plan. Rough grading has been completed for the Eagle Falls development; however, no units have been constructed to date.

3.4.2.5 Shadow View

The Shadow View Specific Plan provides for a single-family residential community consisting of 1,600 dwelling units on 380 acres, a mixed-use commercial center on 100 acres, and a 37-acre park. The commercial site has a residential overlay that provides an option to construct up to 1,000 high-density residential units. The Shadow View development has been approved by City Council.

SECTION 4 - SYSTEM WATER USE

This section describes and quantifies the current and projected water uses within CWA's service area.

4.1 RECYCLED VERSUS POTABLE AND RAW WATER DEMAND

As explained throughout this UWMP, CWA produces all of its water supplies from the Coachella Valley Groundwater Basin, specifically, the East Whitewater River Subbasin, which is continuously replenished at the local and regional level pursuant to a variety of water supply projects and programs. The East Whitewater River Subbasin is regionally managed by CVWD, CWA, and IWA within the jurisdictional boundaries. CVWD has statutory authority to replenish local groundwater supplies and collect assessments necessary to support a groundwater replenishment program as provided in the County Water District Law. Not only does the basin contain vast reserves of local groundwater (approximately 30 million AF at 1,000 foot depth), it has substantial available storage space that has been utilized and will continue to be utilized to store millions of acre-feet of supplemental supplies that become available during normal and above-normal years. Those surplus supplies are recharged to the basin for later use during dry periods.

Currently, CWA does not produce or use recycled water or raw water in their service area; however, the City plans to develop a recycled water system in the future. As mentioned, the City is currently participating in a Coachella Valley wide recycled water feasibility study spearheaded by the CVRWMG as part of the Coachella Valley IRWM Plan. It should be noted that raw water, via the Coachella Canal, is used within the City limits, but by the agricultural community for framing purposed and not a part of the CWA system.

Per CVWD Ordinance No. 1428, CWA has opportunity to receive canal water for additional potable water supply when available. As the water becomes available, CWA will pursue those opportunities to supplement its water portfolio.

4.2 WATER USE BY SECTOR

CWA tracks the following water use sectors: single family, multi-family, commercial/institutional, industrial, and landscape irrigation. **Table 4-1** shows CWA's historical water service connections by water use sector. From 2005 to 2015 to total number of water service connections increased from 6,823 to 8,037 for an increase of 17.7 percent. However, between 2010 and 2015 the increase was only 1.8 percent, likely a result of the recent economic downturn. Since 2005, total single-family residential water service connections increased from 80.6 percent to 88.1 percent.

CWA's historic water uses by sector, are shown in **Table 4-2**. Overall, water use has declined from 2,315 MG in 2005 to 2,128 MG in 2015 or by 8.1 percent. A more significant reduction in water use occurred from 2010 to 2015, decreasing water use by 21 percent overall; attributable to continued implementation of Demand Management Measures (DMMs) and State water reduction mandates. In 2015, single family water use accounts for 57.3 percent of total water use and commercial/institutional water use accounts for 13.9 percent of total water use.

Table 4-1: Historical Water Service Connections			
Use Type	2005	2010	2015
Single family	5,502	6,919	7,077
Multi-family	244	349	367
Commercial/Institutional	923	336	366
Industrial	25	3	2
Landscape Irrigation	129	158	87
Other	0	127	138
Total	**6,823**	**7,892**	**8,037**

Table 4-2: Historical Water Use in Millions of Gallons (MG)						
Use Type	2005	2010	% Change from 2005 to 2010	2015	% Change from 2010 to 2015	% Change from 2005 to 2015
Single family	946	1,426	50.7%	1,220	-14.4%	29.0%
Multi-family	222	307	38.4%	209	-32.1%	-5.9%
Commercial/Institutional	179	376	110.4%	295	-21.5%	65.2%
Industrial	137	43	-68.3%	3	-92.6%	-97.7%
Landscape Irrigation	139	312	124.4%	178	-42.9%	28.1%
Other	0	0	-	21	-	-
Losses	692	227	-67.1%	202	-11.2%	-70.8%
Total	**2,315**	**2,692**	**16.3%**	**2,128**	**-21.0%**	**-8.1%**
NOTES: Units are Million Gallons (MG)						

Table 4-3, shows CWA's retail water demands for drinking water (potable water) for 2015 by water use sector. The table includes water losses to accurately track 100 percent of the water that was produced in 2015 by CWA.

Table 4-3: Demands for Potable and Raw Water - Actual		
Use Type	2015 Actual	
	Level of Treatment When Delivered	Volume (MG)
Single Family	Drinking Water	1,220
Multi-Family	Drinking Water	209
Commercial	Drinking Water	295
Industrial	Drinking Water	3
Landscape	Drinking Water	178
Other	Drinking Water	21
Losses	Drinking Water	202
	TOTAL	2,128
NOTES: Units are in Million Gallons (MG)		

The projected (next 20 years) water use for the City is generally expected to increase at a similar rate to that of the projected population increase within the City and its SOI; provided, however, that per capita water use reductions achieved pursuant to SBx7-7, further discusses in **Section 5**, may be expected to affect the relationship between increased population and increases in total water use. The City Development Services Department show active processing for several proposed and recently approved development projects, ranging in size from 10 residential units to mixed-use developments with over 7,500 residential units. The total number of proposed residential units associated with these entitlement applications is approximately 20,000. These units are included in the City's SOI, which is not anticipated for full build out until after 2050. Thus, many of these development projects are either in the preliminary planning stages or may have been put on hold by applicants for various reasons. Projected water use for 2020 through 2035 in five-year increments is provided in **Table 4-4**. In addition, **Table 4-5** shown future water demand projections by water use sector over the next 20-years. These demand projections are based on projected service area population, presented in **Section 3**, and per capita water use, presented in the City's 2010 UWMP and **Section 5** herein. As presented in the City's 2010 UWMP, the water use is currently 210 gallons per capita per day (gpcd), with a reduction to 205 gpcd by 2015 and 200 gpcd by 2020 and beyond; again, further discussed in **Section 5** herein. Since **Table 4-4** relies on 5-year average per capita water use baselines and targets, a planning number, CWA's 2010 and 2015 actual water demands are lower than those presented. Note, these planning estimates provide a more conservative outlook in water supply planning and do not account for savings from codes, standards, ordinances, or transportation and land use plans.

Table 4-4: Future per Capita Water Use					
Year	Total Service Area Population	Per Capita Water Use (GPCD)[a]	Total Water Use per Day (MGD)	Total Annual Water Use (MG)	% Increase
2010[b]	40,208	210	8.44	3,082	-
2015[b]	40,947	205	8.39	3,064	-0.6%
2020	55,783	200	11.16	4,072	32.9%
2025	71,278	200	14.26	5,203	27.8%
2030	91,078	200	18.22	6,649	27.8%
2035	116,377	200	23.28	8,496	27.8%

NOTES:
[a] As presented in the City's 2010 UWMP, Table 3.2-3, and in Sections 5-6 and 5-7 herein, the base daily per capita water use 5-year average is 210 gpcd.
[b] Note that both 2010 and 2015 Total Annual Water Use are planning number based on a 5-year average per capita water use baselines and targets and vary from actual metered sales presented in Table 4-1B, providing a more conservative outlook.

Table 4-5: Demands for Potable and Raw Water - Projected				
Use Type	Projected Water Use			
	2020	2025	2030	2035
Single Family	2,335	2,983	3,812	4,871
Multi-Family	399	510	652	833
Commercial	565	722	923	1,180
Industrial	6	8	10	13
Landscape	341	435	556	711
Other	40	51	65	83
Losses	386	494	631	806
TOTAL	4,072	5,203	6,649	8,496

NOTES: Units are Million Gallons (MG)

As indicated above, Riverside County was hit particularly hard by the recent economic downturn. The County experienced some of the highest rates of foreclosures and unemployment in the country. Due to this economic downturn, growth in the County had significantly decreased for several years around the late 2000's. The slowdown in the housing market was one of the primary components of the recession. The timing and extent of this reduced growth rate cannot be accurately predicted. Because the planning period for this UWMP is through 2035, it is expected that the effect of the recent recession on growth in the Valley will attenuate over the long term. Additionally, as shown in **Table 4-2**, actual water demand has declined significantly since 2010 and, as presented in **Section 5**, CWA current GPCD water use is 40.8 percent lower than the SBx7-7 2015 interim target (2015 Interim Target = 200 GPCD v. 2015 Actual Water Use = 142 GPCD). These factors result in a particularly conservative analysis this UWMP because the actual growth and the actual increases in water demand associated with growth are likely to be much lower than the forecasts that have been used for long term water supply planning purposes.

4.3 DISTRIBUTION SYSTEM WATER LOSSES

The difference between water production and metered water deliveries (billed to customers) is defined as unaccounted-for-water, or water loss. Unaccounted-for-water is attributed to leaking pipes, faulty meters, unmetered or unauthorized water use, inaccurate meters, or other events causing water to be withdrawn from the system and not measured. Specific events that cause water loss include tank overflows, hydrant flushing, street cleaning, system flushing, and firefighting. As shown in **Table 4-2**, water losses have dropped significantly, 70.8 percent, since 2005 due to the City's efforts in getting all service connections metered.

CWA quantified distribution system water loss for the most recent 12-month period available for the 2015 UWMP, the 2015 calendar year. The water loss calculations were prepared in accordance with DWR requirements, utilizing the American Water Works Association (AWWA) Water Audit Software Version 5.0. Applying CWA's 2015 water production and metered sales together with data grading, the AWWA software calculated an estimated water loss, while factoring in meter inaccuracies and other potential errors. CWA calculated a water loss volume of 175.2 MG/Yr, or approximately 8.2 percent of 2015 water demand, see **Table 4-6**. Per DWR requirements, a copy of the AWWA water audit worksheets used to calculate CWA's 2015 water losses are included in **Appendix D**.

Table 4-6: 12 Month Water Loss Audit Reporting

Reporting Period Start Date	Volume of Water Loss* (MG)
01/2015	175.223
** Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.*	
NOTES: Losses shown include 10.134 MG of apparent losses and 165.088 MG of real losses.	

Since many proposed new developments will be constructed in previously undeveloped areas, new infrastructure will be installed that will assist in lowering the overall non-revenue or unaccounted-for water loss percentage in the system.

Additionally, CWA joined the California Water Loss Control Collaborative through the California-Nevada Section of the AWWA. California Senate Bill 555 passed in October 2015, requires urban water suppliers in the state to submit a completed and validated water loss audit annually to DWR. The collaborative is includes urban water suppliers and includes California's Water Loss Technical Assistance Program to help agency staff with complying with the new regulations and requirements.

4.4 EXISTING AND FUTURE WATER SAVINGS

The State of California is experiencing a drought crisis since 2012, with 2013 being the driest year on record. In response, the State and water purveyors are working hard at reducing water demand. As shown in **Table 4-2**, CWA saw a 21 percent reduction in overall water demand between 2010 and 2015. Additionally, over the last year, CWA has recorded water demand at an average of 20 percent less than the previous year. CWA's experienced reduction in water demand can be attributable to their continued efforts in water conservation and the passage of two local ordinances.

In February 2014, Resolution No. WA-2014-01 was adopted by the CWA Board of Directors. They City has not hit a critical level of shortage, where they are unable to meet the demands of its customers, and therefore could not evoke their water shortage contingency plan. However, the resolution called for all customers to be "judicious and prudent" with water use and called upon "all customers to voluntary reduce water use by 20 percent."

In response to the Governor's January 17, 2014 proclamation of a state of emergency due to drought conditions and asked all Californians to reduce water usage by 20 percent, the State Water Board adopting Resolution 2014-0038 on July 16, 2014 with emergency regulation for urban water suppliers. Following, CWA adopted Resolution No. WA-2014-05 in October 2014, enacting their water shortage contingency plan Stage II that calls for a mandatory 10 percent reduction in water use, together with other water use restrictions.

These extreme efforts are warranted during this extended drought period. In addition, there has been no distinct analysis of current water use reduction from each influence: ongoing DMM programs, the economic downturn and subsequent recovery, or the drought crisis and subsequent response efforts. Considering this, CWA has determined that the actual long-term water use savings for existing residential water users may be much less. Therefore, CWA did not account for current water savings in their water use projections. Given that, the water use projection is Table 4-2 Retail provide a conservative estimate of future water demand based on SBx7-7 water use targets. CWA will reevaluate water use projection in future water supply planning efforts, after sufficient time has passed to determine the long-term effects of the current drought conditions and the continued recovery from the recent economic crisis.

4.5 WATER USE FOR LOWER INCOME HOUSEHOLDS

Lower income households are those with less than 80 percent of the area's median household income, adjusted for family size. The City's median household income is 41 percent lower than the state average, it's retail sales are 42 percent lower than the state average, and nearly a quarter of its residents are living below the poverty level.[7] The City's 2015 General Plan Update includes quantified objectives estimate on the number of units likely to be constructed, rehabilitated, or conserved/preserved by income level during the planning period of 2014-2021. The quantified objectives do not represent a ceiling on development, but rather establish a realistic estimate based on needs, resources, and constraints.[8] As stated in the general plan, the City will strive to meet their new construction goals of the Regional Housing Needs Allocation of 6,771; however, the new construction estimate is based on actual construction trends for the past 10 years in Coachella, during which an average of 436 new units were constructed per year.

Table 4-7: Quantified Objectives by Income Level, 2014–2021

Type of Housing	Extremely Low	Very Low	Low	Moderate	Above Moderate	Total
New Construction	384	384	558	628	1,534	**3,488**
Rehabilitation	30	60	70	60	40	**260**
Conservation/Preservation	10	10	50	20	20	**110**
Total:	**424**	**454**	**678**	**708**	**1,594**	**3,858**

NOTES: As presented in the City's 2015 General Plan Update.

As shown, the quantified objective estimate for lower income households total 1,556 units within the City. The 2015 General Plan states that an average of 4.51 persons were living within each occupied housing unit.[9] With the assumption that these lower income units are built by 2021, the people per household is 4.51, and the per capita residential water use of 202.5 GPCD (average of 2015 and 2025 GPCD estimates, see **Section 5**), the water demand associated with low income households is estimates at 1.42 MGD or 518 MG per year. The low income household water demand is included in the water use planning projections in **Table 4-7**.

Confirmation that future water savings are not included in demand projections and that lower income household demands are included in demand projections is provided in Table 4-5 Retail Only.

[7] 2015 Coachella General Plan Update, p. 01-1
[8] 2015 Coachella General Plan Update, p. 11-16
[9] 2015 Coachella General Plan Update, Table 3-1, p. 03-3

Table 4-8: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections?	No
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc… utilized in demand projections are found.	See Sections 4.2 and 4.5 for explanation.
Are Lower Income Residential Demands Included In Projections?	Yes

4.6 CLIMATE CHANGE

Refer to **Section 6.10** for climate change discussion.

SECTION 5 - BASELINES AND TARGETS

CWA's methods for calculating baseline and target water consumption values are described in this section. In addition, CWA will demonstrate that they have achieved the 2015 interim water use target and are already exceeding their 2020 water use target.

5.1 ABOUT

The Water Conservation Bill of 2009 (SBX7-7) set forth requirements for each water supplier to include baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use in the 2015 UWMP. The goal of SBX7-7 is to achieve a 20 percent reduction in water use per capita, statewide, by 2020. DWR provided technical methodologies to aid in the determination of baseline and target per capita water uses.

5.2 UPDATING CALCULATIONS FROM 2010 UWMP

In CWA's 2010 UWMP, the target method chosen, Method 3: Hydrologic Region, remained the same in the 2015 UWMP. Furthermore, data for population projections used in the 2010 UWMP came from 2000 and 2010 Census data. Therefore, no updates were made to the calculations from the 2010 UWMP.

5.3 BASELINE PERIODS

In order to stay consistent with the baseline periods used in the 2010 UWMP, the 10-Year Baseline period and the 5-Year Baseline period were kept the same. **Table 5-1** shows both baseline period ranges.

Table 5-1: Baseline Period Ranges

Baseline	Parameter	Value	Units
10- to 15-year baseline period	2008 total water deliveries	2,728	Million Gallons
	2008 total volume of delivered recycled water	-	Million Gallons
	2008 recycled water as a percent of total deliveries	0.00%	Percent
	Number of years in baseline period[1, 2]	10	Years
	Year beginning baseline period range	2001	
	Year ending baseline period range[3]	2010	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2006	
	Year ending baseline period range[4]	2010	

[1]If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period. [2]
The Water Code requires that the baseline period is between 10 and 15 years. However, DWR recognizes that some water suppliers may not have the minimum 10 years of baseline data.

[3]The ending year must be between December 31, 2004 and December 31, 2010.

[4]*The ending year must be between December 31, 2007 and December 31, 2010.*

5.4 SERVICE AREA POPULATION

In order to estimate the service area population, several methods were allowed by DWR, as shown in **Table 5-2**. Using the 2015 UWMP Guidebook, Figure 5.1 Flow chart for Determining Service Area Population, CWA selected the DWR Population Tool to determine service area population. To calculate current service area population, CWA uploaded electronic maps of the water service area along with data from the US Census year 2010, the number of past and current service connections, and SBx7-7 baseline information into DWR's population tool. Consistent with population discussion in **Section 3.4.1**, **Table 5-3** shows yearly water service area populations in the 10-Year Baseline, the 5-Year Baseline, and the 2015 Compliance Year.

Table 5-2: Method for Population Estimates

Method Used to Determine Population (may check more than one)	
	1. Department of Finance (DOF) DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2011 - 2015) when available
	2. Persons-per-Connection Method
X	**3. DWR Population Tool**
	4. Other DWR recommends pre-review

Table 5-3: Service Area Population		
Year		**Population**
10 to 15 Year Baseline Population		
Year 1	2001	23,984
Year 2	2002	25,758
Year 3	2003	27,531
Year 4	2004	29,305
Year 5	2005	31,079
Year 6	2006	32,853
Year 7	2007	34,627
Year 8	2008	36,400
Year 9	2009	38,174
Year 10	2010	40,208
5 Year Baseline Population		
Year 1	2006	32,853
Year 2	2007	34,627
Year 3	2008	36,400
Year 4	2009	38,174
Year 5	2010	40,208
2015 Compliance Year Population		
2015		40,947

5.5 GROSS WATER USE

Currently, CWA does not have recycled water deliveries, so a continuous 10-year period was used in determining base daily per capita water use. CWA's distribution system population was determined from the DWR population tool, as previously described, and gross water use was determined from the City's annual production and storage records. **Table 5-4** and **Table 5-5** present the annual gross water use and volume entering the distribution system. Meter adjustments, exported water, distribution system storage, recycled water, and process water were not applicable to CWA's distribution system, and are therefore left blank. CWA's 10-Year Baseline average gross water use is 2,424 MD per Year, the 5-Year Baseline is 2,771 MG per Year, and the 2015 Compliance Year gross water use is 2,128 MG.

Table 5-4: Annual Gross Water Use								
Baseline Year		Volume Into Distribution System	Deductions					Annual Gross Water Use
			Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water	Water Delivered for Agricultural Use	Process Water	
10 to 15 Year Baseline - Gross Water Use								
Year 1	2001	1,883	-	-	-	-	-	1,883
Year 2	2002	1,902	-	-	-	-	-	1,902
Year 3	2003	2,113	-	-	-	-	-	2,113
Year 4	2004	2,168	-	-	-	-	-	2,168
Year 5	2005	2,314	-	-	-	-	-	2,314
Year 6	2006	2,894	-	-	-	-	-	2,894
Year 7	2007	2,829	-	-	-	-	-	2,829
Year 8	2008	2,727	-	-	-	-	-	2,727
Year 9	2009	2,716	-	-	-	-	-	2,716
Year 10	2010	2,692	-	-	-	-	-	2,692
10 - 15 year baseline average gross water use								**2,424**
5 Year Baseline - Gross Water Use								
Year 1	2006	2,894	-	-	-	-	-	2,894
Year 2	2007	2,829	-	-	-	-	-	2,829
Year 3	2008	2,727	-	-	-	-	-	2,727
Year 4	2009	2,716	-	-	-	-	-	2,716
Year 5	2010	2,692	-	-	-	-	-	2,692
5 year baseline average gross water use								**2,771**
2015 Compliance Year - Gross Water Use								
2015		2,128	-	-	-	-	-	**2,128**

Table 5-5: Volume Entering the Distribution System(s)				
Name of Source		Whitewater River Sub-Basin		
This water source is:				
X		The supplier's own water source		
		A purchased or imported source		
Baseline Year		Volume Entering Distribution System	Meter Error Adjustment * *Optional (+/-)*	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	2001	1,883	-	1,883
Year 2	2002	1,902	-	1,902
Year 3	2003	2,113	-	2,113
Year 4	2004	2,168	-	2,168
Year 5	2005	2,314	-	2,314
Year 6	2006	2,894	-	2,894
Year 7	2007	2,829	-	2,829
Year 8	2008	2,727	-	2,727
Year 9	2009	2,716	-	2,716
Year 10	2010	2,692	-	2,692
5 Year Baseline - Water into Distribution System				
Year 1	2006	2,894	-	2,894
Year 2	2007	2,829	-	2,829
Year 3	2008	2,727	-	2,727
Year 4	2009	2,716	-	2,716
Year 5	2010	2,692	-	2,692
2015 Compliance Year - Water into Distribution System				
2015		2,128	-	2,128

5.6 BASELINE DAILY PER CAPITA WATER USE

To calculate the average baseline daily per capita water use (GPCD), the annual gross water use was divided by the service area population, and then converted to gallons per day. **Table 5-6** shows each baseline year's daily per capita water use with the average GPCD for the 10-Year Baseline as 208 GPCD, 210 GPCD for the 5-Year Baseline, and 142 GPCD for the 2015 Compliance Year. These averages are important because they are used to determine the interim 2015 water use target along with the confirmed 2020 target, and to show compliance with the 2015 target. **Table 5-7** provides a summary of GPCD data.

Table 5-6: Gallons Per Capita Per Day (GPCD)				
Baseline Year		Service Area Population	Annual Gross Water Use	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	2001	23,984	1,883	215
Year 2	2002	25,758	1,902	202
Year 3	2003	27,531	2,113	210
Year 4	2004	29,305	2,168	203
Year 5	2005	31,079	2,314	204
Year 6	2006	32,853	2,894	241
Year 7	2007	34,627	2,829	224
Year 8	2008	36,400	2,727	205
Year 9	2009	38,174	2,716	195
Year 10	2010	40,208	2,692	183
10-15 Year Average Baseline GPCD				**208**
5 Year Baseline GPCD				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use
Year 1	2006	32,853	2,894	241
Year 2	2007	34,627	2,829	224
Year 3	2008	36,400	2,727	205
Year 4	2009	38,174	2,716	195
Year 5	2010	40,208	2,692	183
5 Year Average Baseline GPCD				**210**
2015 Compliance Year GPCD				
2015		40,947	2,128	**142**

Table 5-7: GPCD Summary	
10-15 Year Baseline GPCD	**208**
5 Year Baseline GPCD	**210**
2015 Compliance Year GPCD	**142**

5.7 2015 AND 2020 TARGETS

After evaluating the four methodologies for determining per capita water use target, CWA determined Method 3 would be the best fit. Using Method 3, the per capita water use target is based on 95 percent of the applicable state hydraulic region target. CWA is located in the Colorado River hydraulic region. The 2020 target for the Colorado River region is 211 GPCD. Following Method 3, 95 percent of the regional target results in a per capita water use target of 200 GPCD. Additionally, since 95 percent of the 5-year base daily per capita water use, 210 GPCD, is in essence equal to the regional target, 200 GPCD, the per capita water use target was set at 200 GPCD. The Confirmed 2020 target was determined by choosing the least number between the maximum 2020 Target and the Calculated 2020 Target.

Table 5-8: Confirm Minimum Reduction for 2020 Target

5 Year Baseline GPCD *From SB X7-7 Table 5*	Maximum 2020 Target[1]	Calculated 2020 Target[2]	**Confirmed 2020 Target**
210	200	200	**200**

[1]Maximum 2020 Target is 95% of the 5 Year Baseline GPCD [2]2020 Target is calculated based on the selected Target Method, see SB X7-7 Table 7 and corresponding tables for agency's calculated target.

Finally, the 2015 Interim Target GPCD, was calculated by finding the midpoint between the 10-Year Baseline GPCD and the 2020 Target GPCD. Thus, the 2015 Interim Target GPCD is 204, as shown in **Table 5-9**.

Table 5-9: 2015 Interim Target GPCD

Confirmed 2020 Target *Fm SB X7-7 Table 7-F*	10-15 year Baseline GPCD *Fm SB X7-7 Table 5*	**2015 Interim Target GPCD**
200	208	**204**

Table 5-10 presents a summary of CWA's baselines and targets analysis.

Table 5-10 Baselines and Targets Summary					
Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10-15 year	2001	2010	208	204	200
5 Year	2006	2010	210		
*All values are in Gallons per Capita per Day (GPCD)					

5.8 2015 COMPLIANCE DAILY PER CAPITA WATER USE

In order to demonstrate compliance with the 2015 Interim Target GPCD of 204 GPCD, the actual 2015 GPCD was calculated. As mentioned earlier, CWA's actual 2015 water use is 142 GPCD. Therefore, CWA is in compliance with the targeted reduction for 2015 and the 2020 goal, exceeding both. **Table 5-11** summarizes CWA's compliance with the 2015 Interim Target GPCD.

Table 5-11: 2015 Compliance *Retail Agency or Regional Alliance Only*								
Actual 2015 GPCD*	2015 Interim Target GPCD*	**Optional Adjustments to 2015 GPCD** Enter "0" if no adjustment is made *From Methodology 8*					2015 GPCD* *(Adjusted if applicable)*	Did Supplier Achieve Targeted Reduction for 2015? Y/N
		Extraordinary Events*	Economic Adjustment*	Weather Normalization*	TOTAL Adjustments*	Adjusted 2015 GPCD*		
142	204	0	0	0	0	142	142	Yes
All values are in Gallons per Capita per Day (GPCD)								

CWA recognizes that water is a limited resource and that water conservation and use efficiency should be actively pursued. CWA's water conservation efforts to reduce overall water demand are exceeding State mandates. Given that the City is recovering from the recent economic downturn, which directly impacted development, in addition to mandatory water conservation efforts in response to the current, ongoing drought, CWA realizes that the current gallon per capita water use will likely increase going into the future. However, CWA anticipates that their extensive water conservation efforts will still result in a gallon per capita water use below the 2020 goal.

On November 2, 2000, the City became signatory to the Urban Water Conservation MOU with the California Urban Water Conservation Council (CUWCC). In addition, CWA's tiered water rate schedule is conducive to voluntary conservation. CWA currently implements several water conservation programs. Furthermore, CWA promotes water conservation and other resources in coordination with CVWD,

Imperial Irrigation District (IID), and other energy utilities. Refer to **Section 9** for details on CWA's on-going water conservation efforts.

5.9 REGIONAL ALLIANCE

CWA is not participating in a regional alliance and is submitting their 2015 UWMP individually.

SECTION 6 - SYSTEM SUPPLIES

As explained herein, CWA produces all of its water supplies from the Coachella Valley Groundwater Basin, specifically, the East Whitewater River Subbasin, which is continuously replenished at the local and regional level pursuant to a variety of water supply projects and programs. The East Whitewater River Subbasin is regionally managed by CVWD, CWA, and IWA. CVWD has statutory authority to replenish local groundwater supplies and collect assessments necessary to support a groundwater replenishment program as provided in the County Water District Law. As indicated in CVWD's 2015 UWMP and various other Coachella Valley water supply planning documents (e.g. CVWD 2010 Coachella Valley WMP and CVWD 2011 Subsequent Program Environmental Impact Report (SPEIR)), the Coachella Valley groundwater basin area serves as an expansive conjunctive use resource that is capable of ensuring a sufficient and sustainable water supply to serve existing uses and projected growth during normal, single-dry and multiple-dry years over an extended planning horizon, currently established as the year 2045. Not only does the basin contain vast reserves of local groundwater (approximately 30 million AF at 1,000 foot depth), it has substantial available storage space that has been utilized and will continue to be utilized to store millions of acre-feet of supplemental supplies that become available during normal and above-normal years. Those surplus supplies are recharged to the basin for later use during dry periods.

In 2002, CVWD prepared a Water Management Plan to provide a road map for meeting future water demands throughout the Lower Coachella Valley, including the City. It includes recommendations for water conservation, additional imported supplies, source substitution, and groundwater recharge elements.

6.1 PURCHASED OR IMPORTED WATER

As described, the East Whitewater River Subbasin is regionally managed by CVWD, CWA, and IWA. CVWD has statutory authority to replenish local groundwater supplies and collect assessments necessary to support a groundwater replenishment program as provided in the County Water District Law. CVWD imports Colorado River water supplies to replenish the East Whitewater River Subbasin groundwater aquifer. Each are discussed in greater detail in the following sections.

6.1.1 Imported Colorado River Water

Colorado River supplies are important to the Coachella Valley for two primary reasons. First, and as further discussed below, a substantial portion of California's share of Colorado River water is allocated directly to CVWD. Second, much of the current replenishment supplies used in the West portion of the Valley come from MWD's allocation of Colorado River water, via the exchange agreement for SWP supplies and the replenishment supplies used in the East portion of the Valley are from QSA allocation.

Colorado River water has been a major source of supply for the Coachella Valley since 1949 with the completion of the Coachella Canal.[10] The Colorado River is managed and operated in accordance with the Law of the River, the collection of interstate compacts, federal and state legislation, various

[10] 2010 CVWMP, p. 4-13.

agreements and contracts, an international treaty, a U.S. Supreme Court decree, and federal administrative actions that govern the rights to use of Colorado River water within the seven Colorado River Basin states. The Colorado River Compact, signed in 1922, apportioned the waters of the Colorado River Basin between the Upper Colorado River Basin (Colorado, Wyoming, Utah, and New Mexico) and the Lower Basin (Nevada, Arizona, and California). The Colorado River Compact allocates 15 million AFY of Colorado River water: 7.5 million AFY to the Upper Basin and 7.5 million AFY to the Lower Basin, plus up to 1 million AFY of surplus supplies. The Lower Basin's water was further apportioned among the three Lower Basin states by the Boulder Canyon Project Act in 1928 and the 1964 U.S. Supreme Court decree in Arizona v. California. Arizona's basic annual apportionment is 2.8 million AFY, California's is 4.4 million AFY, and Nevada's is 0.3 million AFY. California has been diverting up to 5.3 million AFY in recent years, using the unused portions of the Arizona and Nevada entitlements. Mexico is entitled to 1.5 million AFY of the Colorado River under the 1944 United States-Mexico Treaty for Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande. However, this treaty did not specify a required quality for water entering Mexico. In 1973, the United States and Mexico signed Minute No. 242 of the International Boundary and Water Commission requiring certain water quality standards for water entering Mexico.[11]

California's apportionment of Colorado River water is allocated by the 1931 Seven Party Agreement among Palo Verde Irrigation District (PVID), Imperial Irrigation District (IID), CVWD and Metropolitan. The three remaining parties, the City and the County of San Diego and the City of Los Angeles, are now part of Metropolitan. The allocations defined in the Seven Party Agreement are shown in **Table 6-3** below. In its 1979 supplemental decree in the Arizona v. California case, the United States Supreme Court also assigned "present perfected rights" to the use of river water to a number of individuals, water districts, towns and Indian tribes along the river. These rights, which total approximately 2,875,000 AFY, are charged against California's 4.4 million AFY allocation and must be satisfied first in times of shortage. Under the 1970 Criteria for Coordinated Long-Range Operation of the Colorado River Reservoirs (Operating Criteria), the Secretary of the Interior determines how much water is to be allocated for use in Arizona, California and Nevada and whether a surplus, normal or shortage condition exists. The Secretary may allocate additional water if surplus conditions exist on the River (see additional discussion below).[12]

California's Colorado River supply is protected by the 1968 Colorado River Basin Project Act, which provides that in years of insufficient supply on the main stream of the Colorado River, supplies to the Central Arizona Project shall be reduced to zero before California will be reduced below 4.4 million AF in any year. This assures full supplies to the Coachella Valley except in periods of extreme drought. As further described below, delivery analyses performed for the Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lakes Powell and Mead indicated that that California would only experience shortages if the total shortage in the Lower Basin exceeds 1.7 million AFY.[13]

The Coachella Canal (Canal) is a branch of the All-American Canal that brings Colorado River water into the Imperial and Coachella Valleys. Historically, CVWD received approximately 330,000 AFY of Priority

[11] 2010 CVWMP, p. 4-13.
[12] 2010 CVWMP, p. 4-13.
[13] 2010 CVWMP, p. 4-14.

3A Colorado River water delivered via the Coachella Canal. The Canal originates at Drop 1 on the All-American Canal and extends approximately 122 miles, terminating in CVWD's Lake Cahuilla. The service area for Colorado River water delivery under CVWD's contract with Reclamation is defined as Improvement District No. 1 (ID-1) which encompasses most of the East Valley and a portion of the West Valley north of Interstate 10. Under the 1931 California Seven Party Agreement, CVWD has water rights to Colorado River water as part of the first 3.85 million AFY allocated to California. CVWD is in the third priority position along with IID.[14]

Table 6-1
Priorities and Water Delivery Contracts
California Seven Party Agreement of 1931

Priority	Description	Acre-ft/year
1	Palo Verde Irrigation District gross area of 104,500 acres of Coachella Valley lands	3,850,000
2	Yuma Project (Reservation Division) not exceeding a gross area of 25,000 acres within California	
3(a)	IID, CVWD and lands in Imperial and Coachella Valley's to be served by the All American Canal	
3(b)	Palo Verde Irrigation District – 16,000 acres of mesa lands	
4	Metropolitan Water District of Southern California for use on coastal plain	550,000
	Subtotal – California Basic Apportionment	4,400,000
5(a)	Metropolitan Water District of Southern California for use on coastal plain	550,000
5(b)	Metropolitan Water District of Southern California for use on coastal plain	112,000
6(a)	IID and lands in the Imperial and Coachella Valley's to be served by the All American Canal	300,000
6(b)	Palo Verde Irrigation District – 16,000 acres of mesa lands	
	Total	5,362,000

Sources: United States Bureau of Reclamation, http://www.usbr.gov; Coachella Valley Water Management Plan Update, January 2012, p. 4-14, Table 4-2.

6.1.1.1 Quantification Settlement Agreement

Although the rights and relative priorities to Colorado River supplies as discussed above remain established under the Law of the River, an additional framework applies in California. In 2003, CVWD, IID and Metropolitan successfully completed negotiation of the Quantification Settlement Agreement (QSA). The QSA quantifies the Colorado River water allocations of California's agricultural water contractors for the next 75 years and provides for the transfer of water between agencies.

[14] 2010 CVWMP, p. 4-14.

Specific programs under the QSA include lining portions of the All-American and Coachella Canals, which conserve approximately 96,000 acre-feet annually. As a result, about 80,000 acre-feet of conserved water is delivered to the San Diego County Water Authority ("SDCWA") by exchange with Metropolitan. Metropolitan also takes delivery of 16,000 acre-feet annually that will be made available for the benefit of the La Jolla, Pala, Pauma, Rincon and San Pasqual Bands of Mission Indians, the San Luis Rey River Indian Water Authority, the City of Escondido and the Vista Irrigation District, upon completion of a water rights settlement, expected in 2013. An amendment to the 1988 Conservation Agreement between Metropolitan and IID and an associated 1989 Approval Agreement among Metropolitan, IID, CVWD and PVID, extended the term of the 1988 Conservation Agreement and limited the single year amount of water used by CVWD to 20,000 acre-feet. Also included under the QSA is the Delivery and Exchange Agreement between Metropolitan and CVWD that provides for Metropolitan to deliver annually up to 35,000 acre-feet of Metropolitan's State Water Project contractual water to CVWD by exchange with Metropolitan's available Colorado River supplies. In calendar year 2011, under a supplemental agreement with CVWD, Metropolitan delivered 105,000 acre-feet, which consisted of the full 35,000 acre-feet for 2011 plus advance delivery of the full contractual amounts for 2012 and 2013.[15]

Under the QSA, CVWD has a base allotment of 330,000 AFY. In accordance with the QSA, CVWD has entered into water transfer agreements with Metropolitan and IID that increase CVWD supplies by an additional 129,000 AFY as shown in **Table 6-4** below.[16]

Table 6-2
CVWD Deliveries under the QSA

Component	2010 Amount (AFY)	2045 Amount (AFY)
Base Allotment	330,000	330,000
1988 MWD/IID Approval Agreement	20,000	20,000
Coachella Canal Lining (to SDCWA)	-26,000	-26,000
To Miscellaneous/Indian PPRs	-3,000	-3,000
IID/CVWD First Transfer	12,000	50,000
IID/CVWD Second Transfer	0	53,000
MWD/SWP Transfer	35,000	35,000
Total Diversion at Imperial Dam	368,000	459,000
Less Conveyance Losses[1]	-31,000	-31,000
Total Deliveries to CVWD	337,000	428,000

[1] Assumed losses after completion of canal lining projects.

Source: Coachella Valley Water Management Plan Update, January 2012, p. 4-15, Table 4-3

As of 2010, CVWD receives 368,000 AFY of Colorado River water deliveries under the QSA (See **Table 6-4** above). This includes the base entitlement of 330,000 AFY, Metropolitan/IID Approval of 20,000 AFY, 12,000 AFY of IID/CVWD First transfer, and 35,000 AFY of Metropolitan/SWP transfer. It also includes

[15] MWDSC 2013 Preliminary Official Statement, Water Revenue Refunding Bonds, Appendix A, p. A-16.
[16] 2010 CVWMP, p. 4-15.

the 26,000 AFY transferred to San Diego County Water Authority (SDCWA) as part of the Coachella Canal lining project and the 3,000 AFY transfer to Indian Present Perfected Rights (PPRs). CVWD's allocation will increase to 459,000 ac-ft/yr of Colorado River water by 2026 and remain at that level for the 75-year term of the QSA. After deducting conveyance and distribution losses, approximately 428,000 AFY will be available for CVWD use.[17] As further discussed in **Section 7.1.3**, legal challenges were filed against the QSA in 2003. While several of the issues have been resolved, the litigation continues and will likely take several more years to complete.

6.1.1.2 Factors Affecting Colorado River Supplies

Several important factors have the potential to affect the long-term availability and reliability of Colorado River supplies in the Coachella Valley. Among those factors are drought conditions in the Colorado River Basin; water requirements for endangered species and habitat protection; climate change; and lawsuits challenging the validity of the QSA. A detailed discussion of these factors is presented in **Section 7.1.3**.

6.2 GROUNDWATER

Groundwater[18] is the principal source of municipal water supply in the Coachella Valley. The main groundwater source for the entire valley is the Coachella Valley Groundwater Basin, Indio Subbasin, Basin Number 7-21-01, also known as the Whitewater River Subbasin, as shown in **Figure 6-1**. The east portion of the Whitewater River Subbasin is shared by CVWD, Indio Water Authority, Coachella Water Authority (City), and numerous private groundwater producers.

6.2.1 Basin Description

The Whitewater River Subbasin underlies a major portion of the valley floor and encompasses approximately 400 square miles. Beginning approximately one mile west of the junction of State Highway 111 and Interstate 10, the Subbasin extends southeast approximately 70 miles to the Salton Sea. It is bordered on the southwest by the Santa Rosa and San Jacinto Mountains and is separated from other basins by the Garnet Hill and San Andreas faults.[19] Currently, CWA produces all of their groundwater from the Whitewater River Subbasin.

6.2.2 Groundwater Management

As noted by DWR Bulletin 118, the basin is not adjudicated. As such, there are no specifically established limitations on the rights of CWA to withdraw water. DWR Bulletin 118 notes that groundwater management in the basin is a local responsibility, and therefore decisions regarding basin conditions and controlled overdraft and groundwater management are the responsibility of local agencies. With specific regard to the Whitewater River Subbasin and surrounding areas, CVWD, one of the region's SWP contractors, developed the 2002 CVWMP and 2010 CVWMP Update for the long-term management of

[17] 2010 CVWMP, p. 4-15.
[18] As indicated throughout this WSA, the term groundwater refers to local groundwater and imported, recycled and other supplies that are continuously recharged to the basin and extracted from groundwater wells.
[19] See 2010 CVWMP, Section 4.1.1, Whitewater River Subbasin.

groundwater resources. As detailed in those Plans and discussed in this UWMP, CVWD has determined that the total projected water supplies available to the basin area, including the City and it's SOI, during normal, single-dry and multiple-dry periods throughout the year 2045 are sufficient to meet the needs of existing uses and projected growth.[20] Moreover, the potential environmental effects of implementing the projects and programs contained in the 2010 CVWMP have been analyzed in accordance with CEQA, and the determination has been made that implementation of the 2010 CVWMP will have a beneficial effect on groundwater resources.[21] CVWD, with assistance from other water agencies including CWA, have been implementing water supply projects, programs and related management actions of the CVWMPs since 2002. A notable requirement under the CVWMP is that CWA (and other agency producers) must pay a replenishment assessment charge (RAC) for each acre-foot of groundwater produced. The FY 2015 RAC was $52 per acre-foot (AF) of groundwater pumped, the FY 2016 RAC was $59 per AF, and beginning July 1, 2016 the FY 2017 2017 RAS is $66/AF.[22] In 2015, CWA produced approximately 2,128 MG, or 6,531 AF, of groundwater and paid approximately $339,612 in RAC. In addition to the CVWMP process, in December 2010 the Coachella Valley Integrated Regional Water Management Plan (IRWMP) was developed to promote a regional approach for addressing water management issues and to enhance the region's eligibility for state funding opportunities for water resource projects. The IRWMP was created by the Coachella Valley Regional Water Management Group (CVRWMG), which is a partnership of CWA, CVWD, DWA, Indio Water Agency, and the Mission Springs Water District.

6.2.2.1 Sustainable Groundwater Management Act

In 2014, the California Legislature signed a three bill legislative package into law, composed of AB 1739, SB 1168, and SB 1319, collectively known as the Sustainable Groundwater Management Act (SGMA). SGMA allows local agencies to manage groundwater resources in a sustainable manner, with management efforts tailored to the resources and needs of their specific communities. DWR's Bulletin 118 Update 2003 defines groundwater management as the planned and coordinated monitoring, operation, and administration of a groundwater basin, or portion of a basin, with the goal of long-term groundwater resource sustainability. Sustainability in groundwater management is defined in the new legislations as the "management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results"; such as chronic lowering of groundwater levels, significant and unreasonable reduction of groundwater storage/seawater intrusion/degraded water quality/land subsidence, and surface water depletions that have significant and unreasonable adverse impacts on beneficial uses.

A Groundwater Sustainability Agency (GSA) may be comprised of a local agency, a combination of local agencies, or a county. Once established, it is the GSA's responsibility to develop and implement a Groundwater Sustainability Plan (GSP) to meet the sustainability goal of the basin to ensure that it is operated within its sustainable yield, without causing undesirable results. DWR has stated that GSAs must be formed by June 30, 2017. In addition, DWR will develop and adopt regulations for evaluating

[20] See, e.g., 2010 CVWMP, pp. 7-2 to 7-12; 2011 SPEIR, pp. 3-4 to 3-9.
[21] See, e.g., 2010 CVWMP, pp. 7-18 to 7-31; 2011 SPEIR, pp. 3-23 to 3-33.
[22] CVWD Engineer's Report on Water Supply and Replenishment Assessment 2016-2017 Mission Creek, West Whitewater River, and East Whitewater River Subbasin Areas of Benefit, Table VII-4.

the adequacy of GSPs, the implementation of GSPs, and the development of coordination agreements, by June 1, 2016. Per SGMA, only identified high and medium priority basins need to develop GSPs. The Whitewater River Subbasin has been designated as medium priority under SGMA. The subbasin is unadjudicated and will require the formation of a GSA and the development of a GSP.

Earlier this year, CWA elected to serve as GSA for portions of the Whitewater River Subbasin which lie within CWA's service boundary, as shown on **Figure 3.1**. As a result, CWA is responsible for managing the groundwater within the boundary shown. However, CVWD has statutory authority to replenish local groundwater supplies and collect assessments necessary to support groundwater management within the entire East Whitewater River Subbasin. Further, CWA, CVWD, DWA, and IWA all filed to become GSAs and will jointly manage the Whitewater River Subbasin. Said agencies anticipate submitting the 2010 CVWMP Update as an alternative to preparing a separate GSP for the Valley.[23]

6.2.3 Overdraft Conditions

DWR Bulletin 118-80 defines "overdraft as the condition of a groundwater basin where the amount of water extracted exceeds the amount of groundwater recharging the basin over a period of time." It also defines "critical condition of overdraft" as water management practices that "would probably result in significant adverse overdraft-related environmental, social, or economic effect" (DWR, 1980). Adverse effects can include water quality degradation and land subsidence.

Historical overdraft throughout the Coachella Valley caused groundwater levels to decline in many portions of the East Valley from La Quinta to the Salton Sea, and raised concerns about water quality degradation and land subsidence. Due to continued active management of the Coachella Valley Groundwater Basin, it's not currently in a state of overdraft. The overall condition of the Coachella Valley aquifer is described in both the DWR Bulletin 108 (1964) and, more recently, Bulletin 118 (2003). Overdraft is listed as a primary challenge the aquifer is faced with according to Bulletin 118. CVWD Engineer's Report on Water Supply and Replenishment Assessment 2016-2017 Mission Creek, West Whitewater River, and East Whitewater River Subbasin Areas of Benefit, states that "due to implementation of projects identified in the 2010 CVWMP Update, average groundwater levels in the East Whitewater River Subbasin Management Area are increasing… total inflow to the subbasin exceeds total outflow, and the subbasin continues to experience a positive change in groundwater in storage." The report also recognized that it is necessary to continue artificial replenishment to prevent future and/or further overdraft.

6.2.4 Historical Groundwater Pumping

CWA's total groundwater production from the East Whitewater River Subbasin is presented in **Table 6-5**. As growth occurs in the City, CWA will increase groundwater production to meet the new demands. CWA will continue to use the Whitewater River Subbasin to meet its urban water demands. In addition, CWA has several water conservation measures that restricts the water use of new developments, described in **Section 9**.

[23] 2015 CVWD UWMP, p. 6-8

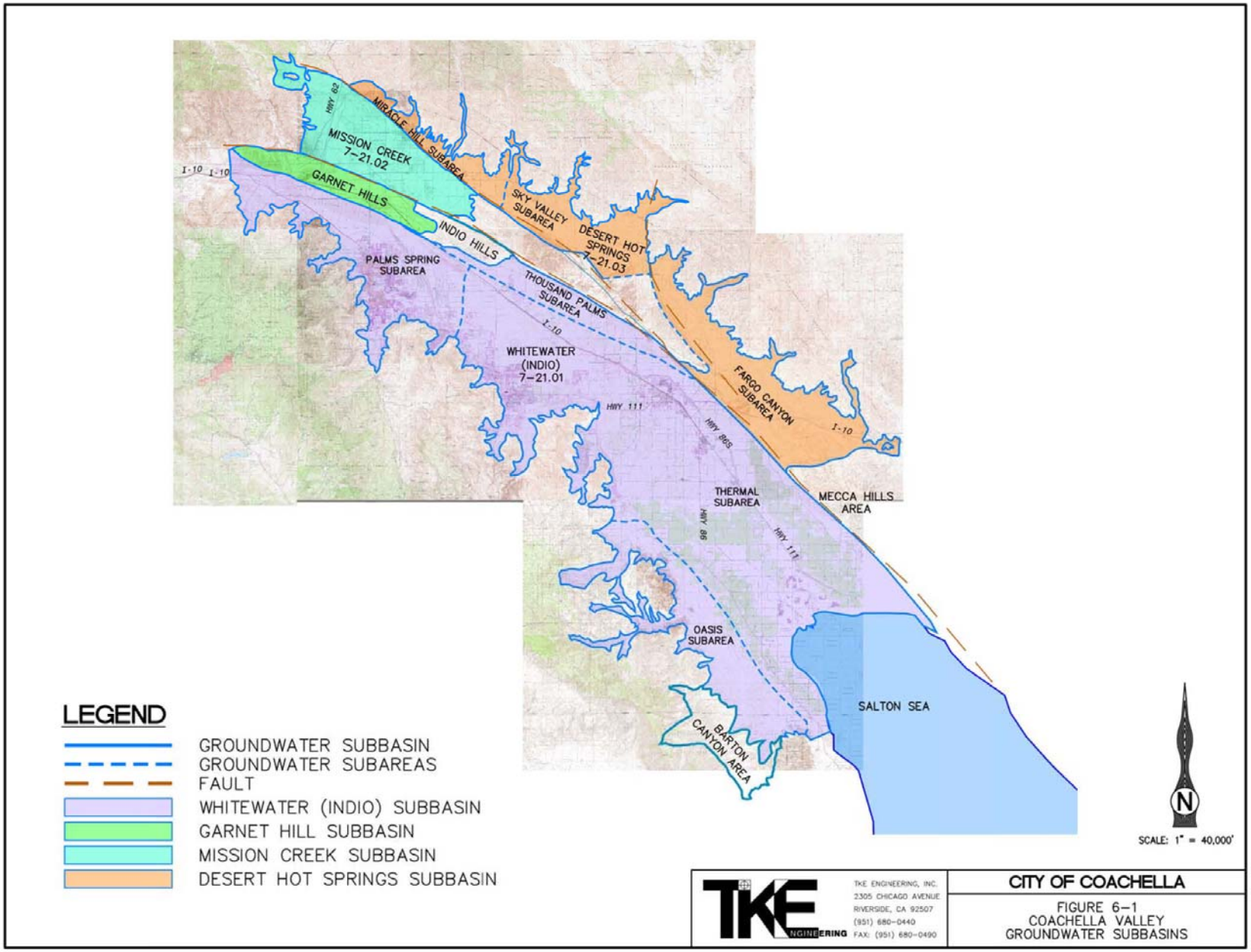

MISSION CREEK
7-21.02
MIRACLE HILL SUBAREA
GARNET HILLS
INDIO HILLS
SKY VALLEY SUBAREA
DESERT HOT SPRINGS
7-21.03
PALMS SPRING SUBAREA
THOUSAND PALMS SUBAREA
WHITEWATER
(INDIO)
7-21.01
FARGO CANYON SUBAREA
THERMAL SUBAREA
MECCA HILLS AREA
OASIS SUBAREA
BARTON CANYON AREA
SALTON SEA
HWY 62
I-10
HWY 111
HWY 86S
HWY 86
LEGEND
GROUNDWATER SUBBASIN
GROUNDWATER SUBAREAS
FAULT
WHITEWATER (INDIO) SUBBASIN
GARNET HILL SUBBASIN
MISSION CREEK SUBBASIN
DESERT HOT SPRINGS SUBBASIN
N
SCALE: 1" = 40,000'
TKE ENGINEERING
TKE ENGINEERING, INC.
2305 CHICAGO AVENUE
RIVERSIDE, CA 92507
(951) 680-0440
FAX: (951) 680-0490
CITY OF COACHELLA
FIGURE 6-1
COACHELLA VALLEY
GROUNDWATER SUBBASINS

Table 6-3: Groundwater Volume Pumped						
Groundwater Type	Location or Basin Name	2011	2012	2013	2014	2015
Alluvial Basin	East Whitewater River Subbasin	2,530	2,604	2,588	2,514	2,128
	TOTAL	2,530	2,604	2,588	2,514	2,128
NOTES: Units are in MG						

6.2.5 Groundwater Quality

The quality of Coachella Valley groundwater is high and most of the groundwater delivered to urban customers receives only disinfection.[24] CWA obtains all of its potable water from the Coachella Valley Groundwater Basin by way of its six active groundwater wells. These wells are all located west of the San Andreas Fault. CWA maintains a 0.2 parts per million (ppm or mg/L) residual of chlorine in the drinking water throughout its system. This water is routinely monitored to ensure compliance with all requirements set forth by the U.S. Environmental Protection Agency (EPA), through the Safe Drinking Water Act, and the California Department of Public Health (CDPH), through Title 22.

CWA has not had any violations of the Maximum Contaminant Level (MCL) for any monitored primary, secondary, or microbial contaminants over the past 7 years[25]. The City's water quality also meets most secondary MCL's known as Public Health Goals (PHG's). PHG's are set by the California EPA and are the level of contaminants in drinking water below which there is no known or expected health risk.

There are two major developments within the City's SOI that are expected appear in the near future. They are the La Entrada and Desert Lakes Developments. Both are scheduled to be built on the east side of the San Andreas Fault, which lies outside of the Whitewater River Subbasin. These developments would lie within the Fargo Canyon Subarea of the Desert Hot Springs Subbasin.[26] Within this area groundwater is generally of poor quality (TDS >1,000 mg/L) and the native yield is limited.[27] Groundwater, recently extracted east of the Coachella Valley Storm Channel, which generally follows the same alignment as the San Andreas Fault, also reported elevated levels of fluoride.[28] Private wells in the area have also reported elevated arsenic levels exceeding the drinking water regulations.[29]

Groundwater supply for developments within the Fargo Canyon Subarea of the Desert Hot Springs Subbasin will most likely have come from new wells added on the westerly side of the San Andreas Fault due to the groundwater quality issues on the east side. While well head or centralized treatment for

[24] 2010 CVWMP Update, Section 6.7.3, Groundwater Quality and Treatment
[25] Based on the City of Coachella Water Quality reports, 2007-2012
[26] 2010 CVWMP Update, Figure 4-1, Coachella Valley Groundwater Subbasins
[27] 2010 CVWMP Update, Section 6.4.6, Other Local Groundwater
[28] 2015 Coachella General Plan Update, Section 3, Water Quality
[29] 2010 CVWMP Update, Section 5.1.3.1, Arsenic

these contaminants is possible it may or may not prove to be economical for CWA. Further analysis on this would be required to make a determination on where or how to proceed.

6.2.5.1 Hexavalent Chromium

The historic primary drinking water standard for hexavalent chromium was 50 parts per billion (ppb or µg/L), which was established in 1977 for California. The EPA adopted the same 50 µg/L standard for total chromium, but in 1991 raised the federal MCL to 100 µg/L. California did not follow US EPA's change and stayed with its 50 µg/L standard. In August of 2013 CDPH proposed a new lower MCL for hexavalent chromium of 10 µg/L. By July 1, 2014 CDPH adopted a new MCL of 10 µg/L. CWA may experience the need for upgrades and additions to their system in order comply with the new CDPH mandated MCL for hexavalent chromium.

CWA and Indio Water Authority (IWA) have teamed up in order to produce a mutually beneficial solution that put both parties on a path toward compliance with the new regulations. Hazen and Sawyer was retained to conduct a study on the treatment and compliance for the lower maximum contaminate level (MCL) for Hexavalent Chromium. The final report of the study was completed August 2015. The study showed that strong based anion exchange was the recommended treatment technology for CWA's wells. In addition, several options exist for strong based anion exchange treatment implementation that are currently being evaluated by CWA; and subsequently funding, design, environmental review, and construction.

6.3 SURFACE WATER

CWA does not use self-supplied surface water as part of its water supply. However, that could change in the future and will be further evaluated at that time.

6.4 STORMWATER

CWA does not use, or plan to use, local stormwater runoff as part of its water supply. However, that could change in the future and will be further evaluated at that time.

6.5 WASTEWATER AND RECYCLED WATER

6.5.1 Recycled Water Coordination

The City manages the Coachella Sanitary District that operates a 4.5 MGD secondary treatment wastewater facility. In addition, the City also plans to develop a recycled water system in the future; however, the City does not have infrastructure in place to recycle water. Currently, the City is participating in a recycled water feasibility study spearheaded by the CVRWMG as part of the Coachella Valley IRWM Plan.

6.5.2 Wastewater Collection, Treatment, and Disposal

As described, the City operates a secondary-treatment wastewater facility. In 2010, the City upgraded the capacity of the Coachella Water Reclamation Facility to 4.5 MGD and current average daily discharge is 2.7 MGD. The plant remains a full secondary treatment facility with oxidation ditches for

denitrification. Waste activated sludge is sent to drying beds for dewatering and then hauled away to landfill for alternate daily cover material. For additional wastewater collection, treatment, and discharge data; see **Tables 6-2 Retail** and **6-3 Retail** presented in **Appendix B**.

6.5.3 Recycled Water System

The City currently does not have recycled water use within their service area. While the City plans to use recycled water in some capacity in the future, additional information related to a potential recycled water system won't be available until the CVRWMG Recycled Water Feasibility Study is complete.

6.5.4 Recycled Water Beneficial Uses

A key benefit of the proposed CVRWMG Recycled Water Feasibility Study is identifying beneficial uses (e.g. golf courses, industrial, schools, urban landscape such as parks and sports fields, other irrigation and select agriculture) throughout the Coachella Valley and determining the feasibility of connecting these beneficial uses as part of the Recycled Water Feasibility Study.

6.5.5 Actions to Encourage and Optimize Future Recycled Water Use

The proposed Recycled Water Feasibility Study will determine the feasibility on implementing recycled water within the Coachella Valley specifically Indio, Desert Hot Springs and Coachella; see **Tables 6-6 Retail** presented in **Appendix B**. If the planning study produces a favorable result and tertiary treatment is added to the City's wastewater treatment facility, potential uses of recycled water could be implemented, including non-potable water systems for larger developments. In addition, requiring new developments to include a "non-potable" water distribution system could help offset much of the costs associated with delivering recycled water system-wide. Construction costs can be borne by developers, but at a reduced price, if the infrastructure were installed simultaneously with water and sewer infrastructure. Using common trench construction techniques generally only increase construction costs for materials and slightly for labor since other services are already necessary.

6.6 DESALINATED WATER OPPORTUNITIES

As described in the Coachella Valley IRWMP, desalination processes are being developed for reuse of agricultural drainage flows in the Coachella Valley. The Valley has a large network of drains and open channels that transport irrigation drainage flows and stormwater. In East Valley areas of agriculture, a high groundwater table and concentration of salts in irrigated soils makes this system a requirement. Desalinated agricultural drain flows can be applied to any number of irrigation and domestic purposes, and thus can serve as an important component of the Valley's water supply portfolio.

CWA does not anticipate the future use of desalinated water within its service area, as the backbone facilities and infrastructure needed for desalination are not economically feasible. However, CWA believes that desalinated water makes sense at the regional level. With a regional approach, desalination of local agricultural drain water could become a viable and economical alternative to potable water and Coachella Canal water.

6.7 EXCHANGES OR TRANSFERS

Water transfers involve the temporary or permanent sale or lease of a water right or contractual water supply between willing parties. Water can be made available for transfer from other parties through a variety of mechanisms.

6.7.1 CWA

As shown in the City's 2007 Water Master Plan Update, CWA is exploring opportunities to exchange non-potable groundwater for water from the Coachella Canal. Certain groundwater in the East Coachella Valley has higher levels of dissolved solids and fluoride, and thus is not suitable for potable purposes. However, that supply may be suitable for irrigation and other non-potable uses. In turn, Canal water that is currently used only for irrigation purposes could be treated for potable use or left untreated and used for non-potable urban uses.

Additionally, in September 2009 CVWD and the City signed a Memorandum of Understanding (2009 MOU) to assist in ensuring a sufficient and reliable water supply for development projects within the City and a major portion of its sphere of influence (SOI) in a manner consistent with CVWD's 2010 CVWMP Update, and as amended from time to time. Under the terms of the 2009 MOU, various means are identified by which the City can mitigate impacts associated with development projects, such as:

- Source Substitution not identified in the current CVWMP. For example, using recycled wastewater effluent of the City's Wastewater Treatment Plant for landscape irrigation instead of using groundwater.
- Acquire supplemental water supplies sufficient to offset the impacts of new water demands within the City or supplied by the City's water system.
- Participate in funding CVWD's acquisition of supplemental water supplies sufficient to offset the impacts of new water demands approved by the City or supplied by the City's water system. The amount paid for supplemental water supplies shall not exceed CVWD's Supplemental Water Supply Charge for similar development types and water requirements in effect at the time paid.

In February 2013, CVWD and the City executed an additional Memorandum of Understanding (2013 MOU) regarding implementation of the 2009 MOU.

6.7.2 CVWD

CVWD, DWA and the City of Indio are considering the acquisition of additional imported water supplies to augment existing supplies. Under the 2010 CVWMP, CVWD plans to acquire up to 50,000 AFY of additional water supplies through either long-term leases or entitlement purchases from willing parties. Potential sources might include the Delta Wetlands Project which would store surplus water at two Delta islands for later delivery, Sacramento Valley irrigation water transfers, or purchase(s) of additional Table A water from other SWP contractors. Notably, developments within CVWD's retail service area are required to pay a supplemental water supply charge. These amounts can be used to acquire additional water supplies to serve the needs of specific development projects. Supplemental supplies can be transferred to the Coachella Valley and delivered via the SWP, Metropolitan's Colorado River

Aqueduct or the Coachella Canal. Further analysis of transfer and exchange opportunities is provided in the 2010 CVWMP.[30]

6.8 FUTURE WATER PROJECTS

CWA and CVWD continue efforts to meet water demand through development of future water projects. Each are discussed in the following paragraphs.

6.8.1 CWA

CWA understands the need to develop additional sources of supply to meet demands associated with projected growth. CWA will continue to evaluate the use of Canal Water as a source substitution for drinking water supplies obtained from groundwater. Upon completion of necessary agreements, treatment facilities, and infrastructure, CWA estimates that it could derive approximately 15 percent of its drinking water from the Canal.[31] Per CVWD Ordinance No. 1428, CWA has opportunity to receive canal water for additional potable water supply when available. As the water becomes available, CWA will pursue those opportunities to supplement its water portfolio. As part of its water master plan process, the City will continue to design water system improvements to enhance conservation, identify additional water supplies and potential source substitutions, and enhance local groundwater recharge.

6.8.2 CVWD

CVWD will continue to implement recommendations provided in the 2010 CVWMP. As described in the 2010 CVWMP, CVWD water supply projects and programs include greater conservation (agricultural conservation, additional urban conservation, and golf course conservation), supply development (acquisition of additional imported water supplies, recycled water use, and desalinated drain water), groundwater recharge program enhancements, and source substitution programs. In addition to the information provided in this UWMP, Section 8 of the 2010 CVWMP Update provides a detailed discussion of the many new projects and programs that are recommended for implementation.[32]

6.9 SUMMARY OF EXISTING AND PLANNED SOURCES OF WATER

As described, CWA currently receives 100 percent of its water supply from groundwater, and does not currently participate in water recycling, water desalination, water exchanges or transfers, or purchase imported water supplies. In addition, the groundwater quality is high with the exception of hexavalent chromium levels over the newly promulgated regulation, and currently only receives chlorine disinfection. No future large scale projects are proposed that would increase CWA's current supply, including recycled water. CWA's water supplies for 2015 and projected water supplies through 2035 are shown in **Tables 6-6** and **6-7**, respectively.

[30] 2010 CVWMP, pp. 8-4 to 8-7; CVWD 2010 UWMP, pp. 4-19 to 4-21.
[31] City of Coachella 2007 Water Master Plan Update

Table 6-4: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2015		
		Actual Volume (MG)	Water Quality	Total Right or Safe Yield (MG)
Groundwater	East Whitewater River Subbasin	2,128	Drinking Water	
Total		2,128		233,069
NOTES: Units in Million Gallons (MG)				

Table 6-5: Water Supplies — Projected					
Water Supply	Additional Detail on Water Supply	**Projected Water Supply (MG)**			
		2020	**2025**	**2030**	**2035**
		Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
Groundwater	East Whitewater River Subbasin	4,072	5,203	6,649	8,496
Total		4,072	5,203	6,649	8,496
NOTES: Units in Million Gallons (MG)					

6.10 CLIMATE CHANGE IMPACTS TO SUPPLY

The 2014 Coachella Valley Integrated Regional Water Management Plan (IWRMP) present suggestions for possible result of climate change including the variability of location, timing, amount, and form of precipitation in California. A result of climate change presents some uncertainly to the availability of future delivery and delivery capabilities of the Region's SWP and Colorado River allotments. For SWP, DWR has determined that the Sierra snowmelt is shrinking and that melting is occurring earlier, shifting runoff from the spring further into the winter and causing winter flooding. Changes in precipitation patterns and quantity throughout the Southwest have impact on the potential water supply availability from the Colorado River. Such changes in local conditions impacts local water quality, flooding, local supplies, and resources such as habitat and recreation. Concerns about climate uncertainty have resulted in the need to adapt existing flood management, water quality management, resources stewardship practices, and water supply systems in response to changing conditions.

The *Climate Change Handbook for Regional Water Planning* (DWR 2011) is intended to help local agencies, cities, and counties include climate change as part of their water resources planning. As part of the suggested process, the *Climate Change Handbook* recommends regions identify strategies that can be used to help them to adapt to climate change as well as mitigate greenhouse gas (GHG)

emissions. The *2009 California Climate Adaptation Strategy Handbook* defines climate change adaptation as adjustments to the natural or human systems due to actual or expected climate changes in an effort to minimize harm or take advantage of beneficial opportunities (CNRA 2009), while climate change mitigation aims at directly reducing the GHG emissions that cause climate change through energy efficiency, emissions reduction, and/or carbon sequestration.

In addition to the documents discussed above, strategies were identified through the review of relevant climate change related documents. These documents include:

- *Managing an Uncertain Future* (DWR 2008)
- *Climate Change Scoping Plan* (CARB 2006)
- *Climate Action Team Biennial Report* (CalEPA 2010)
- *Resolution on Sea Level Rise (OPC 2010)*
- *California Climate Extremes Workshop Report* (Scripps 201 l)

The identified strategies were screened relative to each strategy's potential for addressing the climate change vulnerability issues and mitigating GHG emissions. Table 6-8 presents these strategies, and identifies the following questions that need to be answered as part of the strategies:

- Is the strategy a "no regret" strategy?
- Does the strategy help to adapt to vulnerability issues?
- Does the strategy help the Region to mitigate GHGs?

By definition, "no regret" strategies are those strategies that, if implemented, would provide benefits today regardless of potential climate change impacts, but would also reduce the Region's vulnerability to potential future climate change impacts. "No regret" strategies are desirable for immediate implementation as they will provide benefits even under the uncertainty of climate change projections.

The set of climate change strategies listed in **Table 6-8** are those that will best help the Region in responding to and reducing potential climate change vulnerabilities given current knowledge. Further, the climate change vulnerability analysis upon which these strategies were based was vetted through the Region's stakeholders during a meeting of the Planning Partners held on December 13, 2012. When implementing these strategies, performance measures or metrics to assess the effectiveness of a project in meeting the Region's goals will be developed.

Table 6-6: Climate Change Management Strategies				
	Implemented in Region?	No Regret Strategy?	Help to adapt to climate change vulnerabilities?	Help to mitigate GHGs?
Reduce Water Demand				
Agricultural Water Use Efficiency	Yes	Yes	Yes	Yes
Urban Water Use Efficiency	Yes	Yes	Yes	Yes
Water Meter Installation	Yes	Yes	Yes	Yes
Improve Operational Efficiency and Transfers				
Conveyance- Colorado	Yes			

SECTION 7 - WATER SUPPLY RELIABILITY

Reliability is a measure of water service systems expected success in managing water shortages. In addition to climate, other factors that can cause water supply shortages are natural disaster, such as earthquakes, chemical spills, energy outages and water quality issues.

7.1 CONSTRAINTS ON WATER SOURCES

CWA and regional water agencies, which includes Coachella Valley communities are facing increasing challenges and opportunities in their role as stewards of water resources in the region. The region faces a growing gap between its water requirements and its firm water supplies. Increased environmental regulations, the collaborative competition for water from outside the region, and the current drought conditions have curtailed supplies of imported water. Continued population and economic growth increase water demand within the region, putting an even larger burden on local supplies.

The reliability of the groundwater supply is dependent on reliable sources to replenish water extracted from the groundwater basin. To ensure a safe and reliable supply, CWA participates in the East Whitewater River Subbasin recharge plan with CVWD through RAC. In addition to recharging the groundwater basin, CWA is also exploring exchange and transfer opportunities to minimize non-potable uses for water withdrawn from the groundwater basin. CVWD's replenishes East Whitewater River Subbasin groundwater supplies with Colorado River water. CVWD's efforts in regional management of the groundwater basin, long-term overdraft of the basin has essentially improved such that the basin is net positive difference in the replenishment and the extractions; therefore, water supply reliability is expected to be good and fully reliable.

In 1964, The Department of Water Resources estimated the subbasins in the Coachella Valley groundwater basin contained approximately 39,200,000 acre feet of water in the first 1,000 feet below the surface and is estimated at approximately 28.8 million acre feet of water within the Whitewater Subbasin.[33] In addition, the Mission Creek Garnet Hill Management Plan estimates 1.4 million acre feet within the Mission Creek Subbasin.

There are six water agencies that utilize the groundwater basin to supply potable water to retail customers: CVWD, Desert Water Agency, Indio Water Authority, Coachella Water Authority, Myoma Dunes Water Company, and Mission Springs Water District. In addition, many private pumpers utilize the groundwater basin. Both Agency and private pumping is reported annually in Engineer's reports prepared by CVWD and DWA for five separate areas of benefit. The agencies supplies are based on the percentage of each agencies total reported pumping in the groundwater basin to ensure no water is double-counted and is based on a total water basin. The assumptions are summarized in **Table 7-2** below.

The following sections describe potential constraints that could affect water supply reliability.

[33] 2010 Coachella Valley WMP Update, p. 4-3

Table 7-1 Coachella Valley Groundwater Supply Available			
	Total Pumped	% of total Pumping	GW Supply available
Coachella Water Authority	6,486	0.02	715,311
Coachella Valley Water District	94,611	0.35	10,434,211
Desert Water Agency	29,731	0.11	3,278,895
Indio Water Authority	18,233	0.07	2,010,834
Mission Springs Water District	7,106	0.03	783,688
Myoma Dunes Water Company	3,386	0.01	373,404
Other Pumpers	114,282	0.42	12,603,657
Total Pumped	273,835	1.00	30,200,000
Total GW Basin Size	30,200,000	-	-

7.1.1 Groundwater

As described in **Section 6**, CWA participates with CVWD as part of the Coachella Valley Water Management Plan in 2002 to allow CVWD to meet its responsibilities for securing and protecting Coachella Valley water supplies into the future, including addressing overdraft. The 2010 CVWMP update planning time horizon is 35 years, from 2010 to 2045, and serves as a blueprint for ensuring a sufficient and sustainable water supply to meet the needs of projected growth throughout the Coachella Valley, including the City and the City's sphere of influence. In 2014, CVWD performed a review of the 2010 CVWMP, and concluded that the 2010 CVWMP Update is working and with continued implementation, overdraft will be eliminated by 2021 with increased groundwater levels in the Palm Springs area and the East Valley. Several projects constructed by CVWD over that past ten years, including two groundwater replenishment/recharge facilities, have all played a role in the prevention of continued overdraft of the basin. As described in **Section 6.2**, Coachella Valley groundwater is replenished with imported water supplies, and factors affecting their reliability are discussed below.

7.1.1.1 Groundwater Quality

According to 2010 CVWMP, groundwater quality in the Coachella Valley varies with depth, proximity to faults and recharge basins, presence of surface contaminants, and other hydrogeologic or human factors. Ongoing regional basin wide groundwater quality monitoring found that drinking water supplied from groundwater wells complies with all state and federal drinking water quality standards, with the exception of arsenic and chromium-6. Both substances are naturally-occurring within the local groundwater supply. In addition, the California Department of Public Health has identified both substances to having the potential to cause adverse health effects if ingested at levels above Maximum Contaminant Levels (MCLs) over a long period of time.[34] While CVWD has found elevated arsenic levels

[34] CVWD 2015 UWMP, p. 7-2

in some East Valley water supply wells, CWA has not experienced elevated arsenic levels in their water supply wells.

As described in **Section 6.2.5**, State Water Resource Control Board (SWRCB) adopted a new MCL standard for chromium-6 in drinking water of 10 µg/L. CWA needs to add treatment systems to the supply system in order comply with the new SWRCB mandated MCL for hexavalent chromium. In addition, CWA has identified that about 100 percent of its drinking water wells have chromium-6 levels that are above California's new standard.[35] In response, CWA and Indio Water Authority (IWA) jointly completed a feasibility study in order to produce solutions that put both parties on a path toward compliance for Hexavalent Chromium. Additionally, CWA is currently developing the proposed Chromium-6 Water Treatment Facilities Project that would use ion exchange treatment process to treat drinking water wells; those facilities are required to be operational no later than January 1, 2020.[36]

7.1.2 Factors Affecting Colorado River Supplies

Several important factors have the potential to affect the long-term availability and reliability of Colorado River supplies in the Coachella Valley. Among those factors are drought conditions in the Colorado River Basin; water requirements for endangered species and habitat protection; climate change; and lawsuits challenging the validity of the QSA. A detailed discussion of these factors is presented in below.

7.1.2.1 Drought Conditions and Interim Guidelines

Drought conditions in the Colorado River Basin are well documented. The period from 2000 through 2007 was the driest eight-year period in the 100-year historical record of the Colorado River. This drought in the Colorado River Basin reduced Colorado River system storage, while demands for Colorado River water supplies continued to increase. From October 1, 1999 through September 30, 2007, storage in Colorado River reservoirs decreased from 55.8 million AF (approximately 94 percent of capacity) to 32.1 million AF (approximately 54 percent of capacity), and was as low as 29.7 million AF (approximately 52 percent of capacity) in 2004. In November 2010, Lake Powell and Lake Mead were at 62 percent and 38 percent of their storage capacities, respectively (Reclamation, 2010b). As of January 2016, Lake Powell and Lake Mead were at 48 percent and 39 percent of their respective storage capacities, with total system storage reported at 50 percent capacity.[37]

In January 2001, the Secretary of the Interior adopted guidelines (the "Interim Surplus Guidelines") for use through 2016 in determining if there is surplus Colorado River water available for use in California, Arizona and Nevada. The Interim Surplus Guidelines were amended in 2007, with the new Guidelines extending through 2026. The Interim Surplus Guidelines contain a series of benchmarks for reductions in agricultural use of Colorado River water within California by set dates.[38]

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[35] CVWD 2015 UWMP, p. 7-3
[36] CVWD 2015 UWMP, p. 7-3
[37] Lower Colorado Region Available Reservoir Elevations and Contents. Available at: http://www.usbr.gov/lc/region/g4000/hourly/rivops.html" http://www.usbr.gov/lc/region/g4000/hourly/rivops.html
[38] 2010 CVWMP, p. 4-28.

The purposes of the Guidelines are to: (1) improve Reclamation's management of the Colorado River by considering trade-offs between the frequency and magnitude of reductions of water deliveries, and considering the effects on water storage in Lake Powell and Lake Mead, where Reclamation will also consider the effects on water supply, power production, recreation, and other environmental resources; (2) provide mainstream United States users of Colorado River water, particularly those in the Lower Division states, a greater degree of predictability with respect to the amount of annual water deliveries in future years, particularly under drought and low reservoir conditions; and (3) provide additional mechanisms for the storage and delivery of water supplies in Lake Mead to increase the flexibility of meeting water use needs from Lake Mead, particularly under drought and low reservoir conditions.[39]

As a result of the interim guidelines, recipients of Colorado River water, including CVWD as part of the Coachella Valley recharge program, will receive deliveries with a higher degree of reliability. Due to California's Colorado River priority system, all delivery shortages would be borne by Metropolitan, which has a lower priority than CVWD (Reclamation, 2007). Consequently, no reduction in CVWD's Colorado River supplies is projected at this time.[40]

7.1.2.2 Protected Species and Other Environmental Issues

Federal and state environmental laws protecting fish species and other wildlife species have the potential to affect Colorado River operations. A number of species that are on either "endangered" or "threatened" lists under the ESAs are present in the area of the Lower Colorado River, including among others, the bonytail chub, razorback sucker, southwestern willow flycatcher and Yuma clapper rail. To address this issue, a broad-based state/federal/tribal/private regional partnership that includes water, hydroelectric power and wildlife management agencies in Arizona, California and Nevada have developed a multi-species conservation program for the main stem of the Lower Colorado River (the Lower Colorado River Multi-Species Conservation Program or "MSCP"). The MSCP allows Metropolitan to obtain federal and state permits for any incidental take of protected species resulting from current and future water and power operations of its Colorado River facilities and to minimize any uncertainty from additional listings of endangered species. The MSCP also covers operations of federal dams and power plants on the river that deliver water and hydroelectric power for use by Metropolitan and other agencies. The MSCP covers 27 species and habitat in the Lower Colorado River from Lake Mead to the Mexican border for a term of 50 years. Over the 50-year term of the program, the total cost to Metropolitan will be about $88.5 million (in 2003 dollars), and annual costs will range between $0.8 million and $4.7 million (in 2003 dollars).[41]

7.1.2.3 Potential Climate Change Impacts

Climate change has the potential to affect imported water supplies. Potential effects of global warming could also increase water demand within the Coachella Valley. Although precise estimates of potential future impacts of climate change on runoff throughout the Colorado River basin cannot be predicted

[39] 2010 CVWMP, p. 4-28.
[40] 2010 CVWMP, p. 4-28.
[41] MWDSC 2015 Official Statement, Special Variable Rate Water Revenue Refunding Bonds, Appendix A, pp. A-23 to A-24.

with certainty, reports and data have been developed that address changes in climate and hydrology within that region. These impacts may include decrease in annual flow and increased variability, including more frequent and more severe droughts. Furthermore, even without precise knowledge of the effects, increasing temperatures alone would likely increase losses due to evaporation and sublimation, resulting in reduced runoff.[42] More specifically, the Bureau of Reclamation's 2011 SECURE Water Act Report identifies the following climate challenges in the Colorado River basin: (1) on average, Colorado River Basin temperature is projects to increase by 5 to 6 degrees Fahrenheit during the 21st century, with slightly larger increases projected in the upper Colorado Basin; (2) precipitation is projected to increase by 2.1 percent in the upper Basin while declining by 1.6 percent in the lower Basin by 2050; (3) mean annual runoff is projected to decrease by 8.5 percent by 2050; and (4) warmer conditions will likely transition snowfall to rainfall, producing more December through March runoff and less April through July runoff.[43]

The 2011 SECURE Water Act Report also discussed potential future impacts for water and environmental resources in the Colorado River Basin. The Report notes that spring and early summer runoff reductions could translate into a drop in water supply for meeting irrigation demands and adversely impacting hydropower operations at smaller reservoirs; increased winter runoff may require infrastructure modifications or flood control rule changes to preserve flood protection, which could further reduce warm season water supplies; warmer conditions might result in increased stress on fisheries, shifts in geographic ranges, increased water demands for instream ecosystems and thermoelectric power production, increased power demands for municipal uses, including cooling, and increased likelihood of invasive species infiltrations, where endangered species issues might also be exacerbated; and warming could also lead to significant reservoir evaporation, increased agricultural water demands and losses during water conveyance and irrigation. (Id.)

In response to climate change issues, Reclamation is taking a lead role in assessing risks to Western U.S. water resources and is dedicated to mitigating risks to ensure long-term water resource sustainability. Where opportunities exist, Reclamation has begun adaptation actions in response to climate stresses as well as land use, population growth, invasive species and others. These activities include extending water supplies, water conservation, hydropower production, planning for future operations and supporting rural water development. For example, a 2010-2011 Pilot Run of the Yuma Desalting Plant increased water supplies in the lower Basin through conservation by an estimated 29,000 acre-feet, enough to supply as many as 150,000 people for one year. At Hoover Dam, new wide head range turbines are being installed that will allow more efficient power generation over a wider range of lake levels than existing turbines. Furthermore, the Department of the Interior High Priority Goal for Climate includes activities of the Landscape Conservation Cooperatives and Climate Science Centers, assessing vulnerabilities to the natural and cultural resources management by the Department and activities to adapt to the stresses of climate change. (Id.)[44]

[42] 2010 CVWMP, pp. 5-15 to 5-16.

[43] See, U.S. Department of the Interior, Bureau of Reclamation, Basin Report, Colorado River (http://www.usbr.gov/climate/SECURE/docs/coloradobasinfactsheet.pdf).

[44] See also, United States Geological Survey, Effects of Climate Change and Land Use on Water Resources in the Upper Colorado Basin, Fact Sheet 2010-3123, January 2011.

According to DWR, increased air temperature will result in earlier snow melt runoff and a greater proportion of runoff due to rainfall. Because reservoir storage in the Colorado River basin is so large in comparison to annual basin runoff (roughly four times average runoff), a change in the timing of annual runoff would not be expected to significantly affect basin yield.[45]

Potential climate change impacts also were evaluated in the Environmental Impact Study (EIS) on the BOR interim surplus guidelines discussed above. The guidelines extend through 2026, providing the opportunity to gain valuable operating experience through the management of Lake Powell and Lake Mead, particularly for low flow reservoir conditions, and to improve the bases for making additional future operational decisions during the interim period and thereafter. The shortage sharing guidelines are crafted to include operational elements that would respond if potential impacts of climate change and increased hydrologic variability occur. The guidelines include coordinated operational elements that allow for adjustment of Lake Powell releases to respond to low average storage conditions in Lake Powell or Lake Mead. In addition, the guidelines enhance conservation opportunities in lower basin and retention of water in Lake Mead.[46]

While impacts from climate change cannot be quantified at this time, Coachella Valley water supplies are uniquely protected from potential impacts of climate change and corresponding shortages by (1) California's first priority for Colorado River water supplies in the lower Colorado River basin, and (2) Coachella's high priority for Colorado River supplies among California users of Colorado River water.[47]

7.1.2.4 QSA Litigation

On November 5, 2003, IID filed a validation action in Imperial County Superior Court, seeking a judicial determination that thirteen agreements associated with the IID/SDCWA water transfer and the QSA are valid, legal and binding. Other lawsuits also were filed contemporaneously challenging the execution, approval and implementation of the QSA on various grounds. All of the QSA cases were coordinated in Sacramento Superior Court. Between early 2004 and late 2009, a number of pretrial challenges and dispositive motions were filed by the parties and ruled on by the court, which reduced the number of active cases and narrowed the issues for trial, the first phase of which began in November 2009 and concluded in December 2009. One of the key issues in this first phase was the constitutionality of the QSA Joint Powers Agreement, pursuant to which IID, CVWD and SDCWA agreed to commit $163 million toward certain mitigation and restoration costs associated with implementation of the QSA and related agreements, and the State agreed to be responsible for any costs exceeding this amount. A final judgment was issued on February 11, 2010, in which the trial court held that the State's commitment was unconditional in nature and, as such, violated the appropriation requirement and debt limitation under the California Constitution. The trial court also invalidated eleven other agreements, including the QSA, because they were inextricably interrelated with the QSA Joint Powers Agreement. Lastly, the trial

[45] Progress on Incorporating Climate Change into Management of California's Water Resources, Technical Memorandum Report, California Department of Water Resources, October 2006.
[46] 2010 CVWMP, pp. 5-15 to 5-16.
[47] 2010 CVWMP, p. 5-16.

court ruled that all other claims rose by the parties, including CEQA claims related to the QSA Programmatic EIR and the IID Transfer Project EIR, were moot.[48]

In March 2010, Metropolitan, IID, CVWD, SDCWA, the State and others filed notices of appeal challenging various aspects of the trial court's ruling. On December 7, 2011, the Court of Appeal issued its ruling reversing, in part, the trial court's ruling. In particular, the Court held that while the State's commitment to fund mitigation costs in excess of $163 million was unconditional, actual payment of such costs was subject to a valid appropriation by the Legislature, as required under the California Constitution. Moreover, the State's commitment did not create a present debt in excess of the State Constitution's $300,000 debt limit. Thus, the QSA Joint Powers Agreement was held to be constitutional. The Court of Appeal also rejected other challenges to this agreement, including that it was beyond the State's authority, there was no "meeting of the minds," and there was a conflict of interest. In light of its ruling, the court of appeal remanded the matter back to the trial court for further proceedings on the claims that had been dismissed as moot, including the CEQA claims.

On June 4, 2013, the trial court issued its ruling on remand, validating the QSA and eleven related agreements while denying the remaining legal challenges that were brought against the QSA. Among other important rulings, the court upheld the CEQA review that was prepared for the QSA. Among its decisions on specific environmental issues, the court determined that the potential air quality impacts to the Salton Sea were adequately analyzed under CEQA. The court also found that the use of a baseline consisting of existing and predicted future conditions of the Salton Sea was appropriate to measure the impacts of the long-term water transfers. It denied project opponents' arguments that more alternatives should have been considered and found that the water agencies' conclusion that use and transfer of water to the San Diego area would not induce growth was supported by record evidence. The court also addressed the nature of changes made to the agreements after the environmental documentation was completed and the procedural decision of water districts to designate themselves as "co-lead agencies" under CEQA, finding that these decisions did not violate CEQA. As a result, the court concluded that the record supported the lead agencies' conclusions relating to CEQA and upheld the validity of the QSA and eleven related agreements.

In January 2010, a separate complaint was filed by the County of Imperial and the Imperial County Air Pollution Control District alleging that execution and implementation of three QSA-related agreements violate the federal National Environmental Policy Act (NEPA) and the federal Clean Air Act (CAA). The complaint named the Department of the Interior, Secretary of the Interior, Bureau of Reclamation and Commissioner of Reclamation as defendants, and Metropolitan, CVWD, IID and SDCWA as real parties in interest. With respect to NEPA, the complaint alleged that the environmental impact statement prepared by the Bureau of Reclamation failed to adequately analyze potential impacts on the Salton Sea and on land use, growth and socioeconomics; improperly segmented various project components; failed to address cumulative impacts; and failed to address mitigation of potential impacts. With respect to the CAA, the complaint alleged that the Bureau of Reclamation failed to conduct a conformity analysis as required under the Act and Imperial County Air Pollution Control District's own rules. In April 2012, the court ruled against the plaintiffs and in favor of the defendants on all claims. The court held that the

[48] 2010 CVWMP, pp. 4-28 to 4-29; MWDSC 2015 Official Statement, Special Variable Rate Water Revenue Refunding Bonds, Appendix A, p. A-21.

plaintiffs lacked standing to pursue NEPA and CAA claims and that the NEPA claims lacked merit. In May 2012, the plaintiffs filed a notice of appeal and the non-federal defendants filed a notice of cross-appeal. Briefing on all appeals was completed in 2013, and in May 2014 the United States Court of Appeals for the Ninth Circuit issued a decision that upheld the District Court ruling and found that no violations of NEPA or the CAA occurred in connection with the QSA.

7.1.2.5 Colorado River Basin Study

In December 2012, the Bureau of Reclamation (BOR) issued its Colorado River Basin Water Supply and Demand Study (2012 Study). According to BOR, the 2012 Study was prepared against the backdrop of challenges and complexities of ensuring a sustainable water supply and meeting future demand in the Colorado River system. Notably, the 2012 Study recognizes that because of the Colorado River system's ability to store approximately 60 million acre-feet of water (or nearly four years of average natural flow of the River), all requested deliveries have been met in the Lower Basin, despite recently experiencing the worst 11-year drought in the last century.[49] The 2012 Study concludes that, without additional future water management actions among the Upper and Lower Basin states, a wide range of future imbalances is plausible, primarily due to uncertainties inherent in future water supply.[50] Comparing the median long-term water supply projections against the median long-term water demand projections, and factoring in the myriad factors having the potential to affect the availability and reliability of River supplies and demands (such as climate change, species and other environmental issues, social trends, economic and legal forces, and technical capabilities), the 2012 Study shows that a long-term projected imbalance of 3.2 million acre-feet or more could occur by the year 2060. To address such potential long-term imbalances, the 2012 Study identifies and discusses a broad range of potential options to resolve the differences between water supply and demand. During the study period, over 150 options were received and organized into four groups: (1) those that increase Basin water supplies; (2) those that reduce Basin water demands; (3) those that focus on modifying operations; and (4) those that focus primarily on Basin governance.[51] Moreover, recognizing that no single option is likely sufficient to resolve potential water supply and demand imbalances, the 2012 Study developed groups and portfolios of options to reflect different adaptive strategies.[52] Importantly, the 2012 Study recognizes that complete elimination of Basin vulnerability is not likely obtainable, yet concludes that implementation of various adaptive management options results in a significant reduction in vulnerability (e.g., the percentage of future scenarios resulting in Lake Mead elevations being less than 1,000 feet msl is reduced from 19 percent to only 3 percent).[53] Indeed the 2012 Study states that implementation of management portfolios are projected to be successful in significantly improving the resiliency of Basin resources to vulnerable hydrologic conditions. Similar to the extraordinary conservation and management efforts being undertaking throughout the Coachella Valley, the 2012 Study concludes that supply augmentation, water reuse and conservation will be critical tools in managing potential supply and demand imbalances.

[49] 2012 Study, Executive Summary, p. ES-1.
[50] 2012 Study, Executive Summary, p. ES-6.
[51] 2012 Study, Executive Summary, p. ES-7.
[52] 2012 Study, Executive Summary, p. ES-11.
[53] 2012 Study, Executive Summary, p. ES-14.

7.2 RELIABILITY BY TYPE OF YEAR

Per UWMP requirements, CWA evaluated reliability for an average year, single dry year, and multiple dry year periods, as described below.

7.2.1 Types of Years

7.2.1.1 Average Year

The average year represents a year or an averaged range of years that most closely represents the typical water supply available to CWA. The UWMP Act uses the term "normal" conditions. CWA uses the long-term average supply amounts, as presented herein, to represent average year conditions.

7.2.1.2 Single Dry Year

The single dry year is the year that represents the lowest water supply available to CWA. For this UWMP, 2014 represents that the single dry year as a worst case with strict water conservation measures in place. With regards to SWP water, only 5 percent of Table A water allocation were delivered in 2014.

7.2.1.3 Multiple Dry Year Period

The multiple dry year period is the period that represents the lowest average water supply availability to CWA for a consecutive multi year period (three years or more). This is generally considered to be the lowest average runoff for a consecutive multiple year period (three years or more) for a watershed since 1903. DWR has interpreted "multiple dry years" to mean three dry years; however, water agencies may project their water supplies for a longer time period. With the current drought conditions, this UWMP uses 2013 through 2015 as the multiple dry year period. In addition, over this same period, SWP Table A deliveries averaged 20 percent, see **Table 6-2**.

7.2.2 Agencies with Multiple Sources of Water

As stated, CWA relies on one source, groundwater, to meet demand. CWA's ability to meet demands during the three type of year scenarios described above is determined by an analysis of the available water supplies within CWA's water service area in each scenario. Considering the groundwater basin management efforts presented throughout this UWMP, the historical groundwater supply availability during these scenarios is assumed to be fully reliable and an accurate assumption for future reliability. A summary of water the basis of water year data is presented in **Table 7-2**.

7.3 SUPPLY AND DEMAND ASSESSMENT

CWA's urban water supply is from the East Whitewater River Subbasin aquifer in the Coachella Valley. East Whitewater River Subbasin is replenished on an ongoing basis by Coachella replenishment program. The Whitewater (Indio) groundwater Subbasin storage will be used in dry years to support potential differences between demands and supply. The groundwater basin has a capacity of approximately 28.8 million acre-feet and currently contains about 25 million acre-feet, simulating the benefits of a very large conjunctive use reservoir. It is capable of meeting the water demands of the CWA for extended periods during normal, single-dry and multiple-dry year conditions, and the

determination has been made in accordance with CEQA that CWA's utilization of groundwater supplies in a manner that is consistent with the implementation of the 2010 CVWMP will not have significant environmental impacts on the groundwater basin, and instead will have a beneficial effect on groundwater resources.[54]

Table 7-2: Basis of Water Year Data				
Year Type	**Base Year**	**Available Supplies if Year Type Repeats**		
		X	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location Section 7.1.	
			Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available		**% of Average Supply**
Average Year	Any	*See note below		100%
Single-Dry Year	2014			100%
Multiple-Dry Years 1st Year	2013			100%
Multiple-Dry Years 2nd Year	2014			100%
Multiple-Dry Years 3rd Year	2015			100%
NOTES: Since CWA relies on the groundwater basin as its sole source of water supply, available water supplies are driven by demand. In addition, available groundwater supplies in any given year are significantly greater than CWA's demand. As such, Average Year can be taken as any average of years in CWA's supply history.				

The effects of a local drought are not immediately recognized since CWA relies on the East Whitewater River Subbasin for its sole source for urban water supplies, again simulating a large conjunctive use reservoir. Even though localized drought conditions should not affect supply, CWA participates in several ongoing water conservation measures, basin-wide recharge plan with CVWD through RAC, and has a water shortage contingency plan to put into action as appropriate to reduce the demand during critical drought years.

Table 7-3 compares the projected average, or normal, water supply and customer demands from 2020 to 2035, in five-year increments. Average year supply and demand date comes from supply and demand projections presented in **Section 4** and **Section 6**, respectively.

Table 7-3: Normal Year Supply and Demand Comparison in Million Gallon (MG)				
	2020	2025	2030	2035
Supply Totals[a]	4,072	5,203	6,649	8,496
Demand Totals[b]	4,072	5,203	6,649	8,496

[54] See CVWD 2011 SPEIR.

Difference	(0)	(0)	0	0
NOTES: Units in Million Gallons (MG) [a] From Table 6-7: Water Supplies — Projected [b] From Table 4-5: Demands for Potable and Raw Water - Projected				

Table 7-4 provides a comparison of a single dry year water supply with projected total water use from 2020 to 2035, in five-year increments. CWA's demands in single dry years are projected to be similar to average year demands since CWA's local water supplies (groundwater) is 100 percent reliable and supply is driven by demand.

Table 7-4: Single Dry Year Supply and Demand Comparison in Million Gallons (MG)

	2020	2025	2030	2035
Supply totals	4,072	5,203	6,649	8,496
Demand totals	4,072	5,203	6,649	8,496
Difference	(0)	(0)	0	0
NOTES: Units in Million Gallons (MG)				

Table 7.5 provides a comparison of a multiple dry year water supply with projected water demand from 2020 to 2035, in five-year increments. CWA's demands in multiple dry years are projected to be similar to average year demands since CWA's local water supplies (groundwater) is 100 percent reliable and supply is driven by demand. However, as demonstrated from 2013 to 2015, CWA may implement certain water conservation measures to reduce demand during a multiple dry year scenario. As such, third year demands are projected to be reduced by 20 percent within CWA's service area, assuming similar water conservation measures and a Stage II alert is in effect, as was the case in 2015.

Table 7-5: Multiple Dry Years Supply and Demand Comparison in Million gallons (MG)

		2020	2025	2030	2035
First year	Supply totals	4,072	5,203	6,649	8,496
	Demand totals	4,072	5,203	6,649	8,496
	Difference	(0)	(0)	0	0
Second year	Supply totals	4,072	5,203	6,649	8,496
	Demand totals	4,072	5,203	6,649	8,496
	Difference	(0)	(0)	0	0
Third year	Supply totals	3,258	4,162	5,319	6,797
	Demand totals	3,258	4,163	5,319	6,796

	Difference	(0)	(0)	0	0
NOTES: Units in Million Gallons (MG)					

7.4 REGIONAL SUPPLY RELIABILITY

As discussed in the 2010 CVWMP Update, the 2011 SPEIR, CVWD's 2015 UWMP, and this UWMP, CWA have many programs to maximize the water resources available to CWA, including but not limited to recharge of the basin using Colorado River and SWP supplies, direct use and recharge of recycled water, desalinated agricultural drain water, conversion of groundwater uses to Canal water and comprehensive water conservation practices such as tiered water rates, landscaping ordinances, outreach and education. The CVWD groundwater replenishment programs establish a comprehensive and managed effort to reduce and eliminate overuse of local groundwater resources. These programs allow CVWD to maintain the groundwater basin as its primary water supply and to recharge the groundwater basin as its other supplies are available and needed to meet existing and projected demands within its overall service area, including the City and the City's sphere of influence.

Additionally, CWA have committed sufficient resources to further implement the primary elements of the 2010 CVWMP, including source substitution, water conservation, and purchases of additional water supplies. Furthermore, CWA has implemented several water conservation programs to maximize the use of local water supplies and reduce demands, see **Section 9**.

Further, CWA participates in the Coachella Valley Regional Water Management Group (CVRWMG) and in the completion of the 2014 CVIRWMP to derive benefits of regional planning, including water supply reliability, improved water quality, increased regional self-reliance, and reduced conflict over resources. The IRWMP provides regional water supply planning in support of CWA's 2015 UWMP. The IRWM Plan:

- Defines the Coachella Valley IRWM Region and water systems,
- Identifies regional water management goals and objectives,
- Establishes objectives and measurable targets for the Region,
- Identifies water management issues and needs,
- Identifies stakeholder involvement and agency coordination processes,
- Identifies and evaluates resource management strategies,
- Assesses the integration of projects based on objectives,
- Establishes a project evaluation and prioritization process based on regional priorities, and
- Establishes a framework for implementation of projects.[55]

In addition, since the 2014 CVIRWMP adoption, the CVRWMG has obtained grant funding for a variety of projects including:

- Regional water conservation program
- Regional turf reduction program
- Onsite plumbing retrofit program

[55] 2014 Coachella Valley Integrated Regional Water Management Plan, Final Volume I, p. 1-1

- Short term arsenic treatment project
- Groundwater quality protection programs – septic tank to sewer conversion
- Water supply connection projects
- Non-potable water use expansion program (Recycled Water Feasibility Study)
- Recycled water project
- Regional well retrofit and abandonment program

SECTION 8 - WATER SHORTAGE CONTINGENCY PLANNING

California's extensive water supply infrastructure system helps to mitigate the effect of short-term dry periods. Defining when a drought begins is a function of impacts to water users. Although droughts are sometimes characterized as emergencies, they differ from typical emergency events, occurring slowly over a multiyear period. Drought impacts increase with the length of a drought as supplies in reservoirs are depleted and water levels in groundwater basins decline.

To safeguard the region from a loss of water supply due to natural or man-made disasters, Southern California agencies have made and are continuing to make substantial investments in emergency storage and interconnections with adjacent water purveyors.

CWA has the ability to meet its demands, during less than catastrophic shortages, through increased groundwater pumping and/or implementation of water use efficiency programs, including Water Shortage Plan implementation. Increased groundwater pumping is the most significant factor in CWA's water shortage plan.

8.1 STAGES OF ACTION

Water Shortage is defined as a condition in which the existing or projected water supply available to CWA is not anticipated to meet the ordinary requirements of the Water Department. During a water shortage period, the City has the ability to meet its demands through increased groundwater pumping and implementation of water use efficiency programs, including implementation of Water Shortage Plan Stages. Increased groundwater pumping would serve as a critical component of the shortage strategy through groundwater supplied from the Basin.

The specific stages of action were developed to help CWA prepare for a catastrophic interruption in water supply. In the past, most municipalities prepared such a plan to ensure a continuation in services due to natural disasters. Recent history has shown us to prepare for man-made catastrophes as well.

To determine the validity of the plan, CWA will begin conducting tri-annual vulnerability assessments of the potable water delivery system. Part of the vulnerability assessment includes site inspection of all storage tanks and delivery systems. A contingency plan includes emergency procurement of temporary power generating equipment to power pumping equipment. In addition to preparing for a local service interruption, CWA also coordinates with other localities, as well as regional agencies.

Table 8-1 shows water shortage stages and the reduction objectives. The responsibility for declaring each stage falls to the City Manager who is closely supported by the Utilities General Manager. Once a shortage has been declared then CWA will be responsible for performing field audits to ensure residents comply with the reduction goals shown below.

Table 8-1: Stages of Water Shortage Contingency Plan		
Stage	Percent Supply Reduction[1]	Water Supply Condition
I	10%	Minor and Anticipated Shortage
II	10%	Minor to Moderate Shortage
III	20%	Moderate to Severe
IV	50%	Severe Shortage or Catastrophic Incident
[1] One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.		
NOTES: Refer to City Ordinances WA-2014-01 and WA-2014-05, further described in Section 8.7.		

8.1.1 Stage I – Minor or Anticipated Shortage

During this stage, customers are encouraged to continue to use water wisely, to prevent the water or unreasonable use of water, and to reduce water consumption to that necessary for ordinary domestic and commercial purposes. The following conservation measures shall be in effect:

- Outdoor water use prohibited from Dawn to Dusk
- Car washing prohibited except at commercial car-wash facilities
- Water wash down of pavement prohibited
- Leaks isolated or repaired within 24-hours of identification
- Restaurants are encouraged to provide water only upon request

8.1.1 Stage II – Minor to Moderate Shortage

During this stage, customers are required to use water wisely, to prevent the water or unreasonable use of water, and to reduce water consumption to that necessary for ordinary domestic and commercial purposes. The following conservation measures shall be in effect:

- Outdoor water use prohibited from Dawn to Dusk: A rotation schedule for watering will be developed and implemented throughout the City
- Landscape watering is prohibited except where drip irrigation systems are utilized
- Car washing prohibited except at commercial car-wash facilities
- Water wash down of pavement prohibited
- Leaks isolated or repaired within 24-hours of identification
- Restaurants are encouraged to provide water only upon request
- No initial filling of swimming pools or landscaping ponds
- No ornamental water feature utilization, except for maintenance

8.1.2 Stage III – Moderate to Severe

In the event of a threatened water supply shortage which could affect the City's ability to provide water for ordinary domestic and commercial uses, Stage III shall be declared and a water shortage condition shall prevail. The following conservation measures shall be in effect:

- Outdoor water use prohibited from Dawn to Dusk: A rotation schedule for watering will be developed and implemented throughout the City
- Landscape watering is prohibited except trees and shrubs via drip irrigation systems
- Car washing prohibited except at commercial car-wash facilities
- Water wash down of pavement prohibited
- Leaks isolated or repaired within 24-hours of identification
- Restaurants prohibited from serving water, unless requested
- No initial filling of swimming pools or landscaping ponds
- No ornamental water feature utilization, except for maintenance
- Implementation of City-wide water use audits to ensure compliance with directives

8.1.3 Stage IV – Severe Shortage or Catastrophic Incident

Stage IV (the most restrictive stage) includes the requested consumer actions that have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply. The following conservation measures shall be in effect:

- Outdoor water use prohibited from Dawn to Dusk: A rotation schedule for watering will be developed and implemented throughout the City
- Landscape watering is prohibited except trees and shrubs via drip irrigation systems
- Car washing prohibited except at commercial car-wash facilities
- Water wash down of pavement prohibited
- Leaks repaired within 24-hours of identification
- Restaurants prohibited from serving water, unless requested
- No filling of swimming pools or landscaping ponds except for maintenance
- No ornamental water feature utilization, except for maintenance
- Implementation of City-wide water use audits to ensure compliance with directives
- New landscaping moratorium
- New connection moratorium

8.2 PROHIBITIONS ON END USES

Once the City Manager or Utilities General Manager declares a particular water shortage stage, a series of requested consumer actions is announced to the community. To prepare the community for a potential incident, these actions are distributed as part of the public education demand management measure (DMM) defined in Section 9. Most are voluntary, but if a later stage is declared then they become mandatory. Once a Stage II to IV shortage is declared then department personnel will begin performing audits. **Table 8-2** details the restrictions and prohibitions on end uses for the four stages of Water Shortage Contingency Plan (WSCP).

Table 8-2: Restrictions and Prohibitions on End Uses			
Stage	Restrictions and Prohibitions on End Users	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
I, II, III, IV	Other	Outdoor water use prohibited from Dawn to Dusk	Yes
I, II, III, IV	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water		Yes
I, II, III, IV	Other	Water wash down of pavement prohibited	Yes
I, II, III, IV	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Within 24 hours of identification	Yes
I, II, III, IV	CII - Restaurants may only serve water upon request		Yes
II, III, IV	Landscape - Limit landscape irrigation to specific days	A rotation schedule for watering will be developed and implemented throughout the City	Yes
II, III	Landscape - Prohibit certain types of landscape irrigation	Landscape watering is prohibited except where drip irrigation systems are utilized	Yes
II, III,	Other water feature or swimming pool restriction	No initial filling of swimming pools or landscaping ponds	Yes
II, III, IV	Other	No ornamental water feature utilization, except for maintenance	Yes
III, IV	Landscape - Prohibit certain types of landscape irrigation	Landscape watering is prohibited except trees and shrubs via drip irrigation system	Yes
III, IV	Other	Implementation of City-wide water use audits to ensure compliance with directives	Yes
IV	Other water feature or swimming pool restriction	No filling of swimming pools or landscaping ponds except for maintenance	Yes

8.3 PENALTIES, CHARGES, OTHER ENFORCEMENT OF PROHIBITION

During a declared water shortage stage, penalties for excess water use exist in the form of administrative fees, or fines. These fines are assessed based on the number of violations a particular customer accumulates during a particular stage. The first violation, for all three stages, consists of a warning only, requiring no fine. However, a fine is issued for a second violation, and increasingly expensive fines are issued for any consecutive violations thereafter (penalties are assessed for violations occurring within 12 months of the first violation). Once a Stage IV shortage is declared, no warning will be issued and penalties will be assessed upon the first violation. **Table 8-3** below summarizes the penalties for excessive water use.

Table 8-3: Stages Wise Penalties for Excessive Water Use

Stage	Penalty
I	Written warning upon first violation $15 Administrative fee for second violation $50 Administrative fee for third violation $100 Administrative fee for each subsequent violation
II	Written warning upon first violation $100 Administrative fee for second violation $150 Administrative fee for third violation $300 Administrative fee for each subsequent violation
III	$150 Administrative fee for first violation $300 Administrative fee for second violation $500 Administrative fee for each subsequent violation
IV	$300 Administrative fee for first violation $500 Administrative fee for a second violation $500 Administrative fee for each subsequent violation

8.4 CONSUMPTION REDUCTION METHOD

Consumption reduction methods are actions that are taken by the City to reduce water consumption. In addition to the actions described in Section 8.2, the City also engages in consumption reduction actions to support the varying rationing stages. These actions include:

- Public Information Campaign
- Water Use Surveys
- Rebates
- Reduction of Water System Loss
- Implementation of Drought Rate Structure
- Other Program Methods

Table 8-4 summarizes the various consumption reduction methods to be employed and the following discussion presents the various categories and methods employed by the City to reduce overall demand within its service area.

Table 8-4: Stages of Water Shortage Contingency Plan - Consumption Reduction Methods		
Stage	Consumption Reduction Methods by Water Supplier	Additional Explanation or Reference
All Stages	Expand Public Information Campaign	The City expands public information campaigns on consumption reduction methods through billing inserts, brochures community events, television and the City's website.
All Stages	Offer Water Use Surveys	The City continues to offer water use surveys to educate and reduce water use.
All Stages	Provide Rebates for Turf Replacement	The City offers a turf removal rebate program for customers who want to reduce outdoor water use by converting their front lawn to desert-friendly landscaping.
All Stages	Provide Rebates on Plumbing Fixtures and Devices	The City provides customers with rebates for ultra-low flush toilets.
All Stages	Implement or Modify Drought Rate Structure or Surcharge	The City implements tiered rates in order to incentivize customers to be proactive in reducing water use.
All Stages	Other	The City participates in CVRWMG that provides low-income families with assistance to retrofit older house with newer water efficient fixtures.
All Stages	Other	The City offers a Smart Controller Rebate Program that is designed to financially assist customers in water consumption by synchronizing their landscape irrigation schedules with seasonal variations.

8.4.1 Categories of consumption reduction methods

The following are consumption reduction methods that have been undertaken by the City of Coachella to reduce water demand within their service area.

8.4.1.1 Public Information Campaign

The City distributes public information through bill inserts, brochures, and community events. The City also has the opportunity to provide public information on conservation measures through television advertising on public access channel in conjunction with the City Council meeting broadcasts. The City also maintains a web page, www.conservecoachella.com, and participates in www.cvwatercounts.com,

which provides water conservation information, ideas, and frequently asked questions. The City will continue to work on providing public information and materials to remind the public about water and other resource issues, and will track commentary regarding the information provided.

8.4.1.2 Rebates for Turf Replacement

The City of Coachella Utilities Department offers a turf removal rebate program for residents who want to reduce outdoor water use by converting their front lawn to desert-friendly landscaping. Using less water outdoors is the best way to conserve water and lower your water bill. The program aims to provide examples of water wise planting alternatives to turf in parkways and front yards. Residents who chose to replace their grass with beautiful, desert-friendly landscaping can get up to a $1,000 rebate. Participation in the program will also help residents save on maintenance costs over time. The City offers the rebates on a first-come, first-served basis. Residents choosing to participate in the program must take the following steps:

1. Read all the terms and conditions of the program and think about how you want to convert your landscaping.
2. Develop your landscape design.
3. Complete and submit the application form.
4. Wait to hear back from the City before beginning any work. The City will mail out a Rebate Reservation Confirmation that will include: a reservation number, a start date, an expiration date, and the estimated rebate amount.
5. Call Dig-Alert! at 811 to get clearance before you start your project.
6. Transform your yard to a desert-friendly oasis!
7. Finish your project within 120 days (4 months) from the date on your Rebate Reservation Confirmation.
8. Complete and submit the rebate request.
9. The City will contact the resident to set up a post-conversion visit to examine the work completed.
10. Receive your rebate. It may take several weeks to process.

8.4.1.3 Rebate for Ultra-Low Flush Toilets (ULFT) Program

The City has adopted the Uniform Building Code that requires ultra-low flush toilets (ULFT) (1.2 gallons per flush) be used in all new construction. Most of the population is projected into the future with developments. These developments will be required to install ULFT toilets under current Building Code provisions. For existing houses, the City of Coachella is offering its single-family residence and multi-family residence the opportunity to receive a rebate of up to $100 for exchanging a non-efficient toilet that uses 3.5 gallons per flush (GPF) for an ULFT that uses less than 1.2 GPF and is a qualifying WaterSense model. Currently toilets using 3.5 GPF or more account for roughly 26% of a home's indoor water use. The use of these WaterSense ULFT will not only conserve water but they also have the potential to reduce customer water and electric bill. If Coachella residents chose to participate in the ULFT replacement rebate program, they must:

1. Be within the Coachella water service area and served by an open active Coachella potable water service account in good standing.
2. Be replacing a working toilet flushing 3.5 GPF or higher.
3. Schedule a required pre-installation inspection with the Coachella Water Conservation Program.
4. Purchase a qualifying WaterSense ULFT.
5. Complete an application and attach original purchase receipt (Only one rebate per single-family residence or per multi-family unit).
6. Install the new ULFT and submit an application to the city within 90 days of purchase.

8.4.1.4 Implementation of Drought Rate Structure or Surcharge

The City has a two-tiered rate structure for water service within its service area. The City's water rates include a variable commodity charge (monthly charge based on the amount of water used or consumed by the customer in hundreds of cubic feet (HCF)) and a fixed metered account charge (basic monthly rate by meter size). The rates have been designed to recover the full cost of water service in the commodity charge, while discouraging wasteful water use, and will continue to be implemented into the future. Tiered rates are designed to incentivize customers to be proactive in reducing water use. However, no current drought rate structure or surcharge has been implemented. Currently the CWA is in the process of hiring a consultant to perform a rate study including additional customer classifications, budget tiered rates, drought surcharge implementation, and cost of service.

8.4.1.5 Residential Plumbing Retrofit

The City has adopted the latest version of the Uniform Building Code (UBC), which requires the installation of water efficient fixtures. The City, participates in the CVRWMG, which has a plumbing retrofit program and provides assistance for low-income families to retrofit older houses with newer water efficient fixtures. Measuring reductions in water usage from implementation of the UBC is not achievable.

8.4.1.6 Smart Controller Rebate Program

The program is designed to financially assist large water users in reducing landscape irrigation water consumption by purchasing an advanced irrigation controller capable of synchronizing their landscape irrigation schedules with seasonal variations in local reference evapotranspiration (ETo) rates. These "smart" irrigation clocks reprogram themselves according to periodic variations in ETo after the initial calibrating program has been professionally installed. The City will perform installation and follow-up work for residential customers at a reduced rate of $50.00.

8.5 DETERMINING WATER SHORTAGE REDUCTIONS

The Utilities General Manager of the City monitors the supply and demand for water on a daily basis to determine the level of conservation required by the implementation or termination of the Water Conservation Stages. The Utilities General Manager would recommend to the City Manager which Water Shortage Plan Stage is necessary to implement based on the severity of the water shortage. However, the City Council has the authority to withdraw from the plan and may implement another plan

at any time during the water shortage. Subsequently, the Utilities General Manager may implement or terminate the appropriate stages of water conservation.

Each well that pumps water into the distribution system has a flow monitoring device installed. Daily readings will allow monitoring to determine if reduction measures are effective. If it is determined that no measurable impact is achieved by these measures, then additional field audits will be scheduled. The additional field audits will be coupled with public information pamphlets and educational programs to provide measurable results.

8.6 REVENUE AND EXPENDITURE IMPACTS

It is important to identify potential impacts on the water fund resulting from lower revenues due to reduced water sales during each of the four water reduction stages. In the City's 2010 UWMP, customer sales data was analyzed to get an expected revenue impact with each stage (assuming a given stage is in effect for the entire year). The results indicate that a breakeven point for reduced sales occurs at approximately a 20 percent reduction in sales. This is in part because approximately one-third of operational costs are attributed to energy. When less water is delivered then less energy is needed, thereby reducing operating costs and offsetting losses in revenue.

Funding for water shortages will come through a temporary rate increase and/or fund reserves. Other potential funding sources and/or shortage management options include close monitoring and managing the short-term water reduction plan, and initiating a water contingency fund or temporary deferral of CIP projects. There may be additional outside funding sources made available to water agencies under a water emergency situation (Stage IV).

8.7 RESOLUTION OR ORDINANCE

Due to the State of California's drought crisis that began in 2012, water purveyors are working hard at reducing water demand. In the last year, Coachella Water Authority (CWA) experienced a 20 percent reduction in water demand than the previous year. The water demand reduction can be attributable to their continued efforts in water conservation and the passage of the following two local ordinances.

The City of Coachella adopted Resolution No. WA-2014-01 on February 26, 2014 titled, "A Resolution of the Board of Directors of Coachella Water Authority Calling for 20% Voluntary water Usage Reduction." The City has not hit a critical level of shortage where the Authority is unable to meet the demands of its customers and will not be evoking their water shortage contingency plan. It is however, asking its customers to voluntarily reduce water usage by 20 percent. A copy of this is available in **Appendix E**.

In January 17, 2014, the Governor declared a state of emergency due to the drought conditions and asked all Californians to reduce water usage by 20 percent. As a response, the City adopted Resolution No. WA-2014-05 on October 8, 2014 titled, "Resolution No. WA-2014-05 of the Board of Directors of the Coachella Water Authority, to Implement its State II Water Shortage Contingency Plan." The City enacted their water shortage contingency plan Stage II that calls for 10% mandatory water use in conjunction with other water use restrictions. A copy of this ordinance is available in **Appendix E**.

8.8 CATASTROPHIC SUPPLY INTERRUPTIONS

A water shortage emergency could be the result of a catastrophic event such as result of drought, failures of transmission facilities, a regional power outage, earthquake, flooding, supply contamination from chemical spills, or other adverse conditions.

The City's Emergency Response Plan (ERP) addresses the planned response to extraordinary emergency situations associated with natural disasters, technological incidents, and national security emergencies affecting the City's facilities and service area. The goals of the Emergency Response and Recovery Plan are to rapidly restore service after an emergency; ensure adequate water service for fire suppression; minimize water or electrical system damage; minimize impact and loss to customers; and provide emergency public information concerning customer service.

In the ERP, a series of flowcharts and tables provide direction in a simplified format conducive to use during an emergency. These documents provide contact names and numbers for emergency personnel. To facilitate inter-city and inter-agency cooperation, contacts for other agencies have been included.

For catastrophic water supply interruptions, the City's ERP outlines the water shortage emergency response responsibilities. The plan provides a step by step procedure for responding to different types of emergencies and also provides detailed contact information for adjoining cities, special districts, and regulatory agencies. The plan is updated on a scheduled basis. In general, actions taken during a major emergency or catastrophe include the following:

- Activate the appropriate level of the emergency plan
- Mobilize emergency response personnel, as needed
- Activate the Emergency Operations Center, if necessary
- Notify other agencies such as regulatory agencies (local and state health, etc.)
- Begin damage inspections
- Evaluate safety of facilities
- Begin documentation process
- Activate emergency communications systems, as needed
- Activate emergency mutual assistance agreements, if necessary
- Activate contracts for emergency supplies (including water) and equipment
- Interface with the media
- Coordinate inter-agency resources, including water supplies
- Develop repair and restoration plans
- Provide public and employee information announcements, including water quality advisories

Emergency services available include the State of California Master Mutual Aid Agreement, California Water Agencies Response Network (WARN) and Plan Bulldozer. The Master Mutual Aid Agreement includes all public agencies that have signed the agreement and is planned out of the California Office of Emergency Services. WARN includes all public agencies that have signed the agreement to WARN and provides mutual aid assistance. It is managed by a State Steering Committee. Plan Bulldozer provides mutual aid for construction equipment to any public agency for the initial time of disaster when danger

to life and property exists. Additionally, an Emergency Water Quality Notification Plan, approved by DHS, is annually reviewed and updated.

8.9 MINIMUM SUPPLY NEXT THREE YEARS

Groundwater is the principal source of municipal water supply in the Coachella Valley. The main groundwater source is the Coachella Valley Groundwater Basin, Indio Sub-basin, Basin Number 7-21-01, also known as the Whitewater River Sub-basin. The Whitewater River Subbasin is shared by Cities of Coachella, Indio, Coachella Valley Water District (CVWD), and Desert Water Agency (DWA)and numerous private groundwater producers. CVWD and DWA are both responsible for recharging the Basin. Although the City is not directly reliant on imported water for its water supply, CVWD and DWA are remediating the overdraft condition of the groundwater basin in the Upper Coachella Valley by artificial replenishment with imported Colorado River and State Water Project (SWP) Exchange water from Metropolitan Water District (MWD). Colorado River water is used to recharge the Lower Whitewater River Subbasin, while SWP Exchange water is used to recharge the Upper Whitewater and Mission Creek subbasins.

CVWD and DWA receive delivery of their SWP Table A water through exchange with MWD at the Whitewater River and the Mission Creek Turnouts on the Colorado River Aqueduct. Under the terms of the Advance Delivery Agreement, MWD has stored water in the upper Whitewater River subbasin in advance of CVWD's and DWA's Table A deliveries. MWD may discontinue direct delivery of SWP Exchange Water to these turnouts if the water is needed to meet MWD's demands. During such years, MWD would make its required deliveries from its storage account in the groundwater basin. As of December 2015, MWD had approximately 200,000 AF of water in storage. Assuming a repeat of the past three dry years, it is expected that CVWD and DWA would receive 20 percent of their total Table A allocation (194,100 AFY) or an average of about 38,800 AFY over three years or 116,500 AF, assuming MWD does not exercise its callback option. This amount is less than the balance in the advance delivery account.

For water shortage planning purposes, it is assumed that MWD could take the entire amount of CVWD and DWA Table A Water Deliveries for the succeeding three years and significantly deplete the Advance Delivery Storage account. Although CVWD and DWA might not have access to SWP Exchange water deliveries in these three years, the water is already stored in the basin. The vast storage capacity of the Whitewater River subbasin (about 28.8 million AF) would be more than adequate to meet the projected groundwater extraction needs of the City. Without replenishment, the decline in storage and water levels would likely occur.[56]

For urban water supplies, groundwater is only limited by the City's groundwater wells the total production capacity and the water demand. This supply is fully reliable and is used to meet all urban demands not met by future Canal water or recycled water. The highest pumping from the recent 2010 to 2015 period of 2,691.76 MG is used as the minimum available supply for the next three years. **Table 8-5** presents the estimated three-year minimum urban water supply.

[56] CVWD Engineer's Report on Water Supply and Replenishment Assessment 2016-2017 Mission Creek, West Whitewater River, and East Whitewater River Subbasin Areas of Benefit, p. VII-11.

Table 8-5 Retail: Minimum Supply Next Three Years in Million Gallons (MG)			
	2016	2017	2018
Available Water Supply	2,692	2,692	2,692
NOTES: It is assumed that available groundwater supply is the highest amount pumped from 2010 to 2015 of 2,692 MG.			

SECTION 9 - DEMAND MANAGEMENT MEASURES

The goal of the Demand Management Measures (DMM) section in an UWMP is to provide a comprehensive description of the water conservation programs that the City of Coachella has implemented, is currently implementing, and plans to implement in order to meet its urban water use reduction targets.

The City of Coachella is committed to conservation as a means to provide a sustainable supply of water to its service area, and plans to continue its conservation program during the next five years. The City's DMM implementation efforts are described in the following DMM sections.

9.1 DMM FOR RETAIL AGENCIES

The City recognizes water use efficiency as an integral component of its current and future water strategy for the service area. Demand management measures (DMM) refer to policies, programs, rules, regulation and ordinances, and the use of devices, equipment and facilities that, over the long term, have been generally justified and accepted by the industry as providing a "reliable" reduction in water demand. This means providing education, tools, and incentives to help the homeowner, apartment owner and business owner reduce the amount of water used on their property. Demand management is as important to insuring water supply reliability as is providing a new water supply. The City of Coachella has aggressively pursued conservation in an effort to reduce demand.

The following DMMs include technologies and methodologies that have been sufficiently documented in multiple demonstration projects that result in more efficient water use and conservation. DMMs are defined in the following sections.

9.1.1 Water Waste Prevention Ordinances

The City has a prohibition for wasting water in Municipal Code Section 13.03.044 which states it is unlawful for any person to willfully or neglectfully water waste in any manner whatsoever. In addition, the City has adopted CVAG's Landscape Ordinance which has specific penalties for water waste. The provisions are provided below:

Section 0.00.040, Part C

Water Waste Prevention. Water waste resulting from inefficient landscape irrigation including run-off, low-head drainage, overspray, or other similar conditions where water flows onto adjacent property, non-irrigated areas, walks, roadways, or structures is prohibited. All broken heads and pipes must be repaired within 72 hours of notification. Penalties for violation of these prohibitions are established in Section 0.00.070.

Water service to customers who cause water waste may have their service discontinued.

Customers who appear to be exceeding the Maximum Applied Water Allowance (MAWA) may be interviewed by the Utilities General Manager or his designee to verify customer water usage to ensure compliance.

The measurement of success for this program is a reduction in water waste violations in the future. Additionally, as discussed in Section 8, the City has mandatory prohibitions on water wasting that they enforce during a water shortage. These prohibitions include voluntary and mandatory provisions, audits, and fines than can be imposed.

9.1.2 Metering

The City bills its customers according to meter consumption. In addition, the City encourages the installation of dedicated landscape meters, which allows the City to recommend the appropriate irrigation schedules through future landscape programs.

Meter calibration and periodic replacement insures that customers are paying for all of the water they consume, and therefore encourages conservation. The City replaced all existing meters prior to 2000 to upgrade the older meters to obtain an accurate measure of water usage. Metering allows the City to conserve a total of 20-30 percent of the water demand overall, and up to 40 percent savings during peak demand periods, as estimated by the CUWCC's BMP Costs and Savings Study (December 2003). In 2015, the City completed the process of metering its past unmetered accounts including parks and other accounts, which has further enhanced the effectiveness of measuring consumption.

9.1.3 Conservation Pricing

The City has a tiered rate structure for water service within its service area. Tiered rates are defined as "rates designed to recover the cost of providing service." The City's water rates include a variable commodity charge (monthly charge based on the amount of water used or consumed by the customer in hundreds of cubic feet (HCF)) and a fixed metered account charge (basic monthly rate by meter size). The rates have been designed to recover the full cost of water service in the commodity charge, while discouraging wasteful water use, and will continue to be implemented into the future. Tiered rates are designed to incentivize customers to be proactive in reducing water use. The charges were developed through a rate study by Willdan Financial Services and are not calculated or developed on the basis of any parcel map, but are based upon reasonable estimates of demand placed upon the City in its role as a provider of the water services. Tiered water rates went into effect for residential customers in mid-2010. Table 9-1 presents the City's tiered rates for consumption charge.

Table 9-1 Retail: Tiered Rates for Consumption Charge						
Tiers	Effective Date					
	5/1/2010	1/1/2011	1/1/2012	1/1/2013	1/1/2014	1/1/2015
Block 1 Rate (per HCF) 0-41 HCF	$1.05	$1.16	$1.30	$1.36	$1.43	$1.50
Block 2 Rate (per HCF) Over 41 HCF	$1.21	$1.31	$1.45	$1.51	$1.58	$1.65

9.1.4 Public Education and Public Outreach

The City recognizes the continued need for a public information program to maintain and increase the public's awareness of water and the need to use it wisely. The City promotes water conservation and other resources.

The City distributes public information through bill inserts, brochures, and community events. The City also has the opportunity to provide public information on conservation measures through television advertising on public access channel in conjunction with the City Council meeting broadcasts. The City also maintains a web page, www.conservecoachella.com, which provides water conservation information, ideas, and frequently asked questions. The City will continue to work on providing public information and materials to remind the public about water and other resource issues, and will track commentary regarding the information provided. There is no reliable method to quantify the savings of this management measure; however, the City will monitor the number of public announcements, television advertisements, brochures and bill inserts distributed throughout the service area. An increase in distribution of materials will indicate heightened public water conservation awareness and may correlate with decrease water demand.

The City supports school education programs provided to the schools within the City. The education programs include water conservation, water quality and pollution prevention. The program has provided educational programs predominately for elementary age children throughout the service area. School education helps future water users realize that water in the State is a precious commodity that cannot be taken for granted. The program educates school children about where water comes from, how it is used, that it is a precious resource, and ways to conserve water. The children are also taught about the importance of recycled water, where it comes from, and how it is used.

9.1.5 Program to Assess and Manage Distribution System Real Loss

The City generally performs system water audits on an as-needed basis. Although leak and/or line break repairs are performed expediently (within 24 hours) by the City, no records of these activities, including system audits or leak detection program data are available.

The City does monitor the difference between the water pumped into the distribution system compared to the amount billed annually, which is considered "non-revenue" water.

As discussed in **Section 4.3**, non-revenue water may be attributed to "apparent losses" or "real losses." Apparent losses are paper losses that occur in utility operations due to customer meter inaccuracies, billing system data errors and unauthorized consumption. In other words, this is water that is consumed but is not properly measured, accounted or paid for. Real losses are the physical losses of water from the distribution system, including leakage. These losses inflate production costs and stress water resources since they represent water that is extracted and treated, yet never reaches beneficial use. Real losses also include other events causing water to be withdrawn from the system and not measured, such as hydrant testing and flushing, street cleaning, new construction line draining and/or filling and draining and flushing, and firefighting.

The effectiveness of this DMM accounts for 100 percent of water pumped into the system.

9.1.6 Water Conservation Program Coordination and Staffing Report

The City's Utilities General Manager serves the City as its water conservation coordinator along with the staff Environmental/Regulatory Program Manager. They work closely with agencies in the region, particularly through the CVRWMG and CV Watercounts, to implement and provide successful execution of water conservation programs in the City. The City continues to investigate Federal, State, and local funding to develop new programs throughout its service area.

9.1.7 Other Demand Management Measures

The City of Coachella has developed several other demand management measures to support consumption reduction and promote efficient water use. They are described in the following subsections.

9.1.7.1 Water Survey Programs for Single-Family Residential and Multi-Family Residential Customers

The City conducts water audits at the request of water customers. The City has identified its largest water users and work with these users in hopes of developing a site specific water conservation program. The City believes that identifying and reducing water uses of their largest water consumers provides the largest benefit to the City.

9.1.7.2 Residential Plumbing Retrofit

The City has adopted the latest version of the Uniform Building Code (UBC), which requires the installation of water efficient fixtures. The City, through the Redevelopment Agency, provides assistance for low-income families to retrofit older houses with newer water efficient fixtures. Measuring reductions in water usage from implementation of the UBC is not achievable.

9.1.7.3 Large Landscape Conservation Programs and Incentives

Typically, the large landscape areas such as golf courses and large common areas are required to provide landscape irrigation with non-potable water such as Canal water, non-potable groundwater, or recycled

water and will not be allowed to connect to the City's domestic water system, unless no other water source is available. In addition to negotiating agreements for additional Canal water to serve large landscapes, the City negotiated additional rights to Canal water supplies that may be treated to drinking water standards with the implementation of a new treatment facility. However, as described in Section 6.5, the City does not currently operate a tertiary-treatment plant and does not have infrastructure in place to deliver recycled water. The City is currently participating in a Coachella Valley wide recycled water feasibility study, funded by Proposition 84 Round 2 through the Coachella Valley Regional Water Management Group (CVRWMG), as part of the Coachella Valley Integrated Regional Water Management (IRWM) Plan. If the study produces favorable result for tertiary treatment and distribution system upgrades, the City will implement a recycled water program.

In 2000, the City adopted a landscape ordinance for single family and multi-family residences and large landscape areas. The new ordinance encourages limited use of turf areas and reduces landscape irrigation consumption by mandating high efficiency irrigation systems and low water use landscaping. The City conducts plan checking for compliance with the landscape ordinance prior to the construction of new and/or rehabilitated landscape sites.

Further, in response to the Water Conservation in Landscaping Act of 2006 (Assembly Bill 1881, Laird), requiring cities and counties to adopt water conservation ordinances by January 1, 2010, CVWD worked with the Coachella Valley Association of Governments (CVAG), Coachella Valley cities, Riverside County, other water agencies, and the Building Industry Association to develop a Regional Landscape Water Conservation Ordinance; a copy is provided in **Appendix F**. The Regional Landscape Ordinance not only meets the state requirements, but also is tailored specifically to the unique climate and water conservation needs of the Coachella Valley, including the City of Coachella. The City has adopted the model landscape ordinance by CVAG.

In addition, the City of Coachella Utilities Department offers a turf removal rebate program for residents who want to reduce outdoor water use by converting their front lawn to desert-friendly landscaping. Using less water outdoors is the best way to conserve water and lower your water bill. The program aims to provide examples of water wise planting alternatives to turf in parkways and front yards. Residents who chose to replace their grass with beautiful, desert-friendly landscaping can get up to a $1,000 rebate. Participation in the program will also help residents save on maintenance costs over time. The City offers the rebates on a first-come, first-served basis. Resident's choosing to participate in the program must take the following steps:

1. Read all the terms and conditions of the program and think about how you want to convert your landscaping.
2. Develop your landscape design.
3. Complete and submit the application form.
4. Wait to hear back from the City before beginning any work. The City will mail out a Rebate Reservation Confirmation that will include: a reservation number, a start date, an expiration date, and the estimated rebate amount.
5. Call Dig-Alert! at 811 to get clearance before you start your project.
6. Transform your yard to a desert-friendly oasis!

7. Finish your project within 120 days (4 months) from the date on your Rebate Reservation Confirmation.
8. Complete and submit the rebate request.
9. The City will contact the resident to set up a post-conversion visit to examine the work completed.
10. Receive your rebate. It may take several weeks to process.

The City also offers other programs that have the potential to save irrigation and domestic water demand.

Furthermore, the City instituted a Smart Controller Rebate Program. The program is designed to financially assist water users in reducing landscape irrigation water consumption by purchasing an advanced irrigation controller capable of synchronizing their landscape irrigation schedules with seasonal variations in local reference evapotranspiration (ETo) rates. These "smart" irrigation clocks reprogram themselves according to periodic variations in ETo after the initial calibrating program has been professionally installed. The City will perform installation and follow-up work for all customers at a reduced rate of $50.00.

9.1.7.4 Conservation Programs for Commercial, Industrial, and Institutional Accounts

The amount of water used in commercial, industrial and institutional (CII) within the City is a small percentage of the overall water usage. CII user demand made up approximately 15 percent of the City's total water deliveries. The City does, however, incorporate into its planning review process, a review of water uses for a specific development and how it has incorporated water conservation measures. This is an ongoing procedure as part of the development approval process. A majority of existing passive conservation by CII customers is due to current plumbing codes.

9.1.7.5 Wholesale Agency Assistance Program

The City depends on solely groundwater for its water supply and does not look toward a wholesale water agency for assistance. However, the six water agencies that utilize the groundwater basin to supply potable water to retail customers: CVWD, Desert Water Agency, Indio Water Authority, Coachella Water Authority, Myoma Dunes Water Company and Mission Springs Water District. In addition, many private pumpers utilize the groundwater basin. Both Agency and private pumping is reported annually in Engineer's reports prepared by CVWD and DWA. For the benefit of the regional groundwater users, CVWD together with DWA are state water project contractors, which import water for replenishment of the groundwater supply in the Coachella Valley.

The City will continue to work cooperatively with CVRWMG to participate in regional BMP programs, informational groups and projects, determination of the most cost-effective BMPs, and tailoring programs specific to the City.

9.1.7.6 Residential ULFT Replacement Programs

The City has adopted the Uniform Building Code that requires ultra-low flush toilets (ULFT) (1.2 gallons per flush) be used in all new construction. Most of the population is projected into the future with developments. These developments will be required to install ULFT toilets under current Building Code provisions. For existing houses, the City of Coachella is offering its single-family residence and multi-family residence the opportunity to receive a rebate of up to $100 for exchanging a non-efficient toilet that uses 3.5 gallons per flush (GPF) for an ULFT that uses less than 1.2 GPF and is a qualifying WaterSense model. Currently toilets using 3.5 GPF or more account for roughly 26% of a home's indoor water use. The use of these WaterSense ULFT will not only conserve water but they also have the potential to reduce customer water and electric bill. If Coachella residents chose to participate in the ULFT replacement rebate program, they must:

1. Be within the Coachella water service area and served by an open active Coachella potable water service account in good standing.
2. Be replacing a working toilet flushing 3.5 GPF or higher.
3. Schedule a required pre-installation inspection with the Coachella Water Conservation Program.
4. Purchase a qualifying WaterSense ULFT.
5. Complete an application and attach original purchase receipt (Only one rebate per single-family residence or per multi-family unit).
6. Install the new ULFT and submit an application to the city within 90 days of purchase.

To date, the city has successfully replaced several non-efficient toilets with the program. The city plans to continue the program into the foreseeable future.

9.2 IMPLEMENTATION OVER THE PAST FIVE YEARS

The City of Coachella is committed to conservation as a means to provide a sustainable supply of water to its service area, and plans to continue its conservation program during the next five years. The conservation program was initiated in 2012. The following represents the City's best understanding of the nature and extent of these programs over the past five years.

9.2.1 Waste Water Prevention Ordinances

As mentioned before, the measurement of success for this program is a reduction in water waste violations in the future. Since 2014, 444 water waste reports have been investigated by the City. Additionally, as discussed in **Section 8**, the City has mandatory prohibitions on water wasting that they enforce during a water shortage. These prohibitions include voluntary and mandatory provisions, audits, and fines than can be imposed.

9.2.2 Metering

100 percent of the City of Coachella's urban water customers are metered. Within the past 10 years, the City completed the process of metering its past unmetered accounts including parks and other accounts, which has further enhanced the effectiveness of measuring consumption. From 2005 to 2015, the City increased their number of water service connections from 6,823 to 8,037. This 17.7 percent

increase has contributed to the 8.1 percent decrease in water use from 2005 to 2015. Meter calibration and replacement insures that customers are paying for all of the water they consume, and therefore encourages conservation.

9.2.3 Conservation Pricing

The City implemented a two tiered water rate system that went into effect for residential customers in mid-2010. While no study has been completed to verify its effectiveness, the City has seen a decline in water demand that can be partly attributed to conservation pricing.

9.2.4 Public Education and Outreach

There is no reliable method to quantify the savings of this management measure. The City has continued to promote public awareness of water consumption reduction in the past five years through several public announcements, television advertisements, brochures and bill inserts distributed throughout the service area. The City's increase in distribution of materials will indicate heightened public water conservation awareness and may correlate with decrease water demand.

CWA has seen reduced water consumption and notification of water waste. Furthermore, CWA recently implemented turf reduction program, smart irrigation controllers, ultra-low flow toilets and retrofit kits. A total of $750,000 has been spent in four years and reduced water consumption by 223 million gallons.

9.2.5 Program to Assess and Manage Distribution System Real Loss

In 2015, the City completed the process of metering its past unmetered accounts including parks and other accounts, which has further enhanced the effectiveness of measuring consumption. The City's efforts to meter its entire service area will help decrease the distribution system's real loss. Water will no longer be consumed but is not properly measured, accounted or paid for.

9.2.6 Water Conservation Program Coordination and Staffing Report

The effectiveness of this demand management measure cannot be quantified and measured. Water Conservation Program coordinators and staff will continue to seek and implement water consumption reducing programs and investigate Federal, State, and local funding to develop new programs throughout its service area.

9.2.7 Other Demand Management Measures

The following table quantifies and summarizes each of the water conservation programs, discussed in **Section 9.1.7**, usage in the past five years.

Table 9-2: DMM Implementation Summary		
Program	Completed Since Program Inception	Completed Since 2010
Residential Plumbing Retrofit	300	300
Turf Removal Rebate Program	135	135
Smart Controller Rebate Program	15	15
Residential ULFT Replacement Program	42	42

9.3 PLANNED IMPLEMENTATION TO ACHIEVE WATER USE TARGETS

The City plans to continue implementing the programs described in **Section 9.1** and will continue to implement water conservation practices and enforce requirements of City ordinances to maintain lower than historic per capita water use. While the City has already exceeded their SBx7-7 2020 Target per capita water consumption, the City will continue to seek new water consumption reducing programs that benefit the Basin.

As funding becomes available, CWA will pursue additional conservation activities such as a energy efficient appliances, customer portal, mobile application, and advance metering infrastructure.

9.4 MEMBERS OF THE CALIFORNIA URBAN WATER CONSERVATION COUNCIL

Demand Management Measures are equivalent to the Best Management Practices (BMP) as established by the California Urban Water Conservation Council (CUWCC). On November 2, 2000, the City of Coachella elected to become Signatory to the Memorandum of Understanding (MOU) regarding BMPs for Urban Water Conservation with the CUWCC. While being signatory to the MOU requires submission of annual reports on progress to implement the BMPs, the City drafted and is currently working on submitting the required 2015 BMP. Nevertheless, the City has and continues to, in good faith, work toward implementation of the urban water conservation BMPs.

SECTION 10 - PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

Water agencies will describe the steps taken to adopt and submit the UWMP and to make it publicly available. This section will also include a discussion of the agency's plan to implement the UWMP.

10.1 INCLUSION OF ALL 2015 DATA

The City of Coachella's 2015 UWMP contains water use and planning data for the entire year of 2015. The City is reporting on a 2015 calendar year basis.

10.2 NOTICE OF PUBLIC HEARING

The City will hold a public hearing prior to adopting the Plan. This will give the public the opportunity to participate in the UWMP process and provide feedback to the Plan before its adoption. Two audiences will be noticed for the public hearing; cities and counties, and the public. The City will consider all public input.

10.2.1 Notice to Cities and Counties

CWA serves water to the City of Coachella and has sent notice to the City of Coachella and County of Riverside that it will be reviewing the UWMP and considering amendments to the Plan. This notice was sent at least 60 days prior to the public hearing, included the time and place of the hearing. **Table 2-2** summarizes which Cities and Counties were notified of the public hearing.

10.2.2 Notice to the Public

The City's public notice of the public hearing was published in the local newspaper on May 27, 2016, July 1, 2016, and July 8,2016. A copy of the proof of publication is included in **Appendix G**.

10.3 PUBLIC HEARING AND ADOPTION

As part of the public hearing, the City will provide information on their baseline values, water use targets, and implementation plan required in the Water Conservation Act of 2009. The public hearing on the UWMP will take place before the adoption of the Plan, which will allow the City the opportunity to modify the UWMP in response to public input before adoption. After the hearing, the Plan will be adopted as prepared or as modified after the hearing. The City will include the adoption resolution in the UWMP as **Appendix H**.

10.4 PLAN SUBMITTAL

Once adopted, the City will submit the 2015 UWMP to the DWR, the State Library, and cities and counties. The City's UWMP will be submitted to DWR within 30 days of adoption. UWMP submittal will be done electronically through WUEdata, an online submittal too. After the UWMP has been submitted, DWR will review the plan and make a determination as to whether or not the UWMP addresses the requirements of the CWC. The DWR reviewer will contact the water supplier as needed during the review process. Upon completion of the Plan review, DWR will issue a letter to the agency with the results of the review. In addition, no later than 30 days after adoption, the City shall submit a copy of

the adopted 2015 UWMP to the California State Library. Lastly, as the preparer, the City will keep the adopted 2015 UWMP on hand for viewing and dissemination.

10.5 PUBLIC AVAILABILITY

No later than 30 days after filing a copy of its Plan with DWR, the City will make the plan available for public review during normal business hours by placing a copy of the UWMP at the front desk of the City's office, and by posting the UWMP on the City's website for public viewing.

10.6 AMENDING AN ADOPTED UWMP

If the City amends the adopted UWMP, each of the steps for notification, public hearing, adoption, and submittal will also be followed for the amended plan.

APPENDICES

APPENDIX A 2015 UWMP CHECKLIST

APPENDIX A

CHECKLIST ARRANGED BY WATER CODE SECTION

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location
10608.20(b)	Retail suppliers shall adopt a 2020 water use target using one of four methods.	Baselines and Targets	Section 5.7 and App E	**Section 5.7 and Appendix C**
10608.20(e)	Retail suppliers shall provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	Baselines and Targets	Chapter 5 and App E	**Chapter 5 and Appendix C**
10608.22	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5 year baseline. This does not apply if the suppliers base GPCD is at or below 100.	Baselines and Targets	Section 5.7.2	**Section 5.7**
10608.24(a)	Retail suppliers shall meet their interim target by December 31, 2015.	Baselines and Targets	Section 5.8 and App E	**Section 5.8 and Appendix C**
10608.24(d)(2)	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.	Baselines and Targets	Section 5.8.2	**Does Not Apply**
10608.26(a)	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets.	Plan Adoption, Submittal, and Implementation	Section 10.3	**Section 10.3 and Appendix H**
10608.36	Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions.	Baselines and Targets	Section 5.1	**Does Not Apply**
10608.40	Retail suppliers shall report on their progress in meeting their water use targets. The data shall be reported using a standardized form.	Baselines and Targets	Section 5.8 and App E	**Section 5.8 and Appendix C**
10620(b)	Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.	Plan Preparation	Section 2.1	**Section 2.1**
10620(d)(2)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan Preparation	Section 2.5.2	**Section 2.4.2**

10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water Supply Reliability Assessment	Section 7.4	**Section 7.4**
10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.	Plan Adoption, Submittal, and Implementation	Section 10.2.1	**Sections 10.2.1 and 10.2.2**
10621(d)	Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.	Plan Adoption, Submittal, and Implementation	Sections 10.3.1 and 10.4	**Sections 10.3 and 10.4**
10631(a)	Describe the water supplier service area.	System Description	Section 3.1	**Section 3.1**
10631(a)	Describe the climate of the service area of the supplier.	System Description	Section 3.3	**Section 3.3**
10631(a)	Indicate the current population of the service area.	System Description and Baselines and Targets	Sections 3.4 and 5.4	**Sections 3.4 and 5.4**
10631(a)	Provide population projections for 2020, 2025, 2030, and 2035.	System Description	Section 3.4	**Section 3.4**
10631(a)	Describe other demographic factors affecting the supplier's water management planning.	System Description	Section 3.4	**Section 3.4**
10631(b)	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, 2030, and 2035.	System Supplies	Chapter 6	**Section 6**
10631(b)	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	Section 6.2	**Section 6.2**
10631(b)(1)	Indicate whether a groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System Supplies	Section 6.2.2	**Section 6.2.2**
10631(b)(2)	Describe the groundwater basin.	System Supplies	Section 6.2.1	**Section 6.2.1**
10631(b)(2)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump.	System Supplies	Section 6.2.2	**Section 6.2.2**
10631(b)(2)	For unadjudicated basins, indicate whether or not the department has identified the basin as overdrafted, or projected to become overdrafted. Describe efforts by the supplier to eliminate the long-term overdraft condition.	System Supplies	Section 6.2.3	**Section 6.2.3**
10631(b)(3)	Provide a detailed description and analysis of the location, amount, and sufficiency of	System Supplies	Section 6.2.4	**Section 6.2.4**

	groundwater pumped by the urban water supplier for the past five years			
10631(b)(4)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	Sections 6.2 and 6.9	**Section 6.9**
10631(c)(1)	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage.	Water Supply Reliability Assessment	Section 7.1	**Section 7.1**
10631(c)(1)	Provide data for an average water year, a single dry water year, and multiple dry water years	Water Supply Reliability Assessment	Section 7.2	**Section 7.2**
10631(c)(2)	For any water source that may not be available at a consistent level of use, describe plans to supplement or replace that source.	Water Supply Reliability Assessment	Section 7.1	**Section 7.1**
10631(d)	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	System Supplies	Section 6.7	**Section 6.7**
10631(e)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	Section 4.2	**Section 4.2**
10631(e)(3)(A)	Report the distribution system water loss for the most recent 12-month period available.	System Water Use	Section 4.3	**Section 4.3**
10631(f)(1)	Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand Management Measures	Sections 9.2 and 9.3	**Sections 9.2 and 9.3**
10631(f)(2)	Wholesale suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and supplier assistance program.	Demand Management Measures	Sections 9.1 and 9.3	**Doesn Not Apply**
10631(g)	Describe the expected future water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and multiple-dry years.	System Supplies	Section 6.8	**Section 6.8**
10631(h)	Describe desalinated water project opportunities for long-term supply.	System Supplies	Section 6.6	**Section 6.6**
10631(i)	CUWCC members may submit their 2013-2014 CUWCC BMP annual reports in lieu of, or in addition to, describing the DMM implementation in their UWMPs. This option is only allowable if the supplier has been found to be in full compliance with the CUWCC MOU.	Demand Management Measures	Section 9.5	**Section 9.4**
10631(j)	Retail suppliers will include documentation that they have provided their wholesale supplier(s) – if any - with water use projections from that source.	System Supplies	Section 2.5.1	**Doesn Not Apply**

10631(j)	Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types.	System Supplies	Section 2.5.1	**Doesn Not Apply**
10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the supplier.	System Water Use	Section 4.5	**Section 4.5**
10632(a) and 10632(a)(1)	Provide an urban water shortage contingency analysis that specifies stages of action and an outline of specific water supply conditions at each stage.	Water Shortage Contingency Planning	Section 8.1	**Section 8.1**
10632(a)(2)	Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency.	Water Shortage Contingency Planning	Section 8.9	**Section 8.9**
10632(a)(3)	Identify actions to be undertaken by the urban water supplier in case of a catastrophic interruption of water supplies.	Water Shortage Contingency Planning	Section 8.8	**Section 8.8**
10632(a)(4)	Identify mandatory prohibitions against specific water use practices during water shortages.	Water Shortage Contingency Planning	Section 8.2	**Section 8.2**
10632(a)(5)	Specify consumption reduction methods in the most restrictive stages.	Water Shortage Contingency Planning	Section 8.4	**Section 8.4**
10632(a)(6)	Indicated penalties or charges for excessive use, where applicable.	Water Shortage Contingency Planning	Section 8.3	**Section 8.3**
10632(a)(7)	Provide an analysis of the impacts of each of the actions and conditions in the water shortage contingency analysis on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts.	Water Shortage Contingency Planning	Section 8.6	**Section 8.6**
10632(a)(8)	Provide a draft water shortage contingency resolution or ordinance.	Water Shortage Contingency Planning	Section 8.7	**Section 8.7 and Appendix E**
10632(a)(9)	Indicate a mechanism for determining actual reductions in water use pursuant to the water shortage contingency analysis.	Water Shortage Contingency Planning	Section 8.5	**Section 8.5**
10633	For wastewater and recycled water, coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.1	**Section 6.5.1**
10633(a)	Describe the wastewater collection and treatment systems in the supplier's service area. Include quantification of the amount of	System Supplies (Recycled Water)	Section 6.5.2	**Section 6.5.2**

	wastewater collected and treated and the methods of wastewater disposal.			
10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System Supplies (Recycled Water)	Section 6.5.2.2	**Does Not Apply; See Section 6.5.2**
10633(c)	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.3 and 6.5.4	**Does Not Apply; See Section 6.5.3**
10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System Supplies (Recycled Water)	Section 6.5.4	**Does Not Apply; See Section 6.5.4**
10633(e)	Describe the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	System Supplies (Recycled Water)	Section 6.5.4	**Does Not Apply; See Section 6.5.4**
10633(f)	Describe the actions which may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System Supplies (Recycled Water)	Section 6.5.5	**Section 6.5.5**
10633(g)	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.5	**Sections 6.5.4 and 6.5.5**
10634	Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability	Water Supply Reliability Assessment	Section 7.1	**Section 7.1**
10635(a)	Assess the water supply reliability during normal, dry, and multiple dry water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years.	Water Supply Reliability Assessment	Section 7.3	**Section 7.3**
10635(b)	Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 60 days after the submission of the plan to DWR.	Plan Adoption, Submittal, and Implementation	Section 10.4.4	**Sections 10.4 and 10.5**
10642	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.	Plan Preparation	Section 2.5.2	**Section 2.4.2**
10642	Provide supporting documentation that the urban water supplier made the plan available for public inspection, published notice of the public	Plan Adoption, Submittal, and Implementation	Sections 10.2.2, 10.3, and 10.5	**Sections 10.2, 10.3,**

	hearing, and held a public hearing about the plan.			**10.4, and 10.5**
10642	The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.	Plan Adoption, Submittal, and Implementation	Sections 10.2.1	**Sections 10.2.1**
10642	Provide supporting documentation that the plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	Section 10.3.1	**Section 10.6**
10644(a)	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	Plan Adoption, Submittal, and Implementation	Section 10.4.3	**Section 10.4**
10644(a)(1)	Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption.	Plan Adoption, Submittal, and Implementation	Section 10.4.4	**Sections 10.4 and 10.5**
10644(a)(2)	The plan, or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	Sections 10.4.1 and 10.4.2	**Section 10.4**
10645	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	Section 10.5	**Section 10.5**

APPENDIX B 2015 UWMP STANDARDIZED TABLES

Table 2-1 Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015
1	Coachella Water Authority	8,037	2,128
	TOTAL	8,037	2,128
NOTES: Units are in Million Gallons (MG)			

Table 2-2: Plan Identification			
Select Only One	**Type of Plan**		**Name of RUWMP or Regional Alliance** *if applicable* *drop down list*
☑	**Individual UWMP**		
	☐	Water Supplier is also a member of a RUWMP	
	☐	Water Supplier is also a member of a Regional Alliance	
☐	**Regional Urban Water Management Plan (RUWMP)**		
NOTES:			

Table 2-3: Agency Identification	
Type of Agency (select one or both)	
☐	Agency is a wholesaler
☑	Agency is a retailer
Fiscal or Calendar Year (select one)	
☑	UWMP Tables Are in Calendar Years
☐	UWMP Tables Are in Fiscal Years
If Using Fiscal Years Provide Month and Date that the Fiscal Year Begins (mm/dd)	
Units of Measure Used in UWMP (select from Drop down)	
Unit	MG
NOTES:	

Table 2-4 Retail: Water Supplier Information Exchange
The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.
Wholesale Water Supplier Name *(Add additional rows as needed)*
NOTES: CWA does not purchase water from a wholesale water supplier.

Table 2-4A: Coordination and Public Involvement						
Entities	Coordination and Public Involvement Actions					
	Participated in UWMP Development	Commented on Draft UWMP	Used Entity Data for Source of Information	Received Copy of the Draft UWMP	Sent Notice of Public Hearing	Attended Public Meetings
City of Coachella Utilities Dept.	X				X	
City of Coachella Engineering	X				X	
City of Coachella Services Dept.					X	
CVWD					X	
Desert Water Agency					X	
City of Indio					X	
Indio Water Authority					X	
Mission Springs Water District					X	
Riverside County Flood Control					X	
General Public					X	
Torres Martinez Desert Cahuilla Indians					X	
Agustine Band of Cahuilla Indians					X	
Twenty Nine Palms Band of Mission Indians					X	

Table 3-1: City of Coachella Area Climate				
Month	Monthly Average ETo[a] (inches)	Average Temperature[b] (degrees F)		Average Rainfall[b] (inches)
		Max	Min	
January	2.98	70.6	39.2	0.64
February	3.53	74.9	44.3	0.51
March	6.28	80.0	50.4	0.31
April	8.39	87.0	57.4	0.11
May	10.55	93.7	64.4	0.05
June	10.95	102.3	71.9	0.01
July	10.78	106.9	77.8	0.012
August	9.66	105.7	76.9	0.25
September	8.25	101.5	70.3	0.31
October	5.85	91.9	59.4	0.20
November	3.63	80.2	46.7	0.26
December	2.62	71.7	39.4	0.54
Average:	6.96	88.9	58.2	0.27

NOTES:

[a] California Irrigation Management Information System, Department of Water Resources, Office of Water Use Efficiency, Monthly Average ETo Report for Station 200, Indio 2, Imperial/Coachella Valley – all other nearby stations are inactive or too new; [on-line] http://wwwcimis.water.ca.gov/UserControls/Reports/MonthlyEtoReportViewer.aspx

[b] Western Regional Climate Center (WRCC), Desert Research Institute, Reno, Nevada [on-line] http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca4259 (WRCC program administered by the National Oceanic and Atmospheric Administration (NOAA); data extracted from monitoring Station 044259 at Palm Springs, CA, Average 3/01/1894 through 06/10/16)

Table 3-2: Population - Current and Projected						
Population Served	2015	2020	2025	2030	2035	2040*(opt)*
	40,947	55,783	71,278	91,078	116,377	
NOTES:						

Table 3-3: Coachella Population Projections						
Population Area	2010	2015	2020	2025	2030	2035
City Limits	40,704	-	70,200	-	-	128,700
CWA Service Area	40,208	40,947	55,783	71,278	91,078	116,377

NOTES:

[a] Coachalla General Plan Update, Adopted 2015

[b] DWR Population Tool WUEdata, http://www.census.gov/

Table 4-1: Historical Water Service Connections			
Population Area	2005	2010	2015
Single family	5,502	6,919	7,077
Multi-family	244	349	367
Commercial/Institutional	923	336	366
Industrial	25	3	2
Landscape Irrigation	129	158	87
Other	0	127	138
Total	**6,823**	**7,892**	**8,037**
NOTES:			

Table 4-2: Historical Water Use						
Population Area	2005	2010	% Change from 2005 to 2010	2015	% Change from 2010 to 2015	% Change from 2005 to 2015
Single family	946	1,426	50.7%	1,220	-14.4%	29.0%
Multi-family	222	307	38.4%	209	-32.1%	-5.9%
Commercial/Institutional	179	376	110.4%	295	-21.5%	65.2%
Industrial	137	43	-68.3%	3	-92.6%	-97.7%
Landscape Irrigation	139	312	124.4%	178	-42.9%	28.1%
Other	0	0	-	21	-	-
Losses	692	227	-67.1%	202	-11.2%	-70.8%
Total	**2,315**	**2,692**	**16.3%**	**2,128**	**-21.0%**	**-8.1%**
NOTES: Units are Million Gallons (MG)						

Table 4-3: Demands for Potable and Raw Water - Actual			
Use Type *(Add additional rows as needed)*	2015 Actual		
Drop down list *May select each use multiple times* *These are the only Use Types that will be recognized by the WUEdata online submittal tool*	Additional Description *(as needed)*	Level of Treatment When Delivered *Drop down list*	Volume
Single Family		Drinking Water	1,220
Multi-Family		Drinking Water	209
Commercial		Drinking Water	295
Industrial		Drinking Water	3
Landscape		Drinking Water	178
Other		Drinking Water	21
Losses		Drinking Water	202
		TOTAL	2,128
NOTES: Units are Million Gallons (MG)			

Table 4-4: Future per Capita Water Use					
Year	Total Service Area Population	Per Capita Water Use (GPCD)[a]	Total Water Use per Day (MGD)	Total Annual Water Use (MG)	% Increase
2010[b]	40,208	210	8.44	3,082	-
2015[b]	40,947	205	8.39	3,064	-0.6%
2020	55,783	200	11.16	4,072	32.9%
2025	71,278	200	14.26	5,203	27.8%
2030	91,078	200	18.22	6,649	27.8%
2035	116,377	200	23.28	8,496	27.8%

NOTES:

[a] As presented in the City's 2010 UWMP, Table 3.2-3, and in Sections 5-6 and 5-7 herein, the base daily per capita water use 5-year average is 210 gpcd.

[b] Note that both 2010 and 2015 Total Annual Water Use are planning number based on a 5-year average per capita water use baselines and targets and vary from actual metered sales presented in Table 4-1B, providing a more conservative outlook.

Table 4-5: Demands for Potable and Raw Water - Projected						
Use Type *(Add additional rows as needed)*	Additional Description *(as needed)*	Projected Water Use *Report To the Extent that Records are Available*				
Drop down list *May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool*		2020	2025	2030	2035	2040-opt
Single Family		2,335	2,983	3,812	4,871	
Multi-Family		399	510	652	833	
Commercial		565	722	923	1,180	
Industrial		6	8	10	13	
Landscape		341	435	556	711	
Other		40	51	65	83	
Losses		386	494	631	806	
	TOTAL	4,072	5,203	6,649	8,496	0
NOTES: Units are MG						

Table 4-3 Retail: Total Water Demands						
	2015	2020	2025	2030	2035	2040 *(opt)*
Potable and Raw Water *From Tables 4-1 and 4-2*	2,128	4,072	5,203	6,649	8,496	0
Recycled Water Demand* *From Table 6-4*	0	0	0	0	0	0
TOTAL WATER DEMAND	2,128	4,072	5,203	6,649	8,496	0
**Recycled water demand fields will be blank until Table 6-4 is complete.*						
NOTES:						

Table 4-6: 12 Month Water Loss Audit Reporting	
Reporting Period Start Date (mm/yyyy)	Volume of Water Loss*
01/2015	175.223
** Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.*	
NOTES: Losses shown include 10.134 MG of apparent losses and 165.088 MG of real losses.	

Table 4-7: Quantified Objectives by Income Level, 2014–2021						
Type of Housing	Extremely Low	Very Low	Low	Moderate	Above Moderate	Total
New Construction	384	384	558	628	1,534	**3,488**
Rehabilitation	30	60	70	60	40	**260**
Conservation/Preservation	10	10	50	20	20	**110**
Total:	**424**	**454**	**678**	**708**	**1,594**	**3,858**
NOTES: As presented in the City's 2015 General Plan Update.						

Table 4-8: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) *Drop down list (y/n)*	No
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc… utilized in demand projections are found.	See Sections 4.2 and 4.5 for explanation.
Are Lower Income Residential Demands Included In Projections? *Drop down list (y/n)*	Yes
NOTES:	

Table 5-10 Baselines and Targets Summary					
Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10-15 year	2001	2010	208	204	200
5 Year	2006	2010	210		
*All values are in Gallons per Capita per Day (GPCD)					
NOTES:					

Table 5-11: 2015 Compliance

Retail Agency or Regional Alliance Only

Actual 2015 GPCD*	2015 Interim Target GPCD*	Optional Adjustments to 2015 GPCD Enter "0" if no adjustment is made *From Methodology 8*					2015 GPCD* *(Adjusted if applicable)*	Did Supplier Achieve Targeted Reduction for 2015? Y/N
		Extraordinary Events*	Economic Adjustment*	Weather Normalization *	TOTAL Adjustments*	Adjusted 2015 GPCD*		
142	204	0	0	0	0	142	142	Yes

**All values are in Gallons per Capita per Day (GPCD)*

NOTES:

Table 6-5: Groundwater Volume Pumped						
☐	Supplier does not pump groundwater. The supplier will not complete the table below.					
Groundwater Type ***Drop Down List*** *May use each category multiple times*	Location or Basin Name	2011	2012	2013	2014	2015
Add additional rows as needed						
Alluvial Basin	Whitewater River Subbasin	2530	2604	2588	2514	2128
	TOTAL	2,530	2,604	2,588	2,514	2,128
NOTES: Units are in MG						

Table 6-2 Retail: Wastewater Collected Within Service Area in 2015						
☐	There is no wastewater collection system. The supplier will not complete the table below.					
	Percentage of 2015 service area covered by wastewater collection system *(optional)*					
	Percentage of 2015 service area population covered by wastewater collection system *(optional)*					
Wastewater Collection			**Recipient of Collected Wastewater**			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? *Drop Down List*	Volume of Wastewater Collected from UWMP Service Area 2015	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area? *Drop Down List*	Is WWTP Operation Contracted to a Third Party? *(optional)* *Drop Down List*
Add additional rows as needed						
City of Coachella	Metered	986	City of Coachella	Coachella Sanitary District	Yes	No
Total Wastewater Collected from Service Area in 2015:		986				
NOTES: Units are in MG						

Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2015										
☐	No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.									
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number *(optional)*	Method of Disposal *Drop down list*	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level *Drop down list*	2015 volumes			
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
Add additional rows as needed										
Coachella Sanitary District	On-Site	On-Site Percolation Ponds		Percolation ponds	No	Secondary, Undisinfected	986	986	0	0
						Total	986	986	0	0
NOTES:										

Table 6-4 Retail: Current and Projected Recycled Water Direct Beneficial Uses Within Service Area

☐	Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.

Name of Agency Producing (Treating) the Recycled Water:	
Name of Agency Operating the Recycled Water Distribution System:	
Supplemental Water Added in 2015	
Source of 2015 Supplemental Water	

Beneficial Use Type	General Description of 2015 Uses	Level of Treatment *Drop down list*	2015	2020	2025	2030	2035	2040 (opt)
Agricultural irrigation								
Landscape irrigation (excludes golf courses)								
Golf course irrigation								
Commercial use								
Industrial use								
Geothermal and other energy production								
Seawater intrusion barrier								
Recreational impoundment								
Wetlands or wildlife habitat								
Groundwater recharge (IPR)*								
Surface water augmentation (IPR)*								
Direct potable reuse								
Other *(Provide General Description)*								
		Total:	0	0	0	0	0	0

**IPR - Indirect Potable Reuse*

NOTES:

Table 6-5 Retail: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual			
☐	Recycled water was not used in 2010 nor projected for use in 2015. The supplier will not complete the table below.		
Use Type		**2010 Projection for 2015**	**2015 Actual Use**
Agricultural irrigation			
Landscape irrigation (excludes golf courses)			
Golf course irrigation			
Commercial use			
Industrial use			
Geothermal and other energy production			
Seawater intrusion barrier			
Recreational impoundment			
Wetlands or wildlife habitat			
Groundwater recharge (IPR)			
Surface water augmentation (IPR)			
Direct potable reuse			
Other	*Type of Use*		
Total		0	0
NOTES:			

Table 6-6 Retail: Methods to Expand Future Recycled Water Use			
☐	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
	Provide page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
Add additional rows as needed			
Feasibility Study	City participating in a Coachella Valley wide recycled water feasibility study	2017	TBD
		Total	0
NOTES:			

Table 6-7 Retail: Expected Future Water Supply Projects or Programs						
☐	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
☐	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.					
	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other agencies?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type *Drop Down List*	Expected Increase in Water Supply to Agency *This may be a range*
	Drop Down List (y/n)	*If Yes, Agency Name*				
Add additional rows as needed						
NOTES:						

Table 6-6: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2015		
Drop down list *May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool*		Actual Volume	Water Quality *Drop Down List*	Total Right or Safe Yield *(optional)*
Add additional rows as needed				
Groundwater	East Whitewater River Subbasin	2,128	Drinking Water	233,069
	Total	2,128		233,069

NOTES: Units in Million Gallons (MG)

Table 6-7: Water Supplies — Projected

Water Supply	Additional Detail on Water Supply	Projected Water Supply *Report To the Extent Practicable*									
Drop down list *May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool*		**2020**		**2025**		**2030**		**2035**		**2040** *(opt)*	
		Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*
Add additional rows as needed											
Groundwater	East Whitewater River Subbasin	4,072		5,203		6,649		8,496			
Total		4,072	0	5,203	0	6,649	0	8,496	0	0	0

NOTES: Units in Million Gallons (MG)

Table 7-1: Basis of Water Year Data			
Year Type	**Base Year** *If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000*	**Available Supplies if Year Type Repeats**	
		☑ Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location Section 7.1.	
		☐ Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available	**% of Average Supply**
Average Year	Any	*See Note Below	100%
Single-Dry Year	2014	*See Note Below	100%
Multiple-Dry Years 1st Year	2013	*See Note Below	100%
Multiple-Dry Years 2nd Year	2014	*See Note Below	100%
Multiple-Dry Years 3rd Year	2015	*See Note Below	100%
Multiple-Dry Years 4th Year *Optional*			
Multiple-Dry Years 5th Year *Optional*			
Multiple-Dry Years 6th Year *Optional*			

Agency may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If an agency uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table.

NOTES: Since CWA relies on the groundwater basin as its sole source of water supply, available water supplies are driven by demand. In addition, available groundwater supplies in any given year are significantly greater than CWA's demand. As such, Average Year can be taken as any average of years in CWA's supply history.

Table 7-2: Normal Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040 *(Opt)*
Supply Totals *(autofill from Table 6-9)*	4,072	5,203	6,649	8,496	0
Demand Totals *(autofill from Table 4-3)*	4,072	5,203	6,649	8,496	0
Difference	(0)	(0)	0	0	0

NOTES: Units in Million Gallons (MG)

[a] From Table 6-7: Water Supplies — Projected

[b] From Table 4-5: Demands for Potable and Raw Water - Projected

Table 7-3 Retail: Single Dry Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040 (Opt)
Supply totals	4,072	5,203	6,649	8,496	
Demand totals	4,072	5,203	6,649	8,496	
Difference	(0)	(0)	0	0	0
NOTES: Units in Million Gallons (MG)					

Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison						
		2020	2025	2030	2035	2040 (Opt)
First year	Supply totals	4,072	5,203	6,649	8,496	
	Demand totals	4,072	5,203	6,649	8,496	
	Difference	(0)	(0)	0	0	0
Second year	Supply totals	4,072	5,203	6,649	8,496	
	Demand totals	4,072	5,203	6,649	8,496	
	Difference	(0)	(0)	0	0	0
Third year	Supply totals	3,258	4,162	5,319	6,797	
	Demand totals	3,258	4,163	5,319	6,796	
	Difference	(0)	(0)	0	0	0
Fourth year *(optional)*	Supply totals					
	Demand totals					
	Difference	0	0	0	0	0
Fifth year *(optional)*	Supply totals					
	Demand totals					
	Difference	0	0	0	0	0
Sixth year *(optional)*	Supply totals					
	Demand totals					
	Difference	0	0	0	0	0
NOTES: Units in Million Gallons (MG)						

Table 8-1: Stages of Water Shortage Contingency Plan		
Stage	Complete Both	
	Percent Supply Reduction[1] *Numerical value as a percent*	Water Supply Condition (*Narrative description)*
Add additional rows as needed		
I	10%	Minor and Anticipated Shortage
II	10%	Minor to Moderate Shortage
III	20%	Moderate to Severe
IV	50%	Severe Shortage or Catastrophic Incident
[1] *One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.*		
NOTES: Refer to City Ordinances WA-2014-01 and WA-2014-05, further described in Section 8.7.		

Table 8-3: Restrictions and Prohibitions on End Uses			
Stage	Restrictions and Prohibitions on End Users ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool*	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement? *Drop Down List*
Add additional rows as needed			
I, II, III, IV	Other	Outdoor water use prohibited from Dawn to Dusk	Yes
I, II, III, IV	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water		Yes
I, II, III, IV	Other	Water wash down of pavement prohibited	Yes
I, II, III, IV	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Within 24 hours of identification	Yes
I, II, III, IV	CII - Restaurants may only serve water upon request		Yes
II, III, IV	Landscape - Limit landscape irrigation to specific days	A rotation schedule for watering will be developed and implemented throughout the City	Yes
II, III	Landscape - Prohibit certain types of landscape irrigation	Landscape watering is prohibited except where drip irrigation systems are utilized	Yes
II, III,	Other water feature or swimming pool restriction	No initial filling of swimming pools or landscaping ponds	Yes
II, III, IV	Other	No ornamental water feature utilization, except for maintenance	Yes
III, IV	Landscape - Prohibit certain types of landscape irrigation	Landscape watering is prohibited except trees and shrubs via drip irrigation system	Yes
III, IV	Other	Implementation of City-wide water use audits to ensure compliance with directives	Yes

IV	Other water feature or swimming pool restriction	No filling of swimming pools or landscaping ponds except for maintenance	Yes
NOTES:			

Table 8-3: Stages Wise Penalties for Excessive Water Use	
Stage	Penalty
I	Written warning upon first violation $15 Administrative fee for second violation $ 50 Administrative fee for third violation $100 Administrative fee for each subsequent violation
II	Written warning upon first violation $100 Administrative fee for second violation $150 Administrative fee for third violation $300 Administrative fee for each subsequent violation
III	$150 Administrative fee for first violation $300 Administrative fee for second violation $500 Administrative fee for each subsequent violation
IV	300 Administrative fee for first violation $500 Administrative fee for a second violation $500 Administrative fee for each subsequent violation
NOTES:	

Table 8-4: Stages of Water Shortage Contingency Plan - Consumption Reduction Methods		
Stage	Consumption Reduction Methods by Water Supplier ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool*	Additional Explanation or Reference *(optional)*
Add additional rows as needed		
All Stages	Expand Public Information Campaign	The City expands public information campaigns on consumption reduction methods through billing inserts, brochures community events, television and the City's website.
All Stages	Offer Water Use Surveys	The City continues to offer water use surveys to educate and reduce water use.
All Stages	Provide Rebates for Turf Replacement	The City offers a turf removal rebate program for residents who want to reduce outdoor water use by converting their front lawn to desert-friendly landscaping.
All Stages	Provide Rebates on Plumbing Fixtures and Devices	The City provides customers with rebates for ultra-low flush toilets.
All Stages	Implement or Modify Drought Rate Structure or Surcharge	The City implements tiered rates in order to incentivize customers to be proactive in reducing water use.
All Stages	Other	The City provides low-income families with assistance to retrofit older house with newer water efficient fixtures.
All Stages	Other	The City offers a Smart Controller Rebate Program that is designed to financially assist customers in water consumption by synchronizing their landscape irrigation schedules with seasonal variations.
NOTES:		

Table 8-4 Retail: Minimum Supply Next Three Years			
	2016	2017	2018
Available Water Supply	2,692	2,692	2,692
NOTES: It is assumed that available groundwater supply is the highest amount pumped from 2010 to 2015 of 2,692 MG.			

Table 9-1: Tiered Rates for Consumption Charge						
Tiers	Effective Date					
	5/1/2010	1/1/2011	1/1/2012	1/1/2013	1/1/2014	1/1/2015
Block 1 Rate (per HCF) 0-41 HCF	$1.05	$1.16	$1.30	$1.36	$1.43	$1.50
Block 2 Rate (per HCF) Over 41 HCF	$1.21	$1.31	$1.45	$1.51	$1.58	$1.65
NOTES:						

Table 9-2: DMM Implementation Summary		
Program	Completed Since Program Inception	Completed Since 2010
Residential Plumbing Retrofit		
Turf Removal Rebate Program		
Smart Controller Rebate Program		
Residential ULFT Replacement Program		

Table 10-1 Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
	☐	☐
	☐	☐
	☐	☐
County Name *Drop Down List*	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
	☐	☐
	☐	☐

APPENDIX C POPULATION TOOL WORKSHEETS FOR SBX7-7 CALCULATIONS

SB X7-7 Table 0: Units of Measure Used in UWMP* *(select one from the drop down list)*
Million Gallons
**The unit of measure must be consistent with Table 2-3*
NOTES:
Conversion Rate to Gallons per Day:
2739.726027

Table 5-1: Baseline Period Ranges			
Baseline	**Parameter**	**Value**	**Units**
10- to 15-year baseline period	2008 total water deliveries	2,728	Million Gallons
	2008 total volume of delivered recycled water	-	Million Gallons
	2008 recycled water as a percent of total deliveries	0.00%	Percent
	Number of years in baseline period[1, 2]	10	Years
	Year beginning baseline period range	2001	
	Year ending baseline period range[3]	2010	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2006	
	Year ending baseline period range[4]	2010	

[1] *If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period.* [2] *The Water Code requires that the baseline period is between 10 and 15 years. However, DWR recognizes that some water suppliers may not have the minimum 10 years of baseline data.*

[3] *The ending year must be between December 31, 2004 and December 31, 2010.*

[4] *The ending year must be between December 31, 2007 and December 31, 2010.*

NOTES:

Table 5-2: Method for Population Estimates	
Method Used to Determine Population (may check more than one)	
☐	**1. Department of Finance** (DOF) DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2011 - 2015) when available
☐	**2. Persons-per-Connection Method**
☑	**3. DWR Population Tool**
☐	**4. Other** DWR recommends pre-review
NOTES:	

Table 5-3: Service Area Population		
Year		Population
10 to 15 Year Baseline Population		
Year 1	2001	23,984
Year 2	2002	25,758
Year 3	2003	27,531
Year 4	2004	29,305
Year 5	2005	31,079
Year 6	2006	32,853
Year 7	2007	34,627
Year 8	2008	36,400
Year 9	2009	38,174
Year 10	2010	40,208
5 Year Baseline Population		
Year 1	2006	32,853
Year 2	2007	34,627
Year 3	2008	36,400
Year 4	2009	38,174
Year 5	2010	40,208
2015 Compliance Year Population		
2015		40,947
NOTES:		

Table 5-4: Annual Gross Water Use *

Baseline Year *Fm SB X7-7 Table 3*		Volume Into Distribution System *This column will remain blank until SB X7-7 Table 4-A is completed.*	Deductions					Annual Gross Water Use
			Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water *This column will remain blank until SB X7-7 Table 4-B is completed.*	Water Delivered for Agricultural Use	Process Water *This column will remain blank until SB X7-7 Table 4-D is completed.*	
10 to 15 Year Baseline - Gross Water Use								
Year 1	2001	1,883	-	-	-	-	-	1,883
Year 2	2002	1,902	-	-	-	-	-	1,902
Year 3	2003	2,113	-	-	-	-	-	2,113
Year 4	2004	2,168	-	-	-	-	-	2,168
Year 5	2005	2,314	-	-	-	-	-	2,314
Year 6	2006	2,894	-	-	-	-	-	2,894
Year 7	2007	2,829	-	-	-	-	-	2,829
Year 8	2008	2,727	-	-	-	-	-	2,727
Year 9	2009	2,716	-	-	-	-	-	2,716
Year 10	2010	2,692	-	-	-	-	-	2,692
10 - 15 year baseline average gross water use								**2,424**
5 Year Baseline - Gross Water Use								
Year 1	2006	2,894	-	-	-	-	-	2,894
Year 2	2007	2,829	-	-	-	-	-	2,829
Year 3	2008	2,727	-	-	-	-	-	2,727
Year 4	2009	2,716	-	-	-	-	-	2,716
Year 5	2010	2,692	-	-	-	-	-	2,692
5 year baseline average gross water use								**2,771**
2015 Compliance Year - Gross Water Use								
2015		2,128	-	-	-	-	-	**2,128**

* NOTE that the units of measure must remain consistent throughout the UWMP, as reported in Table 2-3

NOTES:

Table 5-5: Volume Entering the Distribution System(s)				
Name of Source		Whitewater River Sub-Basin		
This water source is:				
☑	The supplier's own water source			
☐	A purchased or imported source			
Baseline Year *Fm SB X7-7 Table 3*		Volume Entering Distribution System	Meter Error Adjustment* *Optional (+/-)*	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	2001	1,883	-	1,883
Year 2	2002	1,902	-	1,902
Year 3	2003	2,113	-	2,113
Year 4	2004	2,168	-	2,168
Year 5	2005	2,314	-	2,314
Year 6	2006	2,894	-	2,894
Year 7	2007	2,829	-	2,829
Year 8	2008	2,727	-	2,727
Year 9	2009	2,716	-	2,716
Year 10	2010	2,692	-	2,692
5 Year Baseline - Water into Distribution System				
Year 1	2006	2,894	-	2,894
Year 2	2007	2,829	-	2,829
Year 3	2008	2,727	-	2,727
Year 4	2009	2,716	-	2,716
Year 5	2010	2,692	-	2,692
2015 Compliance Year - Water into Distribution System				
2015		2,128	-	2,128
** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*				
NOTES:				

SB X7-7 Table 4-B: Indirect Recycled Water Use Deduction *(For use only by agencies that are deducting indirect recycled water)*

Baseline Year *Fm SB X7-7 Table 3*		**Surface Reservoir Augmentation**					**Groundwater Recharge**			**Total Deductible Volume of Indirect Recycled Water Entering the Distribution System**
		Volume Discharged from Reservoir for Distribution System Delivery	Percent Recycled Water	Recycled Water Delivered to Treatment Plant	Transmission/ Treatment Loss	Recycled Volume Entering Distribution System from Surface Reservoir Augmentation	Recycled Water Pumped by Utility*	Transmission/ Treatment Losses	Recycled Volume Entering Distribution System from Groundwater Recharge	
10-15 Year Baseline - Indirect Recycled Water Use										
Year 1	2001			-		-			-	-
Year 2	2002			-		-			-	-
Year 3	2003			-		-			-	-
Year 4	2004			-		-			-	-
Year 5	2005			-		-			-	-
Year 6	2006			-		-			-	-
Year 7	2007			-		-			-	-
Year 8	2008			-		-			-	-
Year 9	2009			-		-			-	-
Year 10	2010			-		-			-	-
Year 11	#REF!			-		-			-	-
Year 12	#REF!			-		-			-	-
Year 13	#REF!			-		-			-	-
Year 14	#REF!			-		-			-	-
Year 15	#REF!			-		-			-	-
5 Year Baseline - Indirect Recycled Water Use										
Year 1	2006			-		-			-	-
Year 2	2007			-		-			-	-
Year 3	2008			-		-			-	-
Year 4	2009			-		-			-	-
Year 5	2010			-		-			-	-
2015 Compliance - Indirect Recycled Water Use										
2015				-		-			-	-

**Suppliers will provide supplemental sheets to document the calculation for their input into "Recycled Water Pumped by Utility". The volume reported in this cell must be less than total groundwater pumped - See Methodology 1, Step 8, section 2.c.*

NOTES: N/A

Table 5-6: Gallons Per Capita Per Day (GPCD)				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Annual Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	2001	23,984	1,883	215
Year 2	2002	25,758	1,902	202
Year 3	2003	27,531	2,113	210
Year 4	2004	29,305	2,168	203
Year 5	2005	31,079	2,314	204
Year 6	2006	32,853	2,894	241
Year 7	2007	34,627	2,829	224
Year 8	2008	36,400	2,727	205
Year 9	2009	38,174	2,716	195
Year 10	2010	40,208	2,692	183
10-15 Year Average Baseline GPCD				**208**
5 Year Baseline GPCD				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use
Year 1	2006	32,853	2,894	241
Year 2	2007	34,627	2,829	224
Year 3	2008	36,400	2,727	205
Year 4	2009	38,174	2,716	195
Year 5	2010	40,208	2,692	183
5 Year Average Baseline GPCD				**210**
2015 Compliance Year GPCD				
2015		40,947	2,128	**142**
NOTES:				

Table 5-7: GPCD Summary	
10-15 Year Baseline GPCD	**208**
5 Year Baseline GPCD	**210**
2015 Compliance Year GPCD	**142**
NOTES:	

SB X7-7 Table 7: 2020 Target Method *Select Only One*		
Target Method		Supporting Documentation
☐	Method 1	SB X7-7 Table 7A
☐	Method 2	SB X7-7 Tables 7B, 7C, and 7D *Contact DWR for these tables*
☑	Method 3	SB X7-7 Table 7-E
☐	Method 4	Method 4 Calculator
NOTES:		

SB X7-7 Table 7-E: Target Method 3				
Agency May Select More Than One as Applicable	Percentage of Service Area in This Hydrological Region	Hydrologic Region	"2020 Plan" Regional Targets	Method 3 Regional Targets (95%)
☐		North Coast	137	130
☐		North Lahontan	173	164
☐		Sacramento River	176	167
☐		San Francisco Bay	131	124
☐		San Joaquin River	174	165
☐		Central Coast	123	117
☐		Tulare Lake	188	179
☐		South Lahontan	170	162
☐		South Coast	149	142
☑		Colorado River	211	200
Target *(If more than one region is selected, this value is calculated.)*				**0**
NOTES:				

Table 5-8: Confirm Minimum Reduction for 2020 Target			
5 Year Baseline GPCD *From SB X7-7 Table 5*	Maximum 2020 Target[1]	Calculated 2020 Target[2]	**Confirmed 2020 Target**
210	200	200	**200**

[1] Maximum 2020 Target is 95% of the 5 Year Baseline GPCD *[2] 2020 Target is calculated based on the selected Target Method, see SB X7-7 Table 7 and corresponding tables for agency's calculated target.*

NOTES:

Table 5-9: 2015 Interim Target GPCD		
Confirmed 2020 Target *Fm SB X7-7 Table 7-F*	10-15 year Baseline GPCD *Fm SB X7-7 Table 5*	**2015 Interim Target GPCD**
200	208	**204**
NOTES:		

Table 5-11: 2015 Compliance

Actual 2015 GPCD	2015 Interim Target GPCD	Optional Adjustments *(in GPCD)*			TOTAL Adjustments	Adjusted 2015 GPCD	2015 GPCD *(Adjusted if applicable)*	**Did Supplier Achieve Targeted Reduction for 2015?**
		Enter "0" if Adjustment						
		Extraordinary Events	Weather Normalization	Economic Adjustment				
142	204	-	-	-	-	142	142	**YES**
NOTES:								

APPENDIX D AWWA WATER LOSS REPORTING WORKSHEETS

AWWA Free Water Audit Software v5.0

This spreadsheet-based water audit tool is designed to help quantify and track water losses associated with water distribution systems and identify areas for improved efficiency and cost recovery. It provides a "top-down" summary water audit format, and is not meant to take the place of a full-scale, comprehensive water audit format.

Auditors are strongly encouraged to refer to the most current edition of AWWA M36 Manual for Water Audits for detailed guidance on the water auditing process and targetting loss reduction levels

The spreadsheet contains several separate worksheets. Sheets can be accessed using the tabs towards the bottom of the screen, or by clicking the buttons below.

Please begin by providing the following information

Name of Contact Person:	Steven Ledbetter
Email Address:	sledbetter@tkeengineering.com
Telephone | Ext.:	951-680-0440
Name of City / Utility:	TKE Engineering, Inc. for Coachella Water Authority
City/Town/Municipality:	City of Coachella
State / Province:	California (CA)
Country:	USA
Year:	2015 Calendar Year
Audit Preparation Date:	6/22/2016
Volume Reporting Units:	Million gallons (US)
PWSID / Other ID:	

The following guidance will help you complete the Audit

All audit data are entered on the ***Reporting Worksheet***

- Value can be entered by user
- Value calculated based on input data
- These cells contain recommended default values

Use of Option (Radio) Buttons: Pcnt: 0.25% Value:

Select the default percentage by choosing the option button on the left

To enter a value, choose this button and enter a value in the cell to the right

The following worksheets are available by clicking the buttons below or selecting the tabs along the bottom of the page

Instructions
The current sheet. Enter contact information and basic audit details (year, units etc)

Reporting Worksheet
Enter the required data on this worksheet to calculate the water balance and data grading

Comments
Enter comments to explain how values were calculated or to document data sources

Performance Indicators
Review the performance indicators to evaluate the results of the audit

Water Balance
The values entered in the Reporting Worksheet are used to populate the Water Balance

Dashboard
A graphical summary of the water balance and Non-Revenue Water components

Grading Matrix
Presents the possible grading options for each input component of the audit

Service Connection Diagram
Diagrams depicting possible customer service connection line configurations

Definitions
Use this sheet to understand the terms used in the audit process

Loss Control Planning
Use this sheet to interpret the results of the audit validity score and performance indicators

Example Audits
Reporting Worksheet and Performance Indicators examples are shown for two validated audits

Acknowledgements
Acknowledgements for the AWWA Free Water Audit Software v5.0

If you have questions or comments regarding the software please contact us via email at: wlc@awwa.org

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

? Click to access definition
+ Click to add a comment

Water Audit Report for: TKE Engineering, Inc. for Coachella Water Authority
Reporting Year: 2015 (1/2015 - 12/2015)

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

Master Meter and Supply Error Adjustments

WATER SUPPLIED

<---------- Enter grading in column 'E' and 'J' ---------->

						Pcnt:		Value:	
Volume from own sources:	8	2,127.780	MG/Yr	4		0.00%			MG/Yr
Water imported:	n/a	0.000	MG/Yr						MG/Yr
Water exported:	n/a	0.000	MG/Yr						MG/Yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 2,127.780 MG/Yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:
Billed metered:	8	1,925.960	MG/Yr		
Billed unmetered:	n/a	0.000	MG/Yr		
Unbilled metered:	n/a	0.000	MG/Yr		
Unbilled unmetered:		26.597	MG/Yr	1.25%	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

AUTHORIZED CONSUMPTION: 1,952.557 MG/Yr

Use buttons to select percentage of water supplied **OR** value

WATER LOSSES (Water Supplied - Authorized Consumption)

175.223 MG/Yr

Apparent Losses

				Pcnt:	Value:
Unauthorized consumption:		5.319	MG/Yr	0.25%	MG/Yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	3	0.000	MG/Yr		MG/Yr
Systematic data handling errors:		4.815	MG/Yr	0.25%	MG/Yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 10.134 MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 165.088 MG/Yr

WATER LOSSES: 175.223 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 201.820 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	3	119.6	miles
Number of active AND inactive service connections:	3	8,037	
Service connection density:		67	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: 6 — 75.0 psi

COST DATA

Total annual cost of operating water system:	2	$5,000,000	$/Year	
Customer retail unit cost (applied to Apparent Losses):	9	$1.50	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	9		$/Million gallons	☑ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 67 out of 100 ***

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Total annual cost of operating water system
3: Customer metering inaccuracies

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

Water Audit Report for: TKE Engineering, Inc. for Coachella Water Authority
Reporting Year: 2015 | 1/2015 - 12/2015

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 67 out of 100 ***

System Attributes:

	Apparent Losses:	10.134	MG/Yr
+	Real Losses:	165.088	MG/Yr
=	Water Losses:	175.223	MG/Yr
?	Unavoidable Annual Real Losses (UARL):	50.71	MG/Yr
	Annual cost of Apparent Losses:	$20,321	
	Annual cost of Real Losses:		Valued at Customer Retail Unit Cost

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	9.5%	
	Non-revenue water as percent by cost of operating system:	8.1%	Real Losses valued at Customer Retail Unit Cost
Operational Efficiency:	Apparent Losses per service connection per day:	3.45	gallons/connection/day
	Real Losses per service connection per day:	56.28	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	0.75	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	165.09	million gallons/year
?	Infrastructure Leakage Index (ILI) [CARL/UARL]:	3.26	

* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline

AWWA Free Water Audit Software:
User Comments

Use this worksheet to add comments or notes to explain how an input value was calculated, or to document the sources of the information used.

General Comment:	

Audit Item	Comment
Volume from own sources:	Coachella Valley Groundwater Basin, specifically, the East Whitewater River Subbasin
Vol. from own sources: Master meter error adjustment:	
Water imported:	
Water imported: master meter error adjustment:	
Water exported:	
Water exported: master meter error adjustment:	
Billed metered:	
Billed unmetered:	
Unbilled metered:	

Audit Item	Comment
Unbilled unmetered:	
Unauthorized consumption:	
Customer metering inaccuracies:	
Systematic data handling errors:	
Length of mains:	
Number of active AND inactive service connections:	
Average length of customer service line:	
Average operating pressure:	
Total annual cost of operating water system:	
Customer retail unit cost (applied to Apparent Losses):	
Variable production cost (applied to Real Losses):	

AWWA Free Water Audit Software: Water Balance

WAS v5.0

Water Audit Report for:	TKE Engineering, Inc. for Coachella Water Authority	
Reporting Year:	2015	1/2015 - 12/2015
Data Validity Score:	67	

Own Sources (Adjusted for known errors): *2,127.780*

Water Imported: *0.000*

System Input: *2,127.780*

Water Exported: *0.000*

Water Supplied: *2,127.780*

Authorized Consumption: *1,952.557*

Billed Water Exported

Billed Authorized Consumption: *1,925.960*

- Billed Metered Consumption (water exported is removed): *1,925.960*
- Billed Unmetered Consumption: *0.000*

Unbilled Authorized Consumption: *26.597*

- Unbilled Metered Consumption: *0.000*
- Unbilled Unmetered Consumption: *26.597*

Water Losses: *175.223*

Apparent Losses: *10.134*

- Unauthorized Consumption: *5.319*
- Customer Metering Inaccuracies: *0.000*
- Systematic Data Handling Errors: *4.815*

Real Losses: *165.088*

- Leakage on Transmission and/or Distribution Mains: *Not broken down*
- Leakage and Overflows at Utility's Storage Tanks: *Not broken down*
- Leakage on Service Connections: *Not broken down*

Revenue Water: 0.000

Revenue Water: 1,925.960

Non-Revenue Water (NRW): 201.820

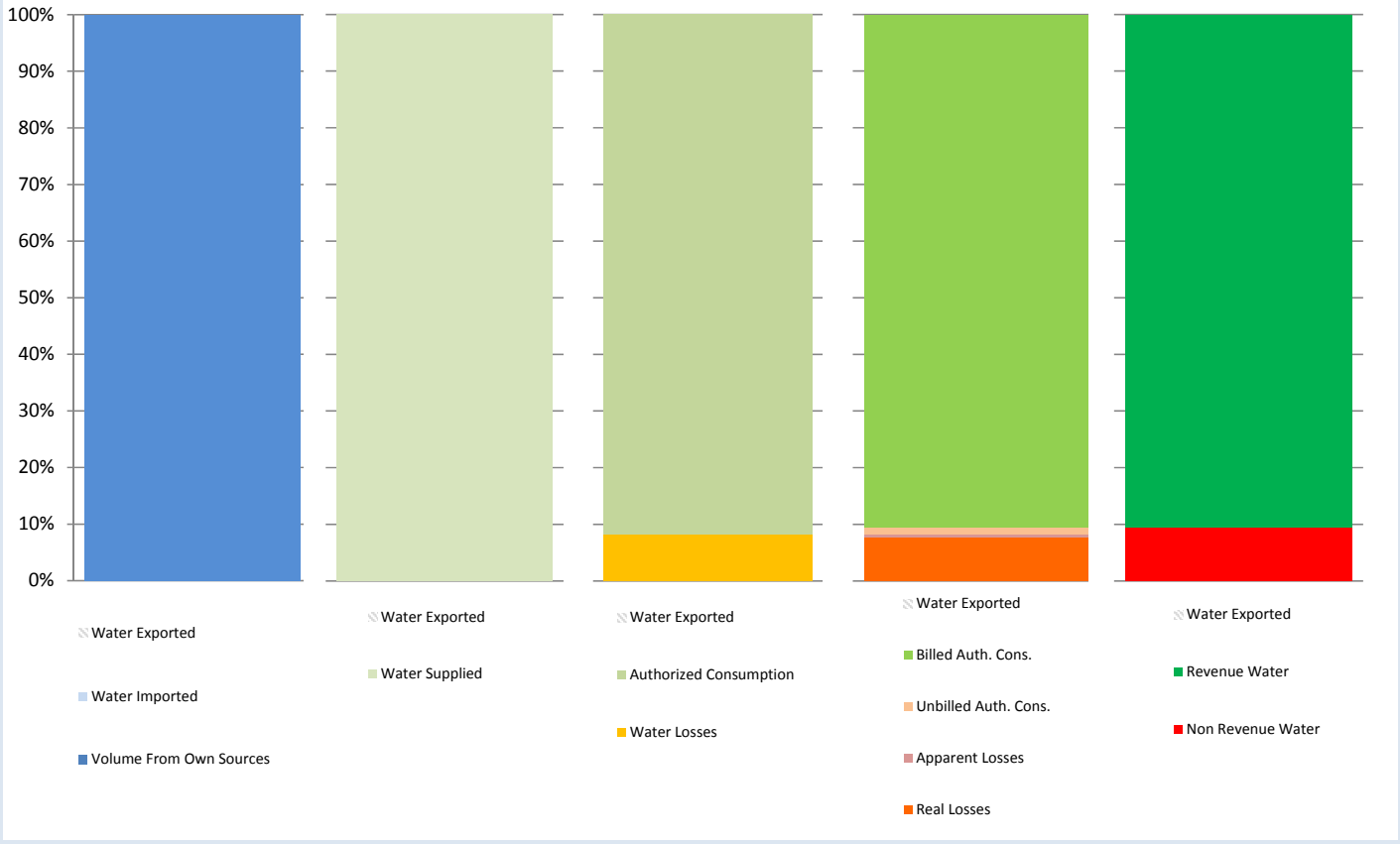
AWWA Free Water Audit Software:
Dashboard

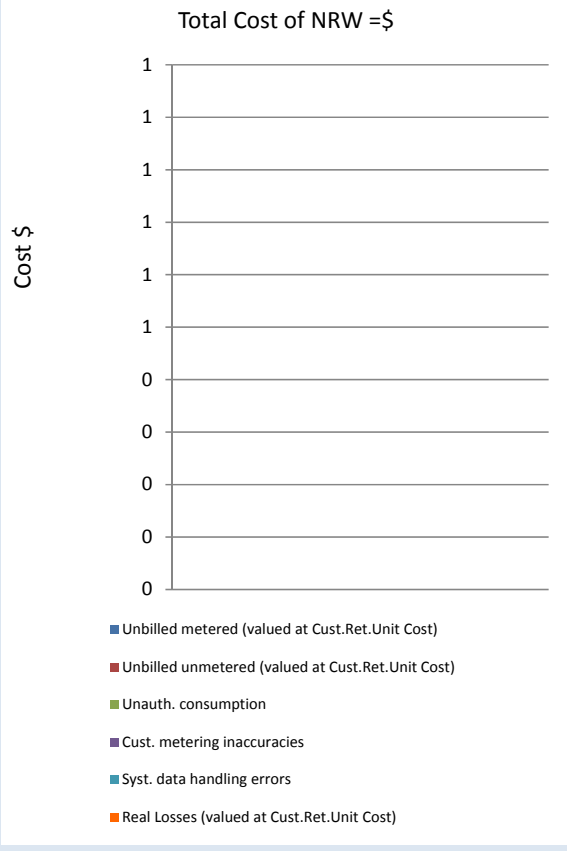
The graphic below is a visual representation of the Water Balance with bar heights propotional to the volume of the audit components

Water Audit Report for:	TKE Engineering, Inc. for Coachella Water Authority	
Reporting Year:	2015	1/2015 - 12/2015
Data Validity Score:	67	

Show me the VOLUME of Non-Revenue Water

Show me the COST of Non-Revenue Water





AWWA Free Water Audit Software: Grading Matrix

WAS 5.0

The grading assigned to each audit component and the corresponding recommended improvements and actions are highlighted in yellow. Audit accuracy is likely to be improved by prioritizing those items shown in red

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
WATER SUPPLIED											
Volume from own sources:	Select this grading only if the water utility purchases/imports all of its water resources (i.e. has no sources of its own)	Less than 25% of water production sources are metered, remaining sources are estimated. No regular meter accuracy testing or electronic calibration conducted.	25% - 50% of treated water production sources are metered; other sources estimated. No regular meter accuracy testing or electronic calibration conducted.	Conditions between 2 and 4	50% - 75% of treated water production sources are metered, other sources estimated. Occasional meter accuracy testing or electronic calibration conducted.	Conditions between 4 and 6	At least 75% of treated water production sources are metered, or at least 90% of the source flow is derived from metered sources. Meter accuracy testing and/or electronic calibration of related instrumentation is conducted annually. Less than 25% of tested meters are found outside of +/- 6% accuracy.	Conditions between 6 and 8	100% of treated water production sources are metered, meter accuracy testing and electronic calibration of related instrumentation is conducted annually, less than 10% of meters are found outside of +/- 6% accuracy	Conditions between 8 and 10	100% of treated water production sources are metered, meter accuracy testing and electronic calibration of related instrumentation is conducted semi-annually, with less than 10% found outside of +/- 3% accuracy. Procedures are reviewed by a third party knowledgeable in the M36 methodology.
Improvements to attain higher data grading for "Volume from own Sources" component:		to qualify for 2: Organize and launch efforts to collect data for determining volume from own sources	to qualify for 4: Locate all water production sources on maps and in the field, launch meter accuracy testing for existing meters, begin to install meters on unmetered water production sources and replace any obsolete/defective meters.		to qualify for 6: Formalize annual meter accuracy testing for all source meters; specify the frequency of testing. Complete installation of meters on unmetered water production sources and complete replacement of all obsolete/defective meters.		to qualify for 8: Conduct annual meter accuracy testing and calibration of related instrumentation on all meter installations on a regular basis. Complete project to install new, or replace defective existing, meters so that entire production meter population is metered. Repair or replace meters outside of +/- 6% accuracy.		to qualify for 10: Maintain annual meter accuracy testing and calibration of related instrumentation for all meter installations. Repair or replace meters outside of +/- 3% accuracy. Investigate new meter technology; pilot one or more replacements with innovative meters in attempt to further improve meter accuracy.		to maintain 10: Standardize meter accuracy test frequency to semi-annual, or more frequent, for all meters. Repair or replace meters outside of +/- 3% accuracy. Continually investigate/pilot improving metering technology.
Volume from own sources master meter and supply error adjustment:	Select n/a only if the water utility fails to have meters on its sources of supply	Inventory information on meters and paper records of measured volumes exist but are incomplete and/or in a very crude condition; data error cannot be determined	No automatic datalogging of production volumes; daily readings are scribed on paper records without any accountability controls. Flows are not balanced across the water distribution system: tank/storage elevation changes are not employed in calculating the "Volume from own sources" component and archived flow data is adjusted only when grossly evident data error occurs.	Conditions between 2 and 4	Production meter data is logged automatically in electronic format and reviewed at least on a monthly basis with necessary corrections implemented. "Volume from own sources" tabulations include estimate of daily changes in tanks/storage facilities. Meter data is adjusted when gross data errors occur, or occasional meter testing deems this necessary.	Conditions between 4 and 6	Hourly production meter data logged automatically & reviewed on at least a weekly basis. Data is adjusted to correct gross error when meter/instrumentation equipment malfunction is detected; and/or error is confirmed by meter accuracy testing. Tank/storage facility elevation changes are automatically used in calculating a balanced "Volume from own sources" component, and data gaps in the archived data are corrected on at least a weekly basis.	Conditions between 6 and 8	Continuous production meter data is logged automatically & reviewed each business day. Data is adjusted to correct gross error from detected meter/instrumentation equipment malfunction and/or results of meter accuracy testing. Tank/storage facility elevation changes are automatically used in "Volume from own sources" tabulations and data gaps in the archived data are corrected on a daily basis.	Conditions between 8 and 10	Computerized system (SCADA or similar) automatically balances flows from all sources and storages; results are reviewed each business day. Tight accountability controls ensure that all data gaps that occur in the archived flow data are quickly detected and corrected. Regular calibrations between SCADA and sources meters ensures minimal data transfer error.
Improvements to attain higher data grading for "Master meter and supply error adjustment" component:		to qualify for 2: Develop a plan to restructure recordkeeping system to capture all flow data; set a procedure to review flow data on a daily basis to detect input errors. Obtain more reliable information about existing meters by conducting field inspections of meters and related instrumentation, and obtaining manufacturer literature.	to qualify for 4: Install automatic datalogging equipment on production meters. Complete installation of level instrumentation at all tanks/storage facilities and include tank level data in automatic calculation routine in a computerized system. Construct a computerized listing or spreadsheet to archive input volumes, tank/storage volume changes and import/export flows in order to determine the composite "Water Supplied" volume for the distribution system. Set a procedure to review this data on a monthly basis to detect gross anomalies and data gaps.		to qualify for 6: Refine computerized data collection and archive to include hourly production meter data that is reviewed at least on a weekly basis to detect specific data anomalies and gaps. Use daily net storage change to balance flows in calculating "Water Supplied" volume. Necessary corrections to data errors are implemented on a weekly basis.		to qualify for 8: Ensure that all flow data is collected and archived on at least an hourly basis. All data is reviewed and detected errors corrected each business day. Tank/storage levels variations are employed in calculating balanced "Water Supplied" component. Adjust production meter data for gross error and inaccuracy confirmed by testing.		to qualify for 10: Link all production and tank/storage facility elevation change data to a Supervisory Control & Data Acquisition (SCADA) System, or similar computerized monitoring/control system, and establish automatic flow balancing algorithm and regularly calibrate between SCADA and source meters. Data is reviewed and corrected each business day.		to maintain 10: Monitor meter innovations for development of more accurate and less expensive flowmeters. Continue to replace or repair meters as they perform outside of desired accuracy limits. Stay abreast of new and more accurate water level instruments to better record tank/storage levels and archive the variations in storage volume. Keep current with SCADA and data management systems to ensure that archived data is well-managed and error free.
Water Imported:	Select n/a if the water utility's supply is exclusively from its own water resources (no bulk purchased/ imported water)	Less than 25% of imported water sources are metered, remaining sources are estimated. No regular meter accuracy testing.	25% - 50% of imported water sources are metered; other sources estimated. No regular meter accuracy testing.	Conditions between 2 and 4	50% - 75% of imported water sources are metered, other sources estimated. Occasional meter accuracy testing conducted.	Conditions between 4 and 6	At least 75% of imported water sources are metered, meter accuracy testing and/or electronic calibration of related instrumentation is conducted annually for all meter installations. Less than 25% of tested meters are found outside of +/- 6% accuracy.	Conditions between 6 and 8	100% of imported water sources are metered, meter accuracy testing and electronic calibration of related instrumentation is conducted annually, less than 10% of meters are found outside of +/- 6% accuracy	Conditions between 8 and 10	100% of imported water sources are metered, meter accuracy testing and electronic calibration of related instrumentation is conducted semi-annually for all meter installations, with less than 10% of accuracy tests found outside of +/- 3% accuracy.
Improvements to attain higher data grading for "Water Imported Volume" component: (*Note: usually the water supplier selling the water - "the Exporter" - to the utility being audited is responsible to maintain the metering installation measuring the imported volume. The utility should coordinate carefully with the Exporter to ensure that adequate meter upkeep takes place and an accurate measure of the Water Imported volume is quantified.*)		to qualify for 2: Review bulk water purchase agreements with partner suppliers; confirm requirements for use and maintenance of accurate metering. Identify needs for new or replacement meters with goal to meter all imported water sources.	To qualify for 4: Locate all imported water sources on maps and in the field, launch meter accuracy testing for existing meters, begin to install meters on unmetered imported water interconnections and replace obsolete/defective meters.		to qualify for 6: Formalize annual meter accuracy testing for all imported water meters, planning for both regular meter accuracy testing and calibration of the related instrumentation. Continue installation of meters on unmetered imported water interconnections and replacement of obsolete/defective meters.		to qualify for 8: Complete project to install new, or replace defective, meters on all imported water interconnections. Maintain annual meter accuracy testing for all imported water meters and conduct calibration of related instrumentation at least annually. Repair or replace meters outside of +/- 6% accuracy.		to qualify for 10: Conduct meter accuracy testing for all meters on a semi-annual basis, along with calibration of all related instrumentation. Repair or replace meters outside of +/- 3% accuracy. Investigate new meter technology; pilot one or more replacements with innovative meters in attempt to improve meter accuracy.		to maintain 10: Standardize meter accuracy test frequency to semi-annual, or more frequent, for all meters. Continue to conduct calibration of related instrumentation on a semi-annual basis. Repair or replace meters outside of +/- 3% accuracy. Continually investigate/pilot improving metering technology.

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
Water imported master meter and supply error adjustment:	Select n/a if the Imported water supply is unmetered, with Imported water quantities estimated on the billing invoices sent by the Exporter to the purchasing Utility.	Inventory information on imported meters and paper records of measured volumes exist but are incomplete and/or in a very crude condition; data error cannot be determined Written agreement(s) with water Exporter(s) are missing or written in vague language concerning meter management and testing.	No automatic datalogging of imported supply volumes; daily readings are scribed on paper records without any accountability controls to confirm data accuracy and the absence of errors and data gaps in recorded volumes. Written agreement requires meter accuracy testing but is vague on the details of how and who conducts the testing.	Conditions between 2 and 4	Imported supply metered flow data is logged automatically in electronic format and reviewed at least on a monthly basis by the Exporter with necessary corrections implemented. Meter data is adjusted by the Exporter when gross data errors are detected. A coherent data trail exists for this process to protect both the selling and the purchasing Utility. Written agreement exists and clearly states requirements and roles for meter accuracy testing and data management.	Conditions between 4 and 6	Hourly Imported supply metered data is logged automatically & reviewed on at least a weekly basis by the Exporter. Data is adjusted to correct gross error when meter/instrumentation equipment malfunction is detected; and to correct for error confirmed by meter accuracy testing. Any data gaps in the archived data are detected and corrected during the weekly review. A coherent data trail exists for this process to protect both the selling and the purchasing Utility.	Conditions between 6 and 8	Continuous Imported supply metered flow data is logged automatically & reviewed each business day by the Exporter. Data is adjusted to correct gross error from detected meter/instrumentation equipment malfunction and/or results of meter accuracy testing. Any data errors/gaps are detected and corrected on a daily basis. A data trail exists for the process to protect both the selling and the purchasing Utility.	Conditions between 8 and 10	Computerized system (SCADA or similar) automatically records data which is reviewed each business day by the Exporter. Tight accountability controls ensure that all error/data gaps that occur in the archived flow data are quickly detected and corrected. A reliable data trail exists and contract provisions for meter testing and data management are reviewed by the selling and purchasing Utility at least once every five years.
Improvements to attain higher data grading for "Water imported master meter and supply error adjustment" component:		to qualify for 2: Develop a plan to restructure recordkeeping system to capture all flow data; set a procedure to review flow data on a daily basis to detect input errors. Obtain more reliable information about existing meters by conducting field inspections of meters and related instrumentation, and obtaining manufacturer literature. Review the written agreement between the selling and purchasing Utility.	to qualify for 4: Install automatic datalogging equipment on Imported supply meters. Set a procedure to review this data on a monthly basis to detect gross anomalies and data gaps. Launch discussions with the Exporters to jointly review terms of the written agreements regarding meter accuracy testing and data management; revise the terms as necessary.		to qualify for 6: Refine computerized data collection and archive to include hourly Imported supply metered flow data that is reviewed at least on a weekly basis to detect specific data anomalies and gaps. Make necessary corrections to errors/data errors on a weekly basis.		to qualify for 8: Ensure that all Imported supply metered flow data is collected and archived on at least an hourly basis. All data is reviewed and errors/data gaps are corrected each business day.		to qualify for 10: Conduct accountability checks to confirm that all Imported supply metered data is reviewed and corrected each business day by the Exporter. Results of all meter accuracy tests and data corrections should be available for sharing between the Exporter and the purchasing Utility. Establish a schedule for a regular review and updating of the contractual language in the written agreement between the selling and the purchasing Utility; at least every five years.		to maintain 10: Monitor meter innovations for development of more accurate and less expensive flowmeters; work with the Exporter to help identify meter replacement needs. Keep communication lines with Exporters open and maintain productive relations. Keep the written agreement current with clear and explicit language that meets the ongoing needs of all parties.
Water Exported:	Select n/a if the water utility sells no bulk water to neighboring water utilities (no exported water sales)	Less than 25% of exported water sources are metered, remaining sources are estimated. No regular meter accuracy testing.	25% - 50% of exported water sources are metered; other sources estimated. No regular meter accuracy testing.	Conditions between 2 and 4	50% - 75% of exported water sources are metered, other sources estimated. Occasional meter accuracy testing conducted.	Conditions between 4 and 6	At least 75% of exported water sources are metered, meter accuracy testing and/or electronic calibration conducted annually. Less than 25% of tested meters are found outside of +/- 6% accuracy.	Conditions between 6 and 8	100% of exported water sources are metered, meter accuracy testing and electronic calibration of related instrumentation is conducted annually, less than 10% of meters are found outside of +/- 6% accuracy	Conditions between 8 and 10	100% of exported water sources are metered, meter accuracy testing and electronic calibration of related instrumentation is conducted semi-annually for all meter installations, with less than 10% of accuracy tests found outside of +/- 3% accuracy.
Improvements to attain higher data grading for "Water Exported Volume" component: *(Note: usually, if the water utility being audited sells (Exports) water to a neighboring purchasing Utility, it is the responsibility of the utility exporting the water to maintain the metering installation measuring the Exported volume. The utility exporting the water should ensure that adequate meter upkeep takes place and an accurate measure of the Water Exported volume is quantified.)*		to qualify for 2: Review bulk water sales agreements with purchasing utilities; confirm requirements for use & upkeep of accurate metering. Identify needs to install new, or replace defective meters as needed.	To qualify for 4: Locate all exported water sources on maps and in field, launch meter accuracy testing for existing meters, begin to install meters on unmetered exported water interconnections and replace obsolete/defective meters		to qualify for 6: Formalize annual meter accuracy testing for all exported water meters. Continue installation of meters on unmetered exported water interconnections and replacement of obsolete/defective meters.		to qualify for 8: Complete project to install new, or replace defective, meters on all exported water interconnections. Maintain annual meter accuracy testing for all exported water meters. Repair or replace meters outside of +/- 6% accuracy.		to qualify for 10: Maintain annual meter accuracy testing for all meters. Repair or replace meters outside of +/- 3% accuracy. Investigate new meter technology; pilot one or more replacements with innovative meters in attempt to improve meter accuracy.		to maintain 10: Standardize meter accuracy test frequency to semi-annual, or more frequent, for all meters. Repair or replace meters outside of +/- 3% accuracy. Continually investigate/pilot improving metering technology.
Water exported master meter and supply error adjustment:	Select n/a only if the water utility fails to have meters on its exported supply interconnections.	Inventory information on exported meters and paper records of measured volumes exist but are incomplete and/or in a very crude condition; data error cannot be determined Written agreement(s) with the utility purchasing the water are missing or written in vague language concerning meter management and testing.	No automatic datalogging of exported supply volumes; daily readings are scribed on paper records without any accountability controls to confirm data accuracy and the absence of errors and data gaps in recorded volumes. Written agreement requires meter accuracy testing but is vague on the details of how and who conducts the testing.	Conditions between 2 and 4	Exported metered flow data is logged automatically in electronic format and reviewed at least on a monthly basis, with necessary corrections implemented. Meter data is adjusted by the utility selling (exporting) the water when gross data errors are detected. A coherent data trail exists for this process to protect both the utility exporting the water and the purchasing Utility. Written agreement exists and clearly states requirements and roles for meter accuracy testing and data management.	Conditions between 4 and 6	Hourly exported supply metered data is logged automatically & reviewed on at least a weekly basis by the utility selling the water. Data is adjusted to correct gross error when meter/instrumentation equipment malfunction is detected; and to correct for error found by meter accuracy testing. Any data gaps in the archived data are detected and corrected during the weekly review. A coherent data trail exists for this process to protect both the selling (exporting) utility and the purchasing Utility.	Conditions between 6 and 8	Continuous exported supply metered flow data is logged automatically & reviewed each business day by the utility selling (exporting) the water. Data is adjusted to correct gross error from detected meter/instrumentation equipment malfunction and any error confirmed by meter accuracy testing. Any data errors/gaps are detected and corrected on a daily basis. A data trail exists for the process to protect both the selling (exporting) Utility and the purchasing Utility.	Conditions between 8 and 10	Computerized system (SCADA or similar) automatically records data which is reviewed each business day by the utility selling (exporting) the water. Tight accountability controls ensure that all error/data gaps that occur in the archived flow data are quickly detected and corrected. A reliable data trail exists and contract provisions for meter testing and data management are reviewed by the selling Utility and purchasing Utility at least once every five years.

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
Improvements to attain higher data grading for "Water exported master meter and supply error adjustment" component:		to qualify for 2: Develop a plan to restructure recordkeeping system to capture all flow data; set a procedure to review flow data on a daily basis to detect input errors. Obtain more reliable information about existing meters by conducting field inspections of meters and related instrumentation, and obtaining manufacturer literature. Review the written agreement between the utility selling (exporting) the water and the purchasing Utility.	to qualify for 4: Install automatic datalogging equipment on exported supply meters. Set a procedure to review this data on a monthly basis to detect gross anomalies and data gaps. Launch discussions with the purchasing utilities to jointly review terms of the written agreements regarding meter accuracy testing and data management; revise the terms as necessary.		to qualify for 6: Refine computerized data collection and archive to include hourly exported supply metered flow data that is reviewed at least on a weekly basis to detect specific data anomalies and gaps. Make necessary corrections to errors/data errors on a weekly basis.		to qualify for 8: Ensure that all exported metered flow data is collected and archived on at least an hourly basis. All data is reviewed and errors/data gaps are corrected each business day.		to qualify for 10: Conduct accountability checks to confirm that all exported metered flow data is reviewed and corrected each business day by the utility selling the water. Results of all meter accuracy tests and data corrections should be available for sharing between the utility and the purchasing Utility. Establish a schedule for a regular review and updating of the contractual language in the written agreements with the purchasing utilities; at least every five years.		to maintain 10: Monitor meter innovations for development of more accurate and less expensive flowmeters; work with the purchasing utilities to help identify meter replacement needs. Keep communication lines with the purchasing utilities open and maintain productive relations. Keep the written agreement current with clear and explicit language that meets the ongoing needs of all parties.
AUTHORIZED CONSUMPTION											
Billed metered:	n/a (not applicable). Select n/a only if the entire customer population is not metered and is billed for water service on a flat or fixed rate basis. In such a case the volume entered must be zero.	Less than 50% of customers with volume-based billings from meter readings; flat or fixed rate billing exists for the majority of the customer population	At least 50% of customers with volume-based billing from meter reads; flat rate billing for others. Manual meter reading is conducted, with less than 50% meter read success rate, remainding accounts' consumption is estimated. Limited meter records, no regular meter testing or replacement. Billing data maintained on paper records, with no auditing.	Conditions between 2 and 4	At least 75% of customers with volume-based, billing from meter reads; flat or fixed rate billing for remaining accounts. Manual meter reading is conducted with at least 50% meter read success rate; consumption for accounts with failed reads is estimated. Purchase records verify age of customer meters; only very limited meter accuracy testing is conducted. Customer meters are replaced only upon complete failure. Computerized billing records exist, but only sporadic internal auditing conducted.	Conditions between 4 and 6	At least 90% of customers with volume-based billing from meter reads; consumption for remaining accounts is estimated. Manual customer meter reading gives at least 80% customer meter reading success rate; consumption for accounts with failed reads is estimated. Good customer meter records eixst, but only limited meter accuracy testing is conducted. Regular replacement is conducted for the oldest meters. Computerized billing records exist with annual auditing of summary statistics conducting by utility personnel.	Conditions between 6 and 8	At least 97% of customers exist with volume-based billing from meter reads. At least 90% customer meter reading success rate; or at least 80% read success rate with planning and budgeting for trials of Automatic Meter Reading (AMR) or Advanced Metering Infrastructure (AMI) in one or more pilot areas. Good customer meter records. Regular meter accuracy testing guides replacement of statistically significant number of meters each year. Routine auditing of computerized billing records for global and detailed statistics occurs annually by utility personnel, and is verified by third party at least once every five years.	Conditions between 8 and 10	At least 99% of customers exist with volume-based billing from meter reads. At least 95% customer meter reading success rate; or minimum 80% meter reading success rate, with Automatic Meter Reading (AMR) or Advanced Metering Infrastructure (AMI) trials underway. Statistically significant customer meter testing and replacement program in place on a continuous basis. Computerized billing with routine, detailed auditing, including field investigation of representative sample of accounts undertaken annually by utility personnel. Audit is conducted by third party auditors at least once every three years.
Improvements to attain higher data grading for "Billed Metered Consumption" component:	If n/a is selected because the customer meter population is unmetered, consider establishing a new policy to meter the customer population and employ water rates based upon metered volumes.	to qualify for 2: Conduct investigations or trials of customer meters to select appropriate meter models. Budget funding for meter installations. Investigate volume based water rate structures.	to qualify for 4: Purchase and install meters on unmetered accounts. Implement policies to improve meter reading success. Catalog meter information during meter read visits to identify age/model of existing meters. Test a minimal number of meters for accuracy. Install computerized billing system.		to qualify for 6: Purchase and install meters on unmetered accounts. Eliminate flat fee billing and establish appropriate water rate structure based upon measured consumption. Continue to achieve verifiable success in removing manual meter reading barriers. Expand meter accuracy testing. Launch regular meter replacement program. Launch a program of annual auditing of global billing statistics by utility personnel.		to qualify for 8: Purchase and install meters on unmetered accounts. If customer meter reading success rate is less than 97%, assess cost-effectiveness of Automatic Meter Reading (AMR) or Advanced Metering Infrastructure (AMI) system for portion or entire system; or otherwise achieve ongoing improvements in manual meter reading success rate to 97% or higher. Refine meter accuracy testing program. Set meter replacement goals based upon accuracy test results. Implement annual auditing of detailed billing records by utility personnel and implement third party auditing at least once every five years.		to qualify for 10: Purchase and install meters on unmetered accounts. Launch Automatic Meter Reading (AMR) or Advanced Metering Infrastructure (AMI) system trials if manual meter reading success rate of at least 99% is not achieved within a five-year program. Continue meter accuracy testing program. Conduct planning and budgeting for large scale meter replacement based upon meter life cycle analysis using cumulative flow target. Continue annual detailed billing data auditing by utility personnel and conduct third party auditing at least once every three years.		to maintain 10: Continue annual internal billing data auditing, and third party auditing at least every three years. Continue customer meter accuracy testing to ensure that accurate customer meter readings are obtained and entered as the basis for volume based billing. Stay abreast of improvements in Automatic Meter Reading (AMR) and Advanced Metering Infrastructure (AMI) and information management. Plan and budget for justified upgrades in metering, meter reading and billing data management to maintain very high accuracy in customer metering and billing.
Billed unmetered:	Select n/a if it is the policy of the water utility to meter all customer connections and it has been confirmed by detailed auditing that all customers do indeed have a water meter; i.e. no intentionally unmetered accounts exist	Water utility policy does not require customer metering; flat or fixed fee billing is employed. No data is collected on customer consumption. The only estimates of customer population consumption available are derived from data estimation methods using average fixture count multiplied by number of connections, or similar approach.	Water utility policy does not require customer metering; flat or fixed fee billing is employed. Some metered accounts exist in parts of the system (pilot areas or District Metered Areas) with consumption read periodically or recorded on portable dataloggers over one, three, or seven day periods. Data from these sample meters are used to infer consumption for the total customer population. Site specific estimation methods are used for unusual buildings/water uses.	Conditions between 2 and 4	Water utility policy does require metering and volume based billing in general. However, a liberal amount of exemptions and a lack of clearly written and communicated procedures result in up to 20% of billed accounts believed to be unmetered by exemption; or the water utility is in transition to becoming fully metered, and a large number of customers remain unmetered. A rough estimate of the annual consumption for all unmetered accounts is included in the annual water audit, with no inspection of individual unmetered accounts.	Conditions between 4 and 6	Water utility policy does require metering and volume based billing but established exemptions exist for a portion of accounts such as municipal buildings. As many as 15% of billed accounts are unmetered due to this exemption or meter installation difficulties. Only a group estimate of annual consumption for all unmetered accounts is included in the annual water audit, with no inspection of individual unmetered accounts.	Conditions between 6 and 8	Water utility policy does require metering and volume based billing for all customer accounts. However, less than 5% of billed accounts remain unmetered because meter installation is hindered by unusual circumstances. The goal is to minimize the number of unmetered accounts. Reliable estimates of consumption are obtained for these unmetered accounts via site specific estimation methods.	Conditions between 8 and 10	Water utility policy does require metering and volume based billing for all customer accounts. Less than 2% of billed accounts are unmetered and exist because meter installation is hindered by unusual circumstances. The goal exists to minimize the number of unmetered accounts to the extent that is economical. Reliable estimates of consumption are obtained at these accounts via site specific estimation methods.

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
Improvements to attain higher data grading for "Billed Unmetered Consumption" component:		to qualify for 2: Conduct research and evaluate cost/benefit of a new water utility policy to require metering of the customer population; thereby greatly reducing or eliminating unmetered accounts. Conduct pilot metering project by installing water meters in small sample of customer accounts and periodically reading the meters or datalogging the water consumption over one, three, or seven day periods.	to qualify for 4: Implement a new water utility policy requiring customer metering. Launch or expand pilot metering study to include several different meter types, which will provide data for economic assessment of full scale metering options. Assess sites with access difficulties to devise means to obtain water consumption volumes. Begin customer meter installation.		to qualify for 6: Refine policy and procedures to improve customer metering participation for all but solidly exempt accounts. Assign staff resources to review billing records to identify errant unmetered properties. Specify metering needs and funding requirements to install sufficient meters to significant reduce the number of unmetered accounts		to qualify for 8: Push to install customer meters on a full scale basis. Refine metering policy and procedures to ensure that all accounts, including municipal properties, are designated for meters. Plan special efforts to address "hard-to-access" accounts. Implement procedures to obtain a reliable consumption estimate for the remaining few unmetered accounts awaiting meter installation.		to qualify for 10: Continue customer meter installation throughout the service area, with a goal to minimize unmetered accounts. Sustain the effort to investigate accounts with access difficulties, and devise means to install water meters or otherwise measure water consumption.		to maintain 10: Continue to refine estimation methods for unmetered consumption and explore means to establish metering, for as many billed remaining unmetered accounts as is economically feasible.
Unbilled metered:	select n/a if all billing-exempt consumption is unmetered.	Billing practices exempt certain accounts, such as municipal buildings, but written policies do not exist; and a reliable count of unbilled metered accounts is unavailable. Meter upkeep and meter reading on these accounts is rare and not considered a priority. Due to poor recordkeeping and lack of auditing, water consumption for all such accounts is purely guesstimated.	Billing practices exempt certain accounts, such as municipal buildings, but only scattered, dated written directives exist to justify this practice. A reliable count of unbilled metered accounts is unavailable. Sporadic meter replacement and meter reading occurs on an as-needed basis. The total annual water consumption for all unbilled, metered accounts is estimated based upon approximating the number of accounts and assigning consumption from actively billed accounts of same meter size.	Conditions between 2 and 4	Dated written procedures permit billing exemption for specific accounts, such as municipal properties, but are unclear regarding certain other types of accounts. Meter reading is given low priority and is sporadic. Consumption is quantified from meter readings where available. The total number of unbilled, unmetered accounts must be estimated along with consumption volumes.	Conditions between 4 and 6	Written policies regarding billing exemptions exist but adherence in practice is questionable. Metering and meter reading for municipal buildings is reliable but sporadic for other unbilled metered accounts. Periodic auditing of such accounts is conducted. Water consumption is quantified directly from meter readings where available, but the majority of the consumption is estimated.	Conditions between 6 and 8	Written policy identifies the types of accounts granted a billing exemption. Customer meter management and meter reading are considered secondary priorities, but meter reading is conducted at least annually to obtain consumption volumes for the annual water audit. High level auditing of billing records ensures that a reliable census of such accounts exists.	Conditions between 8 and 10	Clearly written policy identifies the types of accounts given a billing exemption, with emphasis on keeping such accounts to a minimum. Customer meter management and meter reading for these accounts is given proper priority and is reliably conducted. Regular auditing confirms this. Total water consumption for these accounts is taken from reliable readings from accurate meters.
Improvements to attain higher data grading for "Unbilled Metered Consumption" component:		to qualify for 2: Reassess the water utility's policy allowing certain accounts to be granted a billing exemption. Draft an outline of a new written policy for billing exemptions, with clear justification as to why any accounts should be exempt from billing, and with the intention to keep the number of such accounts to a minimum.	to qualify for 4: Review historic written directives and policy documents allowing certain accounts to be billing-exempt. Draft an outline of a written policy for billing exemptions, identify criteria that grants an exemption, with a goal of keeping this number of accounts to a minimum. Consider increasing the priority of reading meters on unbilled accounts at least annually.		to qualify for 6: Draft a new written policy regarding billing exemptions based upon consensus criteria allowing this occurrence. Assign resources to audit meter records and billing records to obtain census of unbilled metered accounts. Gradually include a greater number of these metered accounts to the routes for regular meter reading.		to qualify for 8: Communicate billing exemption policy throughout the organization and implement procedures that ensure proper account management. Conduct inspections of accounts confirmed in unbilled metered status and verify that accurate meters exist and are scheduled for routine meter readings. Gradually increase the number of unbilled metered accounts that are included in regular meter reading routes.		to qualify for 10: Ensure that meter management (meter accuracy testing, meter replacement) and meter reading activities for unbilled accounts are accorded the same priority as billed accounts. Establish ongoing annual auditing process to ensure that water consumption is reliably collected and provided to the annual water audit process.		to maintain 10: Reassess the utility's philosophy in allowing any water uses to go "unbilled". It is possible to meter and bill all accounts, even if the fee charged for water consumption is discounted or waived. Metering and billing all accounts ensures that water consumption is tracked and water waste from plumbing leaks is detected and minimized.
Unbilled unmetered:		Extent of unbilled, unmetered consumption is unknown due to unclear policies and poor recordkeeping. Total consumption is quantified based upon a purely subjective estimate.	Clear extent of unbilled, unmetered consumption is unknown, but a number of events are randomly documented each year, confirming existence of such consumption, but without sufficient documentation to quantify an accurate estimate of the annual volume consumed.	Conditions between 2 and 4	Extent of unbilled, unmetered consumption is partially known, and procedures exist to document certain events such as miscellaneous fire hydrant uses. Formulae is used to quantify the consumption from such events (time running multiplied by typical flowrate, multiplied by number of events).	Default value of 1.25% of system input volume is employed	Coherent policies exist for some forms of unbilled, unmetered consumption but others await closer evaluation. Reasonable recordkeeping for the managed uses exists and allows for annual volumes to be quantified by inference, but unsupervised uses are guesstimated.	Conditions between 6 and 8	Clear policies and good recordkeeping exist for some uses (ex: water used in periodic testing of unmetered fire connections), but other uses (ex: miscellaneous uses of fire hydrants) have limited oversight. Total consumption is a mix of well quantified use such as from formulae (time running multiplied by typical flow, multiplied by number of events) or temporary meters, and relatively subjective estimates of less regulated use.	Conditions between 8 and 10	Clear policies exist to identify permitted use of water in unbilled, unmetered fashion, with the intention of minimizing this type of consumption. Good records document each occurrence and consumption is quantified via formulae (time running multiplied by typical flow, multiplied by number of events) or use of temporary meters.
Improvements to attain higher data grading for "Unbilled Unmetered Consumption" component:		to qualify for 5: Utilize the accepted default value of 1.25% of the volume of water supplied as an expedient means to gain a reasonable quantification of this use. to qualify for 2: Establish a policy regarding what water uses should be allowed to remain as unbilled and unmetered. Consider tracking a small sample of one such use (ex: fire hydrant flushings).	to qualify for 5: Utilize accepted default value of 1.25% of the volume of water supplied as an expedient means to gain a reasonable quantification of this use. to qualify for 4: Evaluate the documentation of events that have been observed. Meet with user groups (ex: for fire hydrants - fire departments, contractors to ascertain their need and/or volume requirements for water from fire hydrants).		to qualify for 5: Utilize accepted default value of 1.25% of the volume of water supplied as an expedient means to gain a reasonable quantification of all such use. This is particularly appropriate for water utilities who are in the early stages of the water auditing process, and should focus on other components since the volume of unbilled, umetered consumption is usually a relatively small quatity component, and other larger-quantity components should take priority.	to qualify for 6 or greater: Finalize policy and begin to conduct field checks to better establish and quantify such usage. Proceed if top-down audit exists and/or a great volume of such use is suspected.	to qualify for 8: Assess water utility policy and procedures for various unmetered usages. For example, ensure that a policy exists and permits are issued for use of fire hydrants by persons outside of the utility. Create written procedures for use and documentation of fire hydrants by water utility personnel. Use same approach for other types of unbilled, unmetered water usage.		to qualify for 10: Refine written procedures to ensure that all uses of unbilled, unmetered water are overseen by a structured permitting process managed by water utility personnel. Reassess policy to determine if some of these uses have value in being converted to billed and/or metered status.		to maintain 10: Continue to refine policy and procedures with intention of reducing the number of allowable uses of water in unbilled and unmetered fashion. Any uses that can feasibly become billed and metered should be converted eventually.
APPARENT LOSSES											

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
Unauthorized consumption:		Extent of unauthorized consumption is unknown due to unclear policies and poor recordkeeping. Total unauthorized consumption is guesstimated.	Unauthorized consumption is a known occurrence, but its extent is a mystery. There are no requirements to document observed events, but periodic field reports capture some of these occurrences. Total unauthorized consumption is approximated from this limited data.	conditions between 2 and 4	Procedures exist to document some unauthorized consumption such as observed unauthorized fire hydrant openings. Use formulae to quantify this consumption (time running multiplied typical flowrate, multiplied by number of events).	Default value of 0.25% of volume of water supplied is employed	Coherent policies exist for some forms of unauthorized consumption (more than simply fire hydrant misuse) but others await closer evaluation. Reasonable surveillance and recordkeeping exist for occurrences that fall under the policy. Volumes quantified by inference from these records.	Conditions between 6 and 8	Clear policies and good auditable recordkeeping exist for certain events (ex: tampering with water meters, illegal bypasses of customer meters); but other occurrences have limited oversight. Total consumption is a combination of volumes from formulae (time x typical flow) and subjective estimates of unconfirmed consumption.	Conditions between 8 and 10	Clear policies exist to identify all known unauthorized uses of water. Staff and procedures exist to provide enforcement of policies and detect violations. Each occurrence is recorded and quantified via formulae (estimated time running multiplied by typical flow) or similar methods. All records and calculations should exist in a form that can be audited by a third party.
Improvements to attain higher data grading for "Unauthorized Consumption" component:		to qualify for 5: Use accepted default of 0.25% of volume of water supplied. to qualify for 2: Review utility policy regarding what water uses are considered unauthorized, and consider tracking a small sample of one such occurrence (ex: unauthorized fire hydrant openings)	to qualify for 5: Use accepted default of 0.25% of system input volume to qualify for 4: Review utility policy regarding what water uses are considered unauthorized, and consider tracking a small sample of one such occurrence (ex: unauthorized fire hydrant openings)		to qualify for 5: Utilize accepted default value of 0.25% of volume of water supplied as an expedient means to gain a reasonable quantification of all such use. This is particularly appropriate for water utilities who are in the early stages of the water auditing process.	to qualify for 6 or greater: Finalize policy updates to clearly identify the types of water consumption that are authorized from those usages that fall outside of this policy and are, therefore, unauthorized. Begin to conduct regular field checks. Proceed if the top-down audit already exists and/or a great volume of such use is suspected.	to quality for 8: Assess water utility policies to ensure that all known occurrences of unauthorized consumption are outlawed, and that appropriate penalties are prescribed. Create written procedures for detection and documentation of various occurrences of unauthorized consumption as they are uncovered.		to qualify for 10: Refine written procedures and assign staff to seek out likely occurrences of unauthorized consumption. Explore new locking devices, monitors and other technologies designed to detect and thwart unauthorized consumption.		to maintain 10: Continue to refine policy and procedures to eliminate any loopholes that allow or tacitly encourage unauthorized consumption. Continue to be vigilant in detection, documentation and enforcement efforts.
Customer metering inaccuracies:	select n/a only if the entire customer population is unmetered. In such a case the volume entered must be zero.	Customer meters exist, but with unorganized paper records on meters; no meter accuracy testing or meter replacement program for any size of retail meter. Metering workflow is driven chaotically with no proactive management. Loss volume due to aggregate meter inaccuracy is guesstimated.	Poor recordkeeping and meter oversight is recognized by water utility management who has allotted staff and funding resources to organize improved recordkeeping and start meter accuracy testing. Existing paper records gathered and organized to provide cursory disposition of meter population. Customer meters are tested for accuracy only upon customer request.	Conditions between 2 and 4	Reliable recordkeeping exists; meter information is improving as meters are replaced. Meter accuracy testing is conducted annually for a small number of meters (more than just customer requests, but less than 1% of inventory). A limited number of the oldest meters are replaced each year. Inaccuracy volume is largely an estimate, but refined based upon limited testing data.	Conditions between 4 and 6	A reliable electronic recordkeeping system for meters exists. The meter population includes a mix of new high performing meters and dated meters with suspect accuracy. Routine, but limited, meter accuracy testing and meter replacement occur. Inaccuracy volume is quantified using a mix of reliable and less certain data.	Conditions between 6 and 8	Ongoing meter replacement and accuracy testing result in highly accurate customer meter population. Testing is conducted on samples of meters of varying age and accumulated volume of throughput to determine optimum replacement time for various types of meters.	Ongoing meter replacement and accuracy testing result in highly accurate customer meter population. Statistically significant number of meters are tested in audit year. This testing is conducted on samples of meters of varying age and accumulated volume of throughput to determine optimum replacement time for these meters.	Good records of all active customer meters exist and include as a minimum: meter number, account number/location, type, size and manufacturer. Ongoing meter replacement occurs according to a targeted and justified basis. Regular meter accuracy testing gives a reliable measure of composite inaccuracy volume for the customer meter population. New metering technology is embraced to keep overall accuracy improving. Procedures are reviewed by a third party knowledgeable in the M36 methodology.
Improvements to attain higher data grading for "Customer meter inaccuracy volume" component:	If n/a is selected because the customer meter population is unmetered, consider establishing a new policy to meter the customer population and employ water rates based upon metered volumes.	to qualify for 2: Gather available meter purchase records. Conduct testing on a small number of meters believed to be the most inaccurate. Review staffing needs of the metering group and budget for necessary resources to better organize meter management.	to qualify for 4: Implement a reliable record keeping system for customer meter histories, preferably using electronic methods typically linked to, or part of, the Customer Billing System or Customer Information System. Expand meter accuracy testing to a larger group of meters.		to qualify for 6: Standardize the procedures for meter recordkeeping within an electronic information system. Accelerate meter accuracy testing and meter replacements guided by testing results.		to qualify for 8: Expand annual meter accuracy testing to evaluate a statistically significant number of meter makes/models. Expand meter replacement program to replace statistically significant number of poor performing meters each year.		to qualify for 9: Continue efforts to manage meter population with reliable recordkeeping. Test a statistically significant number of meters each year and analyze test results in an ongoing manner to serve as a basis for a target meter replacement strategy based upon accumulated volume throughput.	to qualify for 10: Continue efforts to manage meter population with reliable recordkeeping, meter testing and replacement. Evaluate new meter types and install one or more types in 5-10 customer accounts each year in order to pilot improving metering technology.	to maintain 10: Increase the number of meters tested and replaced as justified by meter accuracy test data. Continually monitor development of new metering technology and Advanced Metering Infrastructure (AMI) to grasp opportunities for greater accuracy in metering of water flow and management of customer consumption data.

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
Systematic Data Handling Errors:	Note: all water utilities incur some amount of this error. Even in water utilities with unmetered customer populations and fixed rate billing, errors occur in annual billing tabulations. Enter a positive value for the volume and select a grading.	Policies and procedures for activation of new customer water billing accounts are vague and lack accountability. Billing data is maintained on paper records which are not well organized. No auditing is conducted to confirm billing data handling efficiency. An unknown number of customers escape routine billing due to lack of billing process oversight.	Policy and procedures for activation of new customer accounts and oversight of billing records exist but need refinement. Billing data is maintained on paper records or insufficiently capable electronic database. Only periodic unstructured auditing work is conducted to confirm billing data handling efficiency. The volume of unbilled water due to billing lapses is a guess.	Conditions between 2 and 4	Policy and procedures for new account activation and oversight of billing operations exist but needs refinement. Periodic, limited internal audits conducted and confirm with approximate accuracy the consumption volumes lost to billing lapses.	Conditions between 4 and 6	Policy and procedures for new account activation and oversight of billing operations is adequate and reviewed periodically. Computerized billing system is in use with basic reporting available. Any effect of billing adjustments on measured consumption volumes is well understood. Internal checks of billing data error conducted annually. Reasonably accurate quantification of consumption volume lost to billing lapses is obtained.	Conditions between 6 and 8	New account activation and billing operations policy and procedures are reviewed at least biannually. Computerized billing system includes an array of reports to confirm billing data and system functionality. Checks are conducted routinely to flag and explain zero consumption accounts. Annual internal checks conducted with third party audit conducted at least once every five years. Accountability checks flag billing lapses. Consumption lost to billing lapses is well quantified and reducing year-by-year.	Conditions between 8 and 10	Sound written policy and procedures exist for new account activation and oversight of customer billing operations. Robust computerized billing system gives high functionality and reporting capabilities which are utilized, analyzed and the results reported each billing cycle. Assessment of policy and data handling errors are conducted internally and audited by third party at least once every three years, ensuring consumption lost to billing lapses is minimized and detected as it occurs.
Improvements to attain higher data grading for "Systematic Data Handling Error volume" component:		to qualify for 2: Draft written policy and procedures for activating new water billing accounts and oversight of billing operations. Investigate and budget for computerized customer billing system. Conduct initial audit of billing records by flow-charting the basic business processes of the customer account/billing function.	to qualify for 4: Finalize written policy and procedures for activation of new billing acocunts and overall billing operations management. Implement a computerized customer billing system. Conduct initial audit of billing records as part of this process.		to qualify for 6: Refine new account activation and billing operations procedures and ensure consistency with the utility policy regarding billing, and minimize opportunity for missed billings. Upgrade or replace customer billing system for needed functionality - ensure that billing adjustments don't corrupt the value of consumption volumes. Procedurize internal annual audit process.		to qualify for 8: Formalize regular review of new account activation process and general billing practices. Enhance reporting capability of computerized billing system. Formalize regular auditing process to reveal scope of data handling error. Plan for periodic third party audit to occur at least once every five years.		to qualify for 10: Close policy/procedure loopholes that allow some customer accounts to go unbilled, or data handling errors to exist. Ensure that billing system reports are utilized, analyzed and reported every billing cycle. Ensure that internal and third party audits are conducted at least once every three years.		to maintain 10: Stay abreast of customer information management developments and innovations. Monitor developments of Advanced Metering Infrastructure (AMI) and integrate technology to ensure that customer endpoint information is well-monitored and errors/lapses are at an economic minimum.
SYSTEM DATA											
Length of mains:		Poorly assembled and maintained paper as-built records of existing water main installations makes accurate determination of system pipe length impossible. Length of mains is guesstimated.	Paper records in poor or uncertain condition (no annual tracking of installations & abandonments). Poor procedures to ensure that new water mains installed by developers are accurately documented.	Conditions between 2 and 4	Sound written policy and procedures exist for documenting new water main installations, but gaps in management result in a uncertain degree of error in tabulation of mains length.	Conditions between 4 and 6	Sound written policy and procedures exist for permitting and commissioning new water mains. Highly accurate paper records with regular field validation; or electronic records and asset management system in good condition. Includes system backup.	Conditions between 6 and 8	Sound written policy and procedures exist for permitting and commissioning new water mains. Electronic recordkeeping such as a Geographical Information System (GIS) and asset management system are used to store and manage data.	Conditions between 8 and 10	Sound written policy exists for managing water mains extensions and replacements. Geographic Information System (GIS) data and asset management database agree and random field validation proves truth of databases. Records of annual field validation should be available for review.
Improvements to attain higher data grading for "Length of Water Mains" component:		to qualify for 2: Assign personnel to inventory current as-built records and compare with customer billing system records and highway plans in order to verify poorly documented pipelines. Assemble policy documents regarding permitting and documentation of water main installations by the utility and building developers; identify gaps in procedures that result in poor documentation of new water main installations.	to qualify for 4: Complete inventory of paper records of water main installations for several years prior to audit year. Review policy and procedures for commissioning and documenting new water main installation.		to qualify for 6: Finalize updates/improvements to written policy and procedures for permitting/commissioning new main installations. Confirm inventory of records for five years prior to audit year; correct any errors or omissions.		to qualify for 8: Launch random field checks of limited number of locations. Convert to electronic database such as a Geographic Information System (GIS) with backup as justified. Develop written policy and procedures.		to qualify for 10: Link Geographic Information System (GIS) and asset management databases, conduct field verification of data. Record field verification information at least annually.		to maintain 10: Continue with standardization and random field validation to improve the completeness and accuracy of the system.
Number of active AND inactive service connections:		Vague permitting (of new service connections) policy and poor paper recordkeeping of customer connections/billings result in suspect determination of the number of service connections, which may be 10-15% in error from actual count.	General permitting policy exists but paper records, procedural gaps, and weak oversight result in questionable total for number of connections, which may vary 5-10% of actual count.	Conditions between 2 and 4	Written account activation policy and procedures exist, but with some gaps in performance and oversight. Computerized information management system is being brought online to replace dated paper recordkeeping system. Reasonably accurate tracking of service connection installations & abandonments; but count can be up to 5% in error from actual total.	Conditions between 4 and 6	Written new account activation and overall billing policies and procedures are adequate and reviewed periodically. Computerized information management system is in use with annual installations & abandonments totaled. Very limited field verifications and audits. Error in count of number of service connections is believed to be no more than 3%.	Conditions between 6 and 8	Policies and procedures for new account activation and overall billing operations are written, well-structured and reviewed at least biannually. Well-managed computerized information management system exists and routine, periodic field checks and internal system audits are conducted. Counts of connections are no more than 2% in error.	Conditions between 8 and 10	Sound written policy and well managed and audited procedures ensure reliable management of service connection population. Computerized information management system, Customer Billing System, and Geographic Information System (GIS) information agree; field validation proves truth of databases. Count of connections recorded as being in error is less than 1% of the entire population.
Improvements to attain higher data grading for "Number of Active and Inactive Service Connections" component:	**Note: The number of Service Connections does <u>not</u> include fire hydrant leads/lines connecting the hydrant to the water main**	to qualify for 2: Draft new policy and procedures for new account activation and overall billing operations. Research and collect paper records of installations & abandonments for several years prior to audit year.	to qualify for 4: Refine policy and procedures for new account activation and overall billing operations. Research computerized recordkeeping system (Customer Information System or Customer Billing System) to improve documentation format for service connections.		to qualify for 6: Refine procedures to ensure consistency with new account activation and overall billing policy to establish new service connections or decommission existing connections. Improve process to include all totals for at least five years prior to audit year.		to qualify for 8: Formalize regular review of new account activation and overall billing operations policies and procedures. Launch random field checks of limited number of locations. Develop reports and auditing mechanisms for computerized information management system.		to qualify for 10: Close any procedural loopholes that allow installations to go undocumented. Link computerized information management system with Geographic Information System (GIS) and formalize field inspection and information system auditing processes. Documentation of new or decommissioned service connections encounters several levels of checks and balances.		to maintain 10: Continue with standardization and random field validation to improve knowledge of system.
	Note: if customer water	Gradings 1-9 apply if customer properties are unmetered, if customer meters exist and are located inside the customer building premises, or if the water utility owns and is responsible for the entire service connection piping from the water main to the customer building. In any of these cases the average distance between the curb stop or boundary separating utility/customer responsibility for service connection piping, and the typical first point of use (ex: faucet) or the customer meter must be quantified. Gradings of 1-9 are used to grade the validity of the means to quantify this value. (See the "Service Connection Diagram" worksheet)									Either of two conditions can be met for a grading of 10:

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
Average length of customer service line:	meters are located outside of the customer building next to the curb stop or boundary separating utility/customer responsibility, then the auditor should answer "Yes" to the question on the Reporting Worksheet asking about this. If the answer is Yes, the grading description listed under the Grading of 10(a) will be followed, with a value of zero automatically entered at a Grading of 10. See the Service Connection Diagram worksheet for a visual presentation of this distance.	Vague policy exists to define the delineation of water utility ownership and customer ownership of the service connection piping. Curb stops are perceived as the breakpoint but these have not been well-maintained or documented. Most are buried or obscured. Their location varies widely from site-to-site, and estimating this distance is arbitrary due to the unknown location of many curb stops.	Policy requires that the curb stop serves as the delineation point between water utility ownership and customer ownership of the service connection piping. The piping from the water main to the curb stop is the property of the water utility; and the piping from the curb stop to the customer building is owned by the customer. Curb stop locations are not well documented and the average distance is based upon a limited number of locations measured in the field.	Conditions between 2 and 4	Good policy requires that the curb stop serves as the delineation point between water utility ownership and customer ownership of the service connection piping. Curb stops are generally installed as needed and are reasonably documented. Their location varies widely from site-to-site, and an estimate of this distance is hindered by the availability of paper records of limited accuracy.	Conditions between 4 and 6	Clear written policy exists to define utility/customer responsibility for service connection piping. Accurate, well-maintained paper or basic electronic recordkeeping system exists. Periodic field checks confirm piping lengths for a sample of customer properties.	Conditions between 6 and 8	Clearly worded policy standardizes the location of curb stops and meters, which are inspected upon installation. Accurate and well maintained electronic records exist with periodic field checks to confirm locations of service lines, curb stops and customer meter pits. An accurate number of customer properties from the customer billing system allows for reliable averaging of this length.	Conditions between 8 and 10	a) Customer water meters exist outside of customer buildings next to the curb stop or boundary separating utility/customer responsibility for service connection piping. If so, answer "Yes" to the question on the Reporting Working asking about this condition. A value of zero and a Grading of 10 are automatically entered in the Reporting Worksheet . b). Meters exist inside customer buildings, or properties are unmetered. In either case, answer "No" to the Reporting Worksheet question on meter location, and enter a distance determined by the auditor. For a Grading of 10 this value must be a very reliable number from a Geographic Information System (GIS) and confirmed by a statistically valid number of field checks.
Improvements to attain higher data grading for "Average Length of Customer Service Line" component:		to qualify for 2: Research and collect paper records of service line installations. Inspect several sites in the field using pipe locators to locate curb stops. Obtain the length of this small sample of connections in this manner.	to qualify for 4: Formalize and communicate policy delineating utility/customer responsibilities for service connection piping. Assess accuracy of paper records by field inspection of a small sample of service connections using pipe locators as needed. Research the potential migration to a computerized information management system to store service connection data.		to qualify for 6: Establish coherent procedures to ensure that policy for curb stop, meter installation and documentation is followed. Gain consensus within the water utility for the establishment of a computerized information management system.		to qualify for 8: Implement an electronic means of recordkeeping, typically via a customer information system, customer billing system, or Geographic Information System (GIS). Standardize the process to conduct field checks of a limited number of locations.		to qualify for 10: Link customer information management system and Geographic Information System (GIS), standardize process for field verification of data.		to maintain 10: Continue with standardization and random field validation to improve knowledge of service connection configurations and customer meter locations.
Average operating pressure:		Available records are poorly assembled and maintained paper records of supply pump characteristics and water distribution system operating conditions. Average pressure is guesstimated based upon this information and ground elevations from crude topographical maps. Widely varying distribution system pressures due to undulating terrain, high system head loss and weak/erratic pressure controls further compromise the validity of the average pressure calculation.	Limited telemetry monitoring of scattered pumping station and water storage tank sites provides some static pressure data, which is recorded in handwritten logbooks. Pressure data is gathered at individual sites only when low pressure complaints arise. Average pressure is determined by averaging relatively crude data, and is affected by significant variation in ground elevations, system head loss and gaps in pressure controls in the distribution system.	Conditions between 2 and 4	Effective pressure controls separate different pressure zones; moderate pressure variation across the system, occasional open boundary valves are discovered that breech pressure zones. Basic telemetry monitoring of the distribution system logs pressure data electronically. Pressure data gathered by gauges or dataloggers at fire hydrants or buildings when low pressure complaints arise, and during fire flow tests and system flushing. Reliable topographical data exists. Average pressure is calculated using this mix of data.	Conditions between 4 and 6	Reliable pressure controls separate distinct pressure zones; only very occasional open boundary valves are encountered that breech pressure zones. Well-covered telemetry monitoring of the distribution system (not just pumping at source treatment plants or wells) logs extensive pressure data electronically. Pressure gathered by gauges/dataloggers at fire hydrants and buildings when low pressure complaints arise, and during fire flow tests and system flushing. Average pressure is determined by using this mix of reliable data.	Conditions between 6 and 8	Well-managed, discrete pressure zones exist with generally predictable pressure fluctuations. A current full-scale SCADA System or similar realtime monitoring system exists to monitor the water distribution system and collect data, including real time pressure readings at representative sites across the system. The average system pressure is determined from reliable monitoring system data.	Conditions between 8 and 10	Well-managed pressure districts/zones, SCADA System and hydraulic model exist to give very precise pressure data across the water distribution system. Average system pressure is reliably calculated from extensive, reliable, and cross-checked data. Calculations are reported on an annual basis as a minimum.
Improvements to attain higher data grading for "Average Operating Pressure" component:		to qualify for 2: Employ pressure gauging and/or datalogging equipment to obtain pressure measurements from fire hydrants. Locate accurate topographical maps of service area in order to confirm ground elevations. Research pump data sheets to find pump pressure/flow characteristics	to qualify for 4: Formalize a procedure to use pressure gauging/datalogging equipment to gather pressure data during various system events such as low pressure complaints, or operational testing. Gather pump pressure and flow data at different flow regimes. Identify faulty pressure controls (pressure reducing valves, altitude valves, partially open boundary valves) and plan to properly configure pressure zones. Make all pressure data from these efforts available to generate system-wide average pressure.		to qualify for 6: Expand the use of pressure gauging/datalogging equipment to gather scattered pressure data at a representative set of sites, based upon pressure zones or areas. Utilize pump pressure and flow data to determine supply head entering each pressure zone or district. Correct any faulty pressure controls (pressure reducing valves, altitude valves, partially open boundary valves) to ensure properly configured pressure zones. Use expanded pressure dataset from these activities to generate system-wide average pressure.		to qualify for 8: Install a Supervisory Control and Data Acquisition (SCADA) System, or similar realtime monitoring system, to monitor system parameters and control operations. Set regular calibration schedule for instrumentation to insure data accuracy. Obtain accurate topographical data and utilize pressure data gathered from field surveys to provide extensive, reliable data for pressure averaging.		to qualify for 10: Annually, obtain a system-wide average pressure value from the hydraulic model of the distribution system that has been calibrated via field measurements in the water distribution system and confirmed in comparisons with SCADA System data.		to maintain 10: Continue to refine the hydraulic model of the distribution system and consider linking it with SCADA System for real-time pressure data calibration, and averaging.

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
COST DATA											
Total annual cost of operating water system:		Incomplete paper records and lack of financial accounting documentation on many operating functions makes calculation of water system operating costs a pure guesstimate	Reasonably maintained, but incomplete, paper or electronic accounting provides data to estimate the major portion of water system operating costs.	Conditions between 2 and 4	Electronic, industry-standard cost accounting system in place. However, gaps in data are known to exist, periodic internal reviews are conducted but not a structured financial audit.	Conditions between 4 and 6	Reliable electronic, industry-standard cost accounting system in place, with all pertinent water system operating costs tracked. Data audited periodically by utility personnel, but not a Certified Public Accountant (CPA).	Conditions between 6 and 8	Reliable electronic, industry-standard cost accounting system in place, with all pertinent water system operating costs tracked. Data audited at least annually by utility personnel, and at least once every three years by third-party CPA.	Conditions between 8 and 10	Reliable electronic, industry-standard cost accounting system in place, with all pertinent water system operating costs tracked. Data audited annually by utility personnel and annually also by third-party CPA.
Improvements to attain higher data grading for "Total Annual Cost of Operating the Water System" component:		to qualify for 2: Gather available records, institute new financial accounting procedures to regularly collect and audit basic cost data of most important operations functions.	to qualify for 4: Implement an electronic cost accounting system, structured according to accounting standards for water utilities		to qualify for 6: Establish process for periodic internal audit of water system operating costs; identify cost data gaps and institute procedures for tracking these outstanding costs.		to qualify for 8: Standardize the process to conduct routine financial audit on an annual basis. Arrange for CPA audit of financial records at least once every three years.		to qualify for 10: Standardize the process to conduct a third-party financial audit by a CPA on an annual basis.		to maintain 10: Maintain program, stay abreast of expenses subject to erratic cost changes and long-term cost trend, and budget/track costs proactively
Customer retail unit cost (applied to Apparent Losses):	Customer population unmetered, and/or only a fixed fee is charged for consumption.	Antiquated, cumbersome water rate structure is used, with periodic historic amendments that were poorly documented and implemented; resulting in classes of customers being billed inconsistent charges. The actual composite billing rate likely differs significantly from the published water rate structure, but a lack of auditing leaves the degree of error indeterminate.	Dated, cumbersome water rate structure, not always employed consistently in actual billing operations. The actual composite billing rate is known to differ from the published water rate structure, and a reasonably accurate estimate of the degree of error is determined, allowing a composite billing rate to be quantified.	Conditions between 2 and 4	Straight-forward water rate structure in use, but not updated in several years. Billing operations reliably employ the rate structure. The composite billing rate is derived from a single customer class such as residential customer accounts, neglecting the effect of different rates from varying customer classes.	Conditions between 4 and 6	Clearly written, up-to-date water rate structure is in force and is applied reliably in billing operations. Composite customer rate is determined using a weighted average residential rate using volumes of water in each rate block.	Conditions between 6 and 8	Effective water rate structure is in force and is applied reliably in billing operations. Composite customer rate is determined using a weighted average composite consumption rate, which includes residential, commercial, industrial, institutional (CII), and any other distinct customer classes within the water rate structure.	Conditions between 8 and 10	Current, effective water rate structure is in force and applied reliably in billing operations. The rate structure and calculations of composite rate - which includes residential, commercial, industrial, institutional (CII), and other distinct customer classes - are reviewed by a third party knowledgeable in the M36 methodology at least once every five years.
Improvements to attain higher data grading for "Customer Retail Unit Cost" component:		to qualify for 2: Formalize the process to implement water rates, including a secure documentation procedure. Create a current, formal water rate document and gain approval from all stakeholders.	to qualify for 4: Review the water rate structure and update/formalize as needed. Assess billing operations to ensure that actual billing operations incorporate the established water rate structure.		to qualify for 6: Evaluate volume of water used in each usage block by residential users. Multiply volumes by full rate structure.	Launch effort to fully meter the customer population and charge rates based upon water volumes	to qualify for 8: Evaluate volume of water used in each usage block by all classifications of users. Multiply volumes by full rate structure.		to qualify for 10: Conduct a periodic third-party audit of water used in each usage block by all classifications of users. Multiply volumes by full rate structure.		to maintain 10: Keep water rate structure current in addressing the water utility's revenue needs. Update the calculation of the customer unit rate as new rate components, customer classes, or other components are modified.
Variable production cost (applied to Real Losses):	Note: if the water utility purchases/imports its entire water supply, then enter the unit purchase cost of the bulk water supply in the Reporting Worksheet with a grading of 10	Incomplete paper records and lack of documentation on primary operating functions (electric power and treatment costs most importantly) makes calculation of variable production costs a pure guesstimate	Reasonably maintained, but incomplete, paper or electronic accounting provides data to roughly estimate the basic operations costs (pumping power costs and treatment costs) and calculate a unit variable production cost.	Conditions between 2 and 4	Electronic, industry-standard cost accounting system in place. Electric power and treatment costs are reliably tracked and allow accurate weighted calculation of unit variable production costs based on these two inputs and water imported purchase costs (if applicable). All costs are audited internally on a periodic basis.	Conditions between 4 and 6	Reliable electronic, industry-standard cost accounting system in place, with all pertinent water system operating costs tracked. Pertinent additional costs beyond power, treatment and water imported purchase costs (if applicable) such as liability, residuals management, wear and tear on equipment, impending expansion of supply, are included in the unit variable production cost, as applicable. The data is audited at least annually by utility personnel.	Conditions between 6 and 8	Reliable electronic, industry-standard cost accounting system in place, with all pertinent primary and secondary variable production and water imported purchase (if applicable) costs tracked. The data is audited at least annually by utility personnel, and at least once every three years by a third-party knowledgeable in the M36 methodology.	Conditions between 8 and 10	Either of two conditions can be met to obtain a grading of 10: 1) Third party CPA audit of all pertinent primary and secondary variable production and water imported purchase (if applicable) costs on an annual basis. or: 2) Water supply is entirely purchased as bulk water imported, and the unit purchase cost - including all applicable marginal supply costs - serves as the variable production cost. If all applicable marginal supply costs are not included in this figure, a grade of 10 should not be selected.
Improvements to attain higher data grading for "Variable Production Cost" component:		to qualify for 2: Gather available records, institute new procedures to regularly collect and audit basic cost data and most important operations functions.	to qualify for 4: Implement an electronic cost accounting system, structured according to accounting standards for water utilities		to qualify for 6: Formalize process for regular internal audits of production costs. Assess whether additional costs (liability, residuals management, equipment wear, impending infrastructure expansion) should be included to calculate a more representative variable production cost.		to qualify for 8: Formalize the accounting process to include direct cost components (power, treatment) as well as indirect cost components (liability, residuals management, etc.) Arrange to conduct audits by a knowledgable third-party at least once every three years.		to qualify for 10: Standardize the process to conduct a third-party financial audit by a CPA on an annual basis.		to maintain 10: Maintain program, stay abreast of expenses subject to erratic cost changes and budget/track costs proactively

APPENDIX E CWA WATER RELATED ORDINANCES

Resolution No. XX-XXX

**RESOLUTION OF THE CITY COUNCIL
OF THE CITY OF COACHELLA
COUNTY OF RIVERSIDE, STATE OF CALIFORNIA
ADOPTING AND AUTHORIZING IMPLEMENTATION OF
WATER SHORTAGE STAGE ___ OF THE WATER SHORTAGE CONTINGENCY PLAN**

WHEREAS, the City's Water Shortage Contingency Plan establishes Water Conservation Measures to be implemented when demand for water consumption threatens to exceed the City's available supply of water to the consumer, provided there are not immediate resources available to remedy the situation.

WHEREAS, the City's Water Shortage Contingency Plan establishes water conservation stages and penalties for violations of mandatory conservation measures to be enacted during a declared water shortage.

WHEREAS, the City Council of the City of Coachella is authorized to direct implementation of the applicable provisions of the Water Shortage Contingency Plan upon determination that such implementation is necessary to protect the public health, welfare and safety.

WHEREAS, the City Council of the City of Coachella hereby finds that a water shortage exists within the City's water service area.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF COACHELLA that for the reasons hearin above set forth, the foregoing Resolution No. XX-XXXX, implementing the Water Shortage Stage ___ of the Water Shortage Contingency Plan for the purpose of conserving water consumption within the City's water service area is approved and adopted by the City Council of the City of Coachella this ____ day of _____ 20__.

_____
MAYOR OF THE CITY OF COACHELLA

ATTEST:

_____
CITY CLERK OF THE CITY OF COACHELLA

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding ("MOU") is entered into this 9 day of September 2009 ("Effective Date"), by and between the City of Coachella, a general law city in California ("City") and Coachella Valley Water District, a public agency of the State of California ("CVWD"). Each party hereto may be hereafter referred to individually as a "Party" or collectively as the "Parties."

RECITALS

A. Whereas CVWD and City recognize that the Whitewater River Groundwater Basin is in a state of overdraft, and that Coachella Valley water purveyors must act together to ensure that the Coachella Valley has sufficient water supplies to meet its current and future demands;

B. Whereas, Coachella Valley Water Management Plan ("CVWMP") was adopted to provide for management of the water supplies to meet the water needs of the Coachella Valley and correct the overdraft of the groundwater basin, and

C. Whereas, the CVWMP planning period is thirty-five years in the future, and is updated each five years, and

D. Whereas the District is currently conducting the first five-year update to the CVWMP,

E. Whereas, the CVWMP relies on water conservation, source water substitution and supplemental water supplies to meet the areas water needs, and

F. Whereas the City is a municipal water supplier which pumps water from the Whitewater River Groundwater Basin, and

G. Whereas the City through its General Plan recognized and supports the CVWMP including water conservation, source water substitution and supplemental water supplies water to meet the areas water needs, and

H. Whereas, the City desires to insure a reliable water supply within its Sphere of Influence through actions consistent with the CVWMP, and

I. Whereas the City desires to provide for its fair share of supplemental water for developments approved by the City or served by the City's water system, and

J. Whereas the City desires to provide water service to future developments with water needs that were not included in the current CVWMP, and

K. The Parties desire to enter certain understandings with respect to insuring reliable long-term water supplies.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties agree as follows:

1. The City agrees to:

   (a) Undertake measures effective to satisfy the water conservation goals of the CVWMP.

   (b) Cooperate with source substitution projects identified in the CVWMP.

   (c) Provide for supply of supplemental water for developments approved by the City and/or supplied by the City's water system after January 1, 2010, by any combination of the following, in a manner consistent with, and not in excess of, any requirements imposed by CVWD within its service territory:

      (1) Water Conservation criteria in excess of the goals of the CVWMP. For example, by adopting low water use landscaping requirements which reduce water use in excess of the current CVWMP water conservation goals.

      (2) Source Substitution not identified in the current CVWMP. For example, using recycled wastewater effluent of the City's Wastewater Treatment Plant for landscape irrigation instead of using groundwater.

      (3) Acquire supplemental water supplies sufficient to offset the impacts of new water demands within the City or supplied by the City's water system.

      (4) Participate in funding CVWD's acquisition of supplemental water supplies sufficient to offset the impacts of new water demands approved by the City or supplied by the City's water system. The amount paid for supplemental water supplies shall not exceed CVWD's Supplemental Water Supply Charge for similar development types and water requirements in effect at the time paid.

   (d) Provide water system demand data and projected water demand data for proposed projects to be utilized for planning and water accounting purposes.

2. CVWD agrees to:

   (a) Include water demands projections for areas within the City's Water Service Area and/or City's Sphere of Influence in the current and successive updates of the CVWMP.

(b) Involve the City to extent reasonably possible in the CVMWP update process and consider in good faith any input the City may offer.

(c) If the City funds acquisition of supplemental supplies in paragraph 1 (c) (4), to use its powers to purchase and hold title to and deliver supplemental water supplies for the benefit of the City.

3. The City and CVWD agrees to:

(a) Work cooperatively to complete studies, and adopt regulations and MOUs necessary to formalize the understandings herein.

(b) Work cooperatively to each amend their Urban Water Management Plans to address water supplies for areas within the City's sphere of influence.

4. The Parties hereto agree to cooperate with each other in furthering the purposes of this MOU. The Parties hereby agree to take such other actions and execute such other reasonable documents as are consistent with this MOU and as are reasonably necessary to effectuate this MOU; provided, however, that the foregoing shall not require Parties to take any legislative action or exercise its discretion in any particular manner.

5. This MOU contains the final and complete agreement between the Parties with respect to the matters herein discussed and supersedes all previous communications and agreements between them with respect to the subject matter hereof, whether oral or written, to the extent such prior communications and agreements are not consistent with this MOU.

6. In the event that any action or proceeding is commenced between the Parties hereto to enforce or interpret any term of this MOU, each party shall bear its own costs and fees. The costs and fees shall include, without limitation, attorneys' costs and fees incurred on appeal and those incurred in enforcing any judgment rendered in any such action or proceeding.

7. All notices shall be in writing and shall be considered given and received: (i) when delivered in person to the recipient named below; or (ii) three days after deposit in the United States mail, postage prepaid, addressed to the recipient named below; or (iii) on the date of delivery shown in the records of an express courier such as Federal Express or DHL; or (iv) on the date of delivery by facsimile transmission to the recipient named below. All notices shall be addressed as followed:

If to District:

General Manager/Chief Engineer
Coachella Valley Water District
P.O. Box 1058
Coachella, Ca 92236-1058

If to City:

City Manager
City of Coachella
1515 Sixth Street
Coachella, CA 92236

Any Party may, by notice given at any time, require subsequent notices to be given to another person or entity, whether a Party or an officer or representative of a Party, or to a different address, or both. Notices given before actual receipt of notice of change shall not be invalidated by the change.

8. This MOU and all its provisions shall in all respects be interpreted, construed, enforced, and governed by and under the laws of the State of California, without regard to its conflict of laws principles.

9. Any action or proceeding brought respecting this MOU shall be instituted and maintained in the appropriate court in the County of Riverside, California.

10. This MOU may be modified only by another written instrument duly authorized, executed, acknowledged by both Parties. The MOU may be terminated by either party after 6 months notice and only after a good faith effort to resolve any dispute that may arise hereunder.

11. The provisions of this MOU are specifically made severable. If any clause, provision, right, or remedy provided for herein is determined to be unlawful or unenforceable, the remainder of this MOU shall remain in effect and shall be enforced as if such clause, provision, right, or remedy were not contained herein.

12. The language in all parts of this MOU shall in all respects be construed as a whole according to its fair meaning, and not strictly for or against any other Party. This MOU is the product of mutual negotiation and drafting efforts. Accordingly, the judicial rule of construction that ambiguities in a document are to be construed against the drafter of that document shall have no application to the interpretation or enforcement of this MOU.

13. This MOU may be executed in one or more counterparts, each of which shall be an original and all such counterparts together shall constitute the entire agreement of the Parties hereto.

14. Each individual executing this MOU hereby represents and warrants that he or she has the full power and authority to execute this MOU on behalf of the named Parties.

IN WITNESS WHEREOF, the Parties have demonstrated their intent to implement the terms of the MOU by signing this MOU, effective as of the date above written.

DISTRICT:

COACHELLA VALLEY WATER DISTRICT, a public agency of the State of California

By: _____

Its: GENERAL MANAGER

CITY:

CITY OF COACHELLA, a general law city of the State of California

By _____

Its: Interim City Manager

RESOLUTION OF THE BOARD OF DIRECTORS OF
COACHELLA VALLEY WATER DISTRICT

RESOLUTION NO. 2009-167

BE IT RESOLVED by the Board of Directors of the Coachella Valley Water District assembled in adjourned regular meeting this 18th day of August, 2009, that the appropriate officers are hereby authorized to execute on behalf of this District, a Memorandum of Understanding with the City of Coachella.

* * * * * * * * * * * *

STATE OF CALIFORNIA)
COACHELLA VALLEY WATER DISTRICT) ss.
OFFICE OF THE SECRETARY)

I, JULIA FERNANDEZ, Secretary of the Board of Directors of the Coachella Valley Water District, DO HEREBY CERTIFY that the foregoing is a full, true and correct copy of Resolution No. 2009-167 adopted by the Board of Directors of said District at a adjourned regular meeting thereof duly held and convened on the 18th day of August, 2009, at which meeting a quorum of said Board was present and acting throughout. The Resolution was adopted by the following vote:

AYES: Five

NOES: None

ABSTAIN: None

Dated this 18th day of August, 2009.

(SEAL)

Julia Fernandez
Board Secretary

MEMORANDUM OF UNDERSTANDING

REGARDING IMPLEMENTATION OF

PRIOR MEMORANDUM OF UNDERSTANDING

REGARDING COACHELLA VALLEY WATER MANAGEMENT PLAN

This Memorandum of Understanding ("Implementation MOU") is entered into effective this 27th day of Feb 2013 ("Effective Date"), by and between the City of Coachella, a general law city in California ("City") and Coachella Valley Water District, a public agency of the State of California ("CVWD"). Each party hereto may be hereafter referred to individually as a "Party" and both may be referred to collectively as the "Parties".

RECITALS

A. In 2009, City and CVWD entered into a Memorandum of Understanding ("Water Plan MOU") committing themselves to cooperate in implementing the goals and objectives of the Coachella Valley Water Management Plan ("CVWMP"), as the CVWMP may be amended or updated from time to time. The Water Plan MOU provides, in part, that the City may participate in funding CVWD's acquisition of Supplemental Water Supplies ("SWS") to offset, in whole or in part, water demands of new projects approved by the City or supplied by the City's domestic water system, provided that the City complies with the Water Plan MOU, including the payment to CVWD of CVWD's Supplemental Water Supply Charge ("SWSC").

B. This Implementation MOU is intended to implement the Water Plan MOU with respect to the acquisition of SWS and the processing of Water Supply Assessments required by SB 610, Water Code section 10910 et seq. ("WSAs") and Written Verifications required by SB 221, Government Code section 66473.7 ("Written Verifications") for new projects entitled by the City to the extent that such projects rely, in whole or in part, on the acquisition of SWS pursuant to section 1(c)(4) of the Water Plan MOU.

C. The goal of both the Water Plan MOU and this Implementation MOU is to ensure that the Coachella Valley has sufficient water supplies to meet its current and future demands and to allow the City to access SWS for new developments within the City in a manner that is consistent with the CVWMP.

D. This Implementation MOU is intended to supplement and further implement, but not modify, the Water Plan MOU. In the event of an inconsistency or ambiguity between the terms of the Water Plan MOU and this Implementation MOU, the terms of the Water Plan MOU shall control.

AGREEMENT

1. Supplemental Water Supply Charge ("SWSC")

(a) City will take reasonable steps to adopt and update its own SWSC based on CVWD's SWSC within 120 days of CVWD's action to update the current SWSC fee and any future updates. CVWD shall provide City with at least 60 days notice of any future update to CVWD's SWSC in order that City has an opportunity to review and comment on the updated fee study. City may impose a SWSC in excess of CVWD's SWSC to recoup City's costs in administering the SWS program. Subject to project-specific calculations pursuant to Section 2(b) below, the City's SWSC will be based on annual consumption factors with return flows and supplemental water costs that result in SWSC unit costs per acre by development type that are approximately equal to the SWSC unit costs per acre as published in CVWD's most recent Water System Backup Facility Charge Study.

(b) CVWD will cooperate with, and provide such information within CVWD's possession or control to, City to facilitate City's adoption of a SWSC and subsequent updates thereto in accordance with section 1(a) above.

(c) For new development projects under consideration by the City that will rely on SWS pursuant to section 1(c)(4) of the Water Plan MOU, City will impose on the project, as a condition of recordation of a final subdivision map or parcel map, or prior to the first water meter connection, whichever comes first, the City's then current SWSC The City will be allowed to condition projects to collect the SWSC through an approved phasing plan that is comparable to CVWD fee-collection policies in effect at that time. Within 30 days of receiving a SWSC payment from developer, City will remit CVWD's portion of the SWSC to CVWD.

(d) Any SWSC funds remitted by the City to CVWD shall be deemed used for the acquisition of SWS needed to supply the demands of the development project for which the SWSC is paid. CVWD will hold entitlement and deliver such SWS for the benefit of the City as the retail water provider for the project.

2. Water Supply Assessments and Written Verifications

(a) For new development projects under consideration by the City that will rely on SWS pursuant to section 1(c)(4) of the Water Plan MOU, City will use its best efforts to submit a draft WSA or draft Written Verification to CVWD for review at least 30 days prior to approval by the City. CVWD will use its best efforts to provide City with any comments on a draft WSA or draft Written Verification within 15 days of receiving the document for review.

(b) If City's calculation of SWS required for a project is different than CVWD's calculation using its "Supplemental Water Supply Charge by Development Type" chart, City and CVWD agree to meet and confer in good faith to develop a mutually agreed upon amount of SWS needed for the project and to resolve related issues. The object of meet and confer will be to determine the amount of SWS needed for the project in a manner that is consistent with best engineering estimates and accounts for factors including but not limited to comparable projects and specific project design features.

(c) Upon CVWD's review and City's finalization of a draft WSA or Written Verification in accordance with section 2(a) above, CVWD will issue a letter to the City confirming that CVWD has reviewed and concurs with the WSA or Written Verification, and that, subject to appropriate conditions, CVWD has the ability to provide sufficient SWS to meet project demands as set forth by the WSA or Written Verification.

3. Additional Terms

(a) Paragraphs 1 through 14 of the Water Plan MOU are incorporated herein by this reference, and the Water Plan MOU remains in full force and effect.

(b) Notwithstanding the provisions of this Implementation MOU, the Parties hereto continue to recognize and support the City's agreements as set forth in the Water Plan MOU, such that nothing herein shall be construed to limit City efforts to develop projects and provide for SWS for developments in accordance with section 1(c) of the Water Plan MOU.

(c) As of the Effective Date hereof, the Parties recognize that an application for development has been submitted to the City for the proposed La Entrada Specific Plan, and that the Water Plan MOU and this Implementation MOU are intended to apply to the use of SWS for said project.

IN WITNESS WHEREOF, the Parties have demonstrated their intent to supplement and further implement the Water Plan MOU by signing this Implementation MOU as of the Effective Date above written.

CVWD:

COACHELLA VALLEY WATER DISTRICT, a public agency of the State of California

By: 02.27.13
J. M. Barrett

Its: Acting General Manager

CITY:

CITY OF COACHELLA, a general law city of the State of California

By: 02-27-2013
David Garcia

Its: City Manager

RESOLUTION NO. WA-2014-01

A RESOLUTION OF THE BOARD OF DIRECTORS OF COACHELLA WATER AUTHORITY CALLING FOR 20% VOLUNTARY WATER USAGE REDUCTION

WHEREAS, the State of California is experiencing record dry conditions, with 2013 being the driest year on record; and

WHEREAS, a high pressure ridge causing these extremely dry conditions has been stalled over the State of California for the last 13 months and is projected to persist for much longer; and

WHEREAS, the Authority's Urban Water Management Plan (UWMP) contains water shortage contingency planning according to State Law 10632 and establishes stages of water use restrictions to be evoked during water supply emergencies according to Ordinance No. 13.03 Section 13.03.045; and

WHEREAS, Ordinance No. 13.03 calls for voluntary 10% water use reductions under Stage I Minor or Anticipated Shortage conditions; 10% mandatory water use reductions under a mandatory Stage II Minor to Moderate Shortage Warning; 20% mandatory conservation measures under a Stage III Moderate to Severe Water Shortage Warning and 50% mandatory water usage reduction during a Stage IV Severe Shortage or Catastrophic Incident Water Shortage Emergency conditions; and

WHEREAS, Coachella Water Authority has not hit a critical level of shortage where the Authority is unable to meet the demands of its customers, therefore will not be evoking Ordinance No. 13.03 mandates; however considers the current conditions of great concern; and

WHEREAS, on January 17, 2014 Governor Jerry Brown proclaimed a state of emergency to exist in the State of California due to current drought conditions and has asked all Californians to reduce their water usage by 20 percent; and

WHEREAS, the Governor's Proclamation of a State of Emergency highlighted the fact that "...extremely dry conditions have persisted since 2012 and may continue beyond this year and more regularly into the future", and

WHEREAS, the Board has determined that given all of the above described considerations, extra vigilant measures are necessary by the Authority and its customers until the current weather conditions have abated.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of Coachella Water Authority as follows:

Acknowledges the ongoing conservation efforts of customers and appreciates their contributions to conserving and preserving our available water supplies. Customers with very low water usage are encouraged to continue their efforts and look for ways to lower usage,

Asks all Authority's customers to be judicious and prudent with every gallon of water used,

Is calling upon all customers to voluntarily reduce water use by 20%,

Directs Staff to send a letter to all Authority's customers advising them of the Board's call for the water usage reductions described above, asking for their cooperation and educating them on the top ten ways to save water,

Directs Staff to continue to have an active role in State Water Project Contract Extension negotiations and keep the Board involved,

Recognizes that weather conditions could change and intends to be agile in its approach and response to dealing with the drought and any changes in weather conditions.

Thanks the Authority's customers for their anticipated cooperation and fully understands that it will take all of us, customers, staff and the Board to successfully navigate this situation.

PASSED, APPROVED AND ADOPTED by the Board of Directors of the Coachella Water Authority on the 26th day of February, 2014, by the following vote:

AYES: Authority Member Martinez, Authority Member Zepeda, Vice President Hernandez.

NOES: None.

ABSENT: Authority Member Aviles and President Garcia.

ABSTAIN: None.

Eduardo Garcia, President

ATTEST:

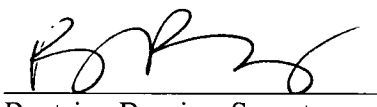
Beatrice Barajas, Secretary

APPROVED AS TO FORM:

Carlos Campos, City Attorney

STATE OF CALIFORNIA)
COUNTY OF RIVERSIDE) ss
CITY OF COACHELLA)

I, Beatrice Barajas, Secretary of the Coachella Water Authority, do hereby certify that the foregoing is a full, true and correct copy of Resolution No. WA-2014-01, adopted by the Directors of the Coachella Water Authority at a regular meeting therefore duly held and convened on the 26th day of February 2014.



Beatrice Barajas, Secretary

RESOLUTION NO. WA-2014-05

RESOLUTION NO. WA-2014-05 OF THE BOARD OF DIRECTORS OF THE COACHELLA WATER AUTHORITY, TO IMPLEMENT ITS STATE II WATER SHORTAGE CONTINGENCY PLAN

WHEREAS, on January 17, 2014 Governor Jerry Brown proclaimed a state of emergency to exist in the State of California due to current drought conditions and has asked all Californians to reduce their water usage by 20 percent; and

WHEREAS, On July 16, 2014, the State Water Board adopted Resolution No. 2014-0038 with emergency regulations for urban water suppliers, and this includes Coachella Water Authority (CWA). These regulations became effective July 28, 2014 and will expire on April 25, 2015, unless extended by the State Water Board and include mandatory restrictions and potential fines arising from violations of prohibited water uses; and

WHEREAS, the CWA's Urban Water Management Plan (UWMP) contains water shortage contingency planning according to State Law 10632 and establishes stages of water use restrictions to be evoked during water supply emergencies according to Ordinance No. 13.03 Section 13.03.045; and

WHEREAS, Ordinance No. 13.03 calls for; 10% mandatory water use reductions under a mandatory Stage II Minor to Moderate Shortage Warning; and

WHEREAS, the Board has determined that given all of the above described considerations, extra vigilant measures are necessary by the CWA and its customers until conditions have abated.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of Coachella Water Authority as follows:

The following water use activities by Coachella Water Authority customers are not allowed:

1. *Watering outdoor landscapes in a way that causes water to "runoff" onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures.*

2. *Washing a vehicle, with a hose without a shut-off nozzle or other device that will immediately stop the flow of water when not in use.*

3. *Using drinking water to wash driveways and sidewalks.*

4. *Using drinking water in a fountain or other decorative water feature, except where the water is recirculated.*

PASSED, APPROVED AND ADOPTED by the Board of Directors of the Coachella Water Authority on the 8th day of October, 2014, by the following vote:

AYES: Authority Member Aviles, Authority Member Martinez, Authority Member Zepeda, Vice President Hernandez and President Garcia.

NOES: None.

ABSENT: None.

ABSTAIN: None.

Eduardo Garcia, President

ATTEST:

Beatrice Barajas, Secretary

APPROVED AS TO FORM:

Carlos Campos, City Attorney

STATE OF CALIFORNIA)
COUNTY OF RIVERSIDE) ss
CITY OF COACHELLA)

I, Beatrice Barajas, Secretary of the Coachella Water Authority, do hereby certify that the foregoing is a full, true and correct copy of Resolution No. WA-2014-05, adopted by the Directors of the Coachella Water Authority at a regular meeting therefore duly held and convened on the 8th day of October 2014.

Beatrice Barajas, Secretary

State of California
Office of Administrative Law

In re:
State Water Resources Control Board

Regulatory Action:

Title 23, California Code of Regulations

Adopt sections: 863, 864, 865
Amend sections:
Repeal sections:

NOTICE OF APPROVAL OF EMERGENCY REGULATORY ACTION

Government Code Sections 11346.1 and 11349.6

OAL File No. 2014-0718-01 E

The State Water Resources Control Board (Board) submitted this emergency action to adopt three sections and a new article in title 23 of the California Code of Regulations pertaining to drought emergency water conservation. The proposed action addresses severe impacts on California's water supplies and its ability to meet all water demands in the state due to the current drought, which was declared to be a state of emergency by Governor Brown in two executive orders issued in 2014. The second executive order, issued April 25, 2014, directed the Board to adopt emergency regulations, pursuant to Water Code section 1058.5, to ensure that urban water suppliers implement drought response plans to limit outdoor irrigation and other wasteful water practices.

OAL approves this emergency regulatory action pursuant to sections 11346.1 and 11349.6 of the Government Code.

This emergency regulatory action is effective on 7/28/2014 and, pursuant to section 1058.5 of the Water Code, will expire on 4/25/2015. The Certificate of Compliance for this action is due no later than 4/24/2015.

Date: 7/28/2014

Richard L. Smith
Senior Attorney

For: DEBRA M. CORNEZ
Director

Original: Thomas Howard
Copy: Carlos Mejia

STATE OF CALIFORNIA–OFFICE OF ADMINISTRATIVE LAW

NOTICE PUBLICATION/REGULATIONS SUBMISSION

EMERGENCY

(See instructions on reverse)

STD. 400 (REV. 01-2013)

For use by Secretary of State only

ENDORSED FILED IN THE OFFICE OF THE SECRETARY OF STATE

2014 JUL 28 PM 1:30

DEBRA BOWEN
SECRETARY OF STATE

OAL FILE NUMBERS	NOTICE FILE NUMBER	REGULATORY ACTION NUMBER	EMERGENCY NUMBER
	Z-		2014-0718-01E

For use by Office of Administrative Law (OAL) only

2014 JUL 18 PM 12:09

OFFICE OF ADMINISTRATIVE LAW

NOTICE | REGULATIONS

AGENCY WITH RULEMAKING AUTHORITY: State Water Resources Control Board

AGENCY FILE NUMBER (If any):

A. PUBLICATION OF NOTICE (Complete for publication in Notice Register)

1. SUBJECT OF NOTICE	TITLE(S)	FIRST SECTION AFFECTED	2. REQUESTED PUBLICATION DATE
Drought Emergency Water Conservation	23	863	

3. NOTICE TYPE	4. AGENCY CONTACT PERSON	TELEPHONE NUMBER	FAX NUMBER (Optional)
[X] Notice re Proposed Regulatory Action [ ] Other	Carlos Mejia	(916) 341-5184	(916) 341-5199

OAL USE ONLY	ACTION ON PROPOSED NOTICE	NOTICE REGISTER NUMBER	PUBLICATION DATE
	[ ] Approved as Submitted [ ] Approved as Modified [ ] Disapproved/ Withdrawn		

B. SUBMISSION OF REGULATIONS (Complete when submitting regulations)

1a. SUBJECT OF REGULATION(S)	1b. ALL PREVIOUS RELATED OAL REGULATORY ACTION NUMBER(S)
Drought Emergency Water Conservation	

2. SPECIFY CALIFORNIA CODE OF REGULATIONS TITLE(S) AND SECTION(S) (Including title 26, if toxics related)

SECTION(S) AFFECTED (List all section number(s) individually. Attach additional sheet if needed.)	
TITLE(S) 23 KH 7/18/14	ADOPT: 863, 864, 865
	AMEND:
	REPEAL:

3. TYPE OF FILING

- [ ] Regular Rulemaking (Gov. Code §11346)
- [ ] Resubmittal of disapproved or withdrawn nonemergency filing (Gov. Code §§11349.3, 11349.4)
- [X] Emergency (Gov. Code, §11346.1(b))
- [ ] Certificate of Compliance: The agency officer named below certifies that this agency complied with the provisions of Gov. Code §§11346.2-11347.3 either before the emergency regulation was adopted or within the time period required by statute.
- [ ] Resubmittal of disapproved or withdrawn emergency filing (Gov. Code, §11346.1)
- [ ] Emergency Readopt (Gov. Code, §11346.1(h))
- [ ] File & Print
- [ ] Changes Without Regulatory Effect (Cal. Code Regs., title 1, §100)
- [ ] Print Only per agency request
- [X] Other (Specify) Emergency (Wat. Code, §1058.5)

4. ALL BEGINNING AND ENDING DATES OF AVAILABILITY OF MODIFIED REGULATIONS AND/OR MATERIAL ADDED TO THE RULEMAKING FILE (Cal. Code Regs. title 1, §44 and Gov. Code §11347.1)

5. EFFECTIVE DATE OF CHANGES (Gov. Code, §§ 11343.4, 11346.1(d); Cal. Code Regs., title 1, §100)

- [ ] Effective January 1, April 1, July 1, or October 1 (Gov. Code §11343.4(a))
- [X] Effective on filing with Secretary of State
- [ ] §100 Changes Without Regulatory Effect
- [ ] Effective other (Specify)

6. CHECK IF THESE REGULATIONS REQUIRE NOTICE TO, OR REVIEW, CONSULTATION, APPROVAL OR CONCURRENCE BY, ANOTHER AGENCY OR ENTITY

- [X] Department of Finance (Form STD. 399) (SAM §6660) per agency request
- [ ] Fair Political Practices Commission
- [ ] State Fire Marshal
- [ ] Other (Specify) RS

7. CONTACT PERSON	TELEPHONE NUMBER	FAX NUMBER (Optional)	E-MAIL ADDRESS (Optional)
Carlos Mejia	(916) 341-5184	(916) 341-5199	carlos.mejia@waterboards.ca.gov

8. **I certify that the attached copy of the regulation(s) is a true and correct copy of the regulation(s) identified on this form, that the information specified on this form is true and correct, and that I am the head of the agency taking this action, or a designee of the head of the agency, and am authorized to make this certification.**

SIGNATURE OF AGENCY HEAD OR DESIGNEE

DATE: 7-17-2014

TYPED NAME AND TITLE OF SIGNATORY: Caren Trgovcich, Chief Deputy Director, State Water Resources Control Board

For use by Office of Administrative Law (OAL) only

ENDORSED APPROVED

JUL 28 2014

Office of Administrative Law

PROPOSED TEXT OF EMERGENCY REGULATIONS

Article 22.5. Drought Emergency Water Conservation.

Section 863. Findings of Drought Emergency.

(a) The State Water Resources Control Board finds as follows:

(1) On January 17, 2014, the Governor issued a proclamation of a state of emergency under the California Emergency Services Act based on drought conditions;

(2) On April 25, 2014, the Governor issued a proclamation of a continued state of emergency under the California Emergency Services Act based on continued drought conditions;

(3) The drought conditions that formed the basis of the Governor's emergency proclamations continue to exist;

(4) The present year is critically dry and has been immediately preceded by two or more consecutive below normal, dry, or critically dry years; and

(5) The drought conditions will likely continue for the foreseeable future and additional action by both the State Water Resources Control Board and local water suppliers will likely be necessary to further promote conservation.

Note:
Authority: Section 1058.5, Water Code.
Reference: Sections 102, 104 and 105, Water Code.

Section 864. Prohibited Activities in Promotion of Water Conservation.

(a) To promote water conservation, each of the following actions is prohibited, except where necessary to address an immediate health and safety need or to comply with a term or condition in a permit issued by a state or federal agency:

(1) The application of potable water to outdoor landscapes in a manner that causes runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures;

(2) The use of a hose that dispenses potable water to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle or device attached to it that causes it to cease dispensing water immediately when not in use;

(3) The application of potable water to driveways and sidewalks; and

(4) The use of potable water in a fountain or other decorative water feature, except where the water is part of a recirculating system.

(b) The taking of any action prohibited in subdivision (a) of this section, in addition to any other applicable civil or criminal penalties, is an infraction, punishable by a fine of up to five hundred dollars ($500) for each day in which the violation occurs.

Note:
Authority: Section 1058.5, Water Code.
Reference: Sections 102, 104 and 105, Water Code.

Section 865. Mandatory Actions by Water Suppliers.

(a) The term "urban water supplier," when used in this section, refers to a supplier that meets the definition set forth in Water Code section 10617, except it does not refer to

suppliers when they are functioning solely in a wholesale capacity, but does apply to suppliers when they are functioning in a retail capacity.

(b)(1) To promote water conservation, each urban water supplier shall implement all requirements and actions of the stage of its water shortage contingency plan that imposes mandatory restrictions on outdoor irrigation of ornamental landscapes or turf with potable water.

(2) As an alternative to subdivision (b)(1), an urban water supplier may submit a request to the Executive Director for approval of an alternate plan that includes allocation-based rate structures that satisfies the requirements of chapter 3.4 (commencing with section 370) of division 1 of the Water Code, and the Executive Director may approve such an alternate plan upon determining that the rate structure, in conjunction with other measures, achieves a level of conservation that would be superior to that achieved by implementing limitations on outdoor irrigation of ornamental landscapes or turf with potable water by the persons it serves to no more than two days per week.

(c) To promote water conservation, each urban water supplier that does not have a water shortage contingency plan or has been notified by the Department of Water Resources that its water shortage contingency plan does not meet the requirements of Water Code section 10632 shall, within thirty (30) days, limit outdoor irrigation of ornamental landscapes or turf with potable water by the persons it serves to no more than two days per week or shall implement another mandatory conservation measure or measures intended to achieve a comparable reduction in water consumption by the persons it serves relative to the amount consumed in 2013.

(d) In furtherance of the promotion of water conservation each urban water supplier shall prepare and submit to the State Water Resources Control Board by the 15th of each month a monitoring report on forms provided by the Board. The monitoring report shall include the amount of potable water the urban water supplier produced, including water provided by a wholesaler, in the preceding calendar month and shall compare that amount to the amount produced in the same calendar month in 2013. Beginning October 15, 2014, the monitoring report shall also estimate the gallons of water per person per day used by the residential customers it serves. In its initial monitoring report, each urban water supplier shall state the number of persons it serves.

(e) To promote water conservation, each distributor of a public water supply, as defined in Water Code section 350, that is not an urban water supplier shall, within thirty (30) days, take one or more of the following actions:

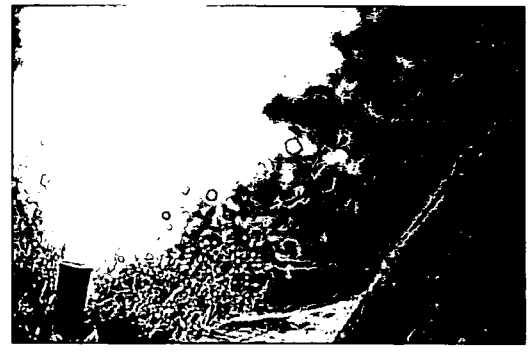
(1) Limit outdoor irrigation of ornamental landscapes or turf with potable water by the persons it serves to no more than two days per week; or

(2) Implement another mandatory conservation measure or measures intended to achieve a comparable reduction in water consumption by the persons it serves relative to the amount consumed in 2013.

Note:
Authority: Section 1058.5, Water Code.
Reference: Sections 102, 104, 105, 350, 10617 and 10632, Water Code.

CITY OF COACHELLA
INCORPORATED 1946

Coachella Water Authority Calls For Mandatory Water Conservation Practices



In response to the State's drought declaration, the Coachella Water Authority (CWA) *has declared a Mandatory Prohibition on Water Wasting. Effective August 1, 2014,* CWA activated Stage II of its Water Shortage Contingency Plan. This Plan requires mandatory restrictions for outdoor water use. *Outdoor water usage can account for more than 60% of our total demand.*

By using water wisely and controlling our use, we can avoid more serious water restrictions.

Water Saving Practices Include:

1. Repairing leaks quickly
2. Irrigate only between 9 p.m. and 6 a.m.
3. Eliminating inefficient landscape irrigation, such as runoff and overspray
4. Using hoses with automatic shut-off valves for car washing and watering areas that aren't on automated irrigation systems
5. Washing paved surfaces only when necessary for health and safety
6. Using potable water in a fountain or decorative water feature, only if the water is *recirculated.

* The regulation makes an exception for health and safety circumstances

The City may impose <u>fines up to $500.00</u> for habitual water wasters

For ideas on how to save water in and around your home, please go to <u>www.conservecoachella.com</u>

STATE WATER RESOURCES CONTROL BOARD
RESOLUTION NO. 2014-0038

TO ADOPT AN EMERGENCY REGULATION
FOR STATEWIDE URBAN WATER CONSERVATION

WHEREAS:

1. On April 25, 2014, Governor Edmund G. Brown Jr. issued an executive order to strengthen the state's ability to manage water and habitat effectively in drought conditions and called on all Californians to redouble their efforts to conserve water. The executive order finds that the continuous severe drought conditions present urgent challenges across the state including water shortages in communities and for agricultural production, increased wildfires, degraded habitat for fish and wildlife, threat of saltwater contamination, and additional water scarcity if drought conditions continue into 2015. The National Integrated Drought Information System reported that nearly 80% of the state was reported to be under "extreme" drought conditions at the end of June;

2. The executive order refers to the Governor's Proclamation No. 1-17-2014, issued on January 17, 2014, declaring a State of Emergency to exist in California due to severe drought conditions. The January Proclamation notes that the state is experiencing record dry conditions, with 2014 projected to become the driest year on record. Since January, state water officials indicate that reservoirs, rainfall totals and the snowpack remain critically low. This follows two other dry or below average years, leaving reservoir storage at alarmingly low levels. The January Proclamation highlights the State's dry conditions, lack of precipitation and the resulting effects on drinking water supplies, the cultivation of crops, and the survival of animals and plants that rely on California's rivers and streams. The January Proclamation also calls on all Californians to reduce their water usage by 20 percent;

3. There is no guarantee that winter precipitation will alleviate the drought conditions that the executive orders address, which will lead to even more severe impacts across the state if the drought wears on;

4. Water Code section 1058.5 grants the State Water Board the authority to adopt emergency regulations in certain drought years in order to: "prevent the waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion, of water, to promote water recycling or water conservation, to require curtailment of diversions when water is not available under the diverter's priority of right, or in furtherance of any of the foregoing, to require reporting of diversion or use or the preparation of monitoring reports";

5. Over 400,000 acres of farmland are expected to be fallowed, thousands of people may be out of work, communities risk running out of drinking water, and fish and wildlife will suffer.

6. Many Californians have taken bold steps over the years and in this year to reduce water use; nevertheless, the dire nature of the current drought requires additional conservation actions from residents and businesses. Some severely affected communities have implemented water rationing, limiting water use in some cases to only 50 gallons per person per day, foregoing showers, laundry, toilet flushing, and all outdoor watering.

7. Water conservation is the easiest, most efficient and most cost effective way to quickly reduce water demand and extend supplies into the next year, providing flexibility for all California communities. Water saved this summer is water available next year, giving water suppliers the flexibility to manage their systems efficiently. The more water that is conserved now, the less likely it is that a community will experience such dire circumstances that water rationing is required ;

8. Most Californians use more water outdoors than indoors. In many areas, 50 percent or more of daily water use is for lawns and outdoor landscaping. Outdoor water use is generally discretionary, and many irrigated landscapes would not suffer greatly from receiving a decreased amount of water;

9. Public information and awareness is critical to achieving conservation goals and the Save Our Water campaign, run jointly by the Department of Water Resources (DWR) and the Association of California Water Agencies, is an excellent resource for conservation information and messaging that is integral to effective drought response (http://saveourwater.com).

10. Enforcement against water waste is a key tool in conservation programs. When conservation becomes a social norm in a community, the need for enforcement is reduced or eliminated;

11. The emergency regulations set a minimum standard requiring only modest lifestyle changes across the state. Many communities are already doing more and have been for years. They should be commended, but can and should do more. Others are not yet doing so and should at least do this, but should do much more given the severity of the drought;

12. On July 8, 2014, the State Water Board issued public notice that the State Water Board would consider the adoption of the regulation at the Board's regularly-scheduled July 15, 2014 public meeting, in accordance with applicable State laws and regulations. The State Water Board also distributed for public review and comment a Finding of Emergency that complies with State laws and regulations;

13. On April 25, 2014, the Governor suspended the California Environmental Quality Act's application to the State Water Board's adoption of emergency regulations pursuant to Water Code section 1058.5 to prevent the waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of water, to promote water recycling or water conservation;

14. As discussed above, the State Water Board is adopting the emergency regulation because of emergency drought conditions, the need for prompt action, and current limitations in the existing enforcement process;

15. Disadvantaged communities may require assistance in increasing water conservation and state agencies should look for opportunities to provide assistance in promoting water conservation;

16. Nothing in the regulations or in the enforcement provisions of the regulations, preclude a local agency from exercising its authority to adopt more stringent conservation measures. Moreover, the Water Code does not impose a mandatory penalty for violations of the regulations adopted by this resolution and local agencies retain their enforcement discretion in enforcing the regulations, to the extent authorized, and may develop their own progressive enforcement practices to encourage conservation.

THEREFORE BE IT RESOLVED THAT:

1. The State Water Board adopts California Code of Regulations, title 23, sections 863, 864, and 865, as appended to this resolution as an emergency regulation;

2. The State Water Board staff will submit the regulation to the Office of Administrative Law (OAL) for final approval;

3. If, during the approval process, State Water Board staff, the State Water Board, or OAL determines that minor corrections to the language of the regulation or supporting documentation are needed for clarity or consistency, the State Water Board Executive Director or designee may make such changes;

4. These regulations shall remain in effect for 270 days after filing with the Secretary of State unless the State Water Board determines that it is no longer necessary due to changed conditions, or unless the State Water Board renews the regulations due to continued drought conditions as described in Water Code section 1058.5;

5. The State Water Board directs staff to provide the Board with monthly updates on the implementation of the emergency regulations and their effect;

6. Directs State Water Board staff to condition funding upon compliance with the emergency regulations, to the extent feasible;

7. Directs State Water Board staff to work with the Department of Water Resources and the Save Our Water campaign to disseminate information regarding the emergency regulations; and

8. Directs State Water Board staff in developing an electronic reporting portal to include data fields so that local agencies may provide monthly reporting data on (i) conservation-related implementation measures or enforcement actions taken by the local agency and (ii) substitution during the drought of potable water with recycled water to extend water supplies.

THEREFORE BE IT FURTHER RESOLVED THAT:

9. The State Water Board commends water suppliers that have increased conservation messaging and adopted innovative strategies to enhance customer awareness of water use, such as applications that let customers compare their water use to water use by others; reduce system losses, such as fixing system leaks which can deplete supplies by 10 percent or more; and establish incentives to reduce demand, such as tiered or drought rate structures. The State Water Board also commends all Californians that have already been working to maximize their conservation efforts, both at home and at work;

10. The State Water Board calls upon water suppliers to take the following actions:

Educate customers and employees

- Retail water suppliers should provide notice of the regulations in English and Spanish in one or more of the following ways: newspaper advertisements, bill inserts, website homepage, social media, notices in public libraries;
- Wholesale suppliers should include reference to the regulations in their customer communications;
- All water suppliers should train personnel on the regulations;
- All water suppliers should provide signage where recycled or reclaimed water is being used for activities that the emergency regulations prohibit with the use of potable water, such as operation of fountains and other water features;
- All water suppliers should redouble their efforts to disseminate information regarding opportunities and incentives to upgrade indoor fixtures and appliances;
- All water suppliers should use education and the tools available through the Save Our Water website (http://saveourwater.com); and
- All water suppliers should educate and prepare their boards and councils on the drought response actions contained in the emergency regulations and in this resolution, and to make sure that drought response items are placed on agendas as early as possible;

Increasing local supplies

- All water suppliers should accelerate the completion of projects that will conserve potable water by making use of non-potable supplies, such as recycled water, "greywater," and stormwater collection projects;
- All water suppliers should improve their leak reporting and response programs and request that police and fire departments and other local government personnel report leaks and water waste that they encounter during their routine duties/patrols;
- Smaller water suppliers – those with fewer than 3,000 service connections – should take proactive steps to secure their communities' water supplies and educate their customers about water conservation and the status of their supply reserves;
- All water suppliers should conduct water loss audits and make leak detection and repair a top priority for the duration of the drought; and
- All urban water suppliers should evaluate their rate structures and begin to implement needed changes as part of planning for another dry year. Information and assistance on setting and implementing drought rates is available from the Alliance for Water Efficiency. (http://www.allianceforwaterefficiency.org/).

11. The State Water Board calls on all Californians to take the following additional actions:
    - Further reduce water demand, whether by using less water in daily routines indoors and out, retrofitting appliances and installing greywater and rainwater catchment systems; and
    - Check residential and business water bills to see if there are high charges that may indicate a leak and to fix the leak, if they are able, or contact their local water utility if they need assistance.

12. The State Water Board encourages its staff, the Department of Water Resources, the Public Utilities Commission, urban water suppliers, and other local agencies to look for opportunities to encourage and promote new technologies that reduce water usage, including through timely access to water usage information and behavioral response.

13. The State Water Board encourages all state and local agencies to look for additional opportunities to minimize potable water use in outdoor spaces.

14. The State Water Board encourages investor-owned utilities to expeditiously submit applications for implementation of the regulations to the California Public Utilities Commission.

CERTIFICATION

The undersigned Clerk to the Board does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on July 15, 2014.

AYE:	Chair Felicia Marcus Vice Chair Frances Spivy-Weber Board Member Steven Moore Board Member Dorene D'Adamo
NAY:	None
ABSENT:	Board Member Tam M. Doduc
ABSTAIN:	None

Jeanine Townsend

Jeaniné Townsend
Clerk to the Board

PROPOSED TEXT OF EMERGENCY REGULATIONS

Article 22.5. Drought Emergency Water Conservation

Sec. 863 Findings of Drought Emergency

(a) The State Water Resources Control Board finds as follows:

(1) On January 17, 2014, the Governor issued a proclamation of a state of emergency under the California Emergency Services Act based on drought conditions;

(2) On April 25, 2014, the Governor issued a proclamation of a continued state of emergency under the California Emergency Services Act based on continued drought conditions;

(3) The drought conditions that formed the basis of the Governor's emergency proclamations continue to exist;

(4) The present year is critically dry and has been immediately preceded by two or more consecutive below normal, dry, or critically dry years; and

(5) The drought conditions will likely continue for the foreseeable future and additional action by both the State Water Resources Control Board and local water suppliers will likely be necessary to further promote conservation.

Authority: Wat. Code, § 1058.5.
References: Wat. Code, §§ 102, 104, 105.

Sec. 864 Prohibited Activities in Promotion of Water Conservation

(a) To promote water conservation, each of the following actions is prohibited, except where necessary to address an immediate health and safety need or to comply with a term or condition in a permit issued by a state or federal agency:

(1) The application of potable water to outdoor landscapes in a manner that causes runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures;

(2) The use of a hose that dispenses potable water to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle or device attached to it that causes it to cease dispensing water immediately when not in use;

(3) The application of potable water to driveways and sidewalks; and

(4) The use of potable water in a fountain or other decorative water feature, except where the water is part of a recirculating system.

(b) The taking of any action prohibited in subdivision (a) of this section, in addition to any other applicable civil or criminal penalties, is an infraction, punishable by a fine of up to five hundred dollars ($500) for each day in which the violation occurs.

Authority: Wat. Code, § 1058.5.
References: Wat. Code, §§ 102, 104, 105.

PROPOSED TEXT OF EMERGENCY REGULATIONS

Sec. 865 Mandatory Actions by Water Suppliers

(a) The term "urban water supplier," when used in this section, refers to a supplier that meets the definition set forth in Water Code section 10617, except it does not refer to suppliers when they are functioning solely in a wholesale capacity, but does apply to suppliers when they are functioning in a retail capacity.

(b)(1) To promote water conservation, each urban water supplier shall implement all requirements and actions of the stage of its water shortage contingency plan that imposes mandatory restrictions on outdoor irrigation of ornamental landscapes or turf with potable water.

(2) As an alternative to subdivision (b)(1), an urban water supplier may submit a request to the Executive Director for approval of an alternate plan that includes allocation-based rate structures that satisfies the requirements of chapter 3.4 (commencing with section 370) of division 1 of the Water Code, and the Executive Director may approve such an alternate plan upon determining that the rate structure, in conjunction with other measures, achieves a level of conservation that would be superior to that achieved by implementing limitations on outdoor irrigation of ornamental landscapes or turf with potable water by the persons it serves to no more than two days per week.

(c) To promote water conservation, each urban water supplier that does not have a water shortage contingency plan or has been notified by the Department of Water Resources that its water shortage contingency plan does not meet the requirements of Water Code section 10632 shall, within thirty (30) days, limit outdoor irrigation of ornamental landscapes or turf with potable water by the persons it serves to no more than two days per week or shall implement another mandatory conservation measure or measures intended to achieve a comparable reduction in water consumption by the persons it serves relative to the amount consumed in 2013.

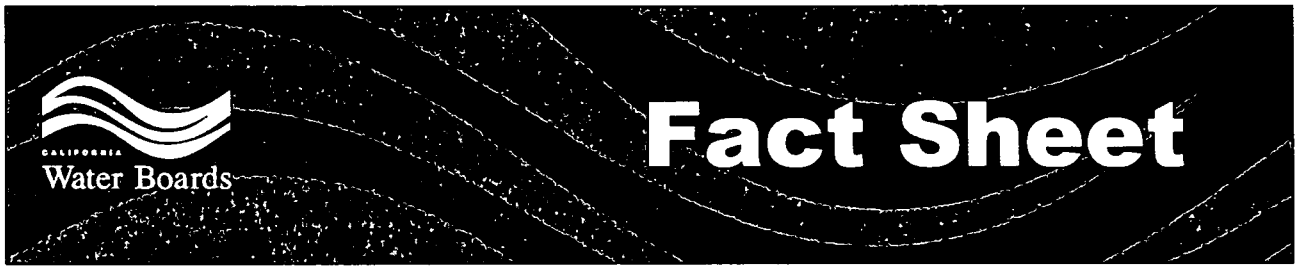
(d) In furtherance of the promotion of water conservation each urban water supplier shall prepare and submit to the State Water Resources Control Board by the 15th of each month a monitoring report on forms provided by the Board. The monitoring report shall include the amount of potable water the urban water supplier produced, including water provided by a wholesaler, in the preceding calendar month and shall compare that amount to the amount produced in the same calendar month in 2013. Beginning October 15, 2014, the monitoring report shall also estimate the gallons of water per person per day used by the residential customers it serves. In its initial monitoring report, each urban water supplier shall state the number of persons it serves.

(e) To promote water conservation, each distributor of a public water supply, as defined in Water Code section 350, that is not an urban water supplier shall, within thirty (30) days, take one or more of the following actions:

(1) Limit outdoor irrigation of ornamental landscapes or turf with potable water by the persons it serves to no more than two days per week; or

(2) Implement another mandatory conservation measure or measures intended to achieve a comparable reduction in water consumption by the persons it serves relative to the amount consumed in 2013.

Authority: Wat. Code, § 1058.5.
References: Wat. Code, §§ 102, 104, 105; 350; 10617; 10632.



Mandatory Water Conservation Regulation Go Into Effect

An emergency regulation to increase conservation practices for all Californians became effective July 29, 2014. The new conservation regulation targets outdoor urban water use. In some areas of the State, 50 percent or more of daily water use is for lawns and outdoor landscaping. This regulation establishes the minimum level of activity that residents, businesses and water suppliers must meet as the drought deepens and will be in effect for 270 days unless extended or repealed.

Prohibitions for ALL urban water users in California:

- The application of potable water to any driveway or sidewalk.
- Using potable water to water outdoor landscapes in a manner that causes runoff to adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots or structures.
- Using a hose that dispenses potable water to wash a motor vehicle, unless the hose is fitted with a shut-off nozzle.
- Using potable water in a fountain or decorative water feature, unless the water is recirculated. Recycled water is not mandated, but encouraged for fountain use.

Requirements for Urban Water Suppliers (serving >3000 connections):

- Implement water shortage contingency plans to a level where restrictions on outdoor irrigation are mandatory.
- Urban water suppliers without a plan, or without an adequate plan, must either mandate that outdoor irrigation be reduced to no more than twice a week or implement other mandatory use restrictions that provide a comparable level of savings.
- Report monthly water production beginning August 15. Include an estimate of the gallons per capita per day used by residential customers beginning with the October 15 report.

Requirements for Other Water Suppliers (serving <3000 connections):

- Mandate that outdoor irrigation be reduced to no more than twice a week or implement other mandatory use restrictions that provide a comparable level of savings.

Assessing Compliance

- Individual Prohibitions – evaluating alleged violations and taking enforcement action is primarily a local discretionary action.
- Water Suppliers – compliance will be evaluated based on multiple factors including implementation of the required actions, the content of the monthly reports (Urban Water Suppliers), and other relevant information.

Tips for Implementing the New Regulations

- Notify and educate staff, ratepayers and the community at large about the prohibitions.
- Inform ratepayers of the requirements of the stage of the Water Shortage Contingency Plan required by the regulations.
- Access the water conservation resources clearinghouse, a partnership of the State of California and the Association of California Water Agencies at either http://www.saveourh2o.org/ or http://saveourwater.com/

Contact Information

- Report State Agency water waste at http://www.saveourh2o.org/report-water-waste
- Contact the State Water Board's drought hotline for questions on drought-related activities including general questions on the emergency regulations: (916) 341-5342.

More information on the emergency regulation can be found at the Conservation Regulation Portal.

(This fact sheet was last updated July 29, 2014)

ORDINANCE NO. 1016

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF COACHELLA TO INCREASE THE RATES FOR WATER SERVICE CHARGES COMMENCING MAY 1, 2010

RECITALS:

WHEREAS, the City of Coachella (the "City") is a duly organized general law city and municipal corporation existing in the state of California; and

WHEREAS, the City Council of the City sits as the governing body of the City; and

WHEREAS, the City Council on behalf of the Coachella Water Authority wishes to increase the rates for the water service charges (the "Charges") commencing May 1, 2010; and

WHEREAS, the City, on behalf of the Coachella Water Authority determined to undertake a rate study to analyze the revenue requirements, and the rate structure necessary to proportionately allocate the costs of providing water services; and

WHEREAS, a rate study was prepared by MuniFinancial (the "Rate Study"), a copy of which is on file in the Office of the City Clerk, which demonstrates that existing water system revenues are and will be insufficient to cover: (i) current and projected operations and maintenance costs of the water system (the "System"); and (ii) the capital infrastructure improvements needed to repair, replace, and update the System; and

WHEREAS, the results of the Rate Study includes the proposed rates for the Charges and documents the estimated and reasonable costs of providing water services to property owners and tenants directly liable for payment of such Charges (collectively referred to herein as "customers") in the City; and

WHEREAS, the findings and determinations contained herein are based upon the Rate Study documenting the estimated reasonable costs of providing water services to customers in the City; and

WHEREAS, the City has determined to increase the rates for its Charges for a six-year period, commencing May 1, 2010, and each May 1 thereafter, through and including May 1, 2015; and

WHEREAS, the City Council hereby finds and determines the following with regard to the proposed rate increases to the Charges:

1. the rate structure for the Charges has two components: (a) a meter charge (the "Meter Charge"), which is a fixed monthly charge determined on the basis of the size of the customer's meter; and (b) a variable consumption charge (the "Consumption

Charge"), which is imposed on the basis of the amount of water used or consumed by the customer in hundreds of cubic feet ("HCF");

2. the proposed rates for the Charges referenced above and those included in the Rate Study and this Ordinance represent increases in such Charges;

3. the revenues derived from the proposed Charges will not exceed the funds required to provide the water services and shall be used exclusively for the System;

4. the amount of the proposed Charges will not exceed the proportional cost of the services attributable to each parcel upon which they are proposed for imposition;

5. the proposed Charges will not be imposed on a parcel unless the water services are actually used by, or immediately available to, the customer of the parcel;

6. the proposed Charges will not be used for any other purpose than that for which they are imposed;

7. the proposed Charges are not levied for general governmental services;

8. the proposed Charges are not calculated or developed on the basis of any parcel map, including an assessor's parcel map, but are based upon reasonable estimates of the demand placed upon the City in its role as a provider of the water services; and

9. the proposed Charges represent increases in the fees and charges needed to provide water services and to operate the System; and

WHEREAS, the City hereby finds and determines that in accordance with the provisions of California Constitution article XIII D, section 6 ("Article XIII D"):

1. the City identified the parcels upon which the increased Charges are proposed to be imposed, and calculated the amount of the Charges proposed to be imposed on each parcel;

2. on January 15, 2010, the City Clerk caused a written notice to be mailed to customers of each parcel upon which the proposed increases to the Charges are proposed for imposition, which explained: (a) the amount of the Charges; (b) the basis on which they were calculated; (c) the reason for the increases; and (d) the date, time, and location of the public hearing on the proposed increases;

3. on March 10, 2010, (more than 45 days after mailing the notice), the City conducted a public hearing and considered all written protests against the proposed increases to the rates for the Charges; and

4. at the conclusion of the public hearing, written protests against the proposed increases to the rates for the Charges were not presented by a majority of customers subject to the proposed Charges; and

WHEREAS, the City, as the lead agency under the California Environmental Quality Act ("CEQA"), in consultation with the City's Legal Counsel, prepared a Preliminary Exemption Assessment for the adoption of this Ordinance in order to evaluate its potential impacts. The City determined that this Ordinance is exempt from CEQA review under Public Resources Code section 21080(b)(8) and State CEQA Guidelines section 15273 because the Charges are necessary and reasonable to fund the administration, operation, maintenance, and improvements of the System and will not result in the expansion of the System;

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF COACHELLA DOES ORDAIN AS FOLLOWS:

Section 1. The above recitals, and each of them, are true and correct.

Section 2. As the decision-making body for the City, the City Council has reviewed and considered the information contained in the Preliminary Exemption Assessment and administrative record. The City Council finds that the Preliminary Exemption Assessment contains a complete and accurate reporting of the environmental impacts associated with the adoption of this Ordinance and reflects the independent judgment of the City Council.

Section 3. The City Council hereby finds that the administration, operation, maintenance, and improvements of the System, which are to be funded by the Charges set forth herein, are necessary to maintain service within the City's existing service area. The City Council further finds that the administration, operation, maintenance, and improvements of the System, to be funded by the Charges set forth herein, will not expand the System. The City Council further finds that such Charges are necessary and reasonable to fund the administration, operation, maintenance, and improvements of the System. Based on these findings, the City Council hereby determines that this Ordinance is exempt from the requirements of CEQA pursuant to California Public Resources Code section 21080(b)(8) and State CEQA Guidelines section 15273(a).

Section 4. The documents and materials that constitute the record of proceedings on which these findings have been based are located at City of Coachella, 1515 Sixth Street, Coachella, California 92236. The custodian for these records is the City Clerk of the City.

Section 5. The City Council hereby adopts Charges at the rates, in the amounts, on the effective dates set forth in the tables below:

Rates for Monthly Meter Charge ($/Meter Size)

Meter Size	Effective Date					
	5/1/2010	1/1/2011	1/1/2012	1/1/2013	1/1/2014	1/1/2015
5/8" – 3/4"	9.69	10.66	11.92	12.52	13.14	13.80
1"	13.57	14.93	16.69	17.53	18.40	19.32
1 1/2"	17.45	19.19	21.46	22.53	23.66	24.84
2"	28.11	30.92	34.57	36.30	38.12	40.02
3"	106.62	117.28	131.14	137.70	144.59	151.82
4"	135.70	149.27	166.91	175.26	184.02	193.22
6"	203.55	223.91	250.37	262.88	276.03	289.83
8"	281.09	309.20	345.74	363.03	381.18	400.24

Rates for Consumption Charge

Tiers	Effective Date					
	5/1/2010	1/1/2011	1/1/2012	1/1/2013	1/1/2014	1/1/2015
Block 1 Rates (per hcf) – 0 to 41 hcf	$1.05	$1.16	$1.30	$1.36	$1.43	$1.50
Block 2 Rates (per hcf) – Over 41 hcf	$1.21	$1.31	$1.45	$1.51	$1.58	$1.65

Section 6. The City Council hereby authorizes and directs the City Manager to implement and take all actions necessary to effectuate the rates for the Charges set forth herein and to file a Notice of Exemption with the County Clerk for Riverside County within five (5) working days of the date of the adoption of this Ordinance.

Section 7. To the extent that any other provision of local law relating to the establishment of water charges is inconsistent with this Ordinance, the provisions of this Ordinance shall prevail. This Ordinance shall supersede all other previous City Council resolutions and ordinances that may conflict with, or be contrary to, this Ordinance.

Section 8. If any section, subsection, subdivision, sentence, clause, phrase, or portion of this Ordinance, or the application thereof to any person or place, is for any reason held to be invalid or unconstitutional by a court of competent jurisdiction, such decision shall not affect the validity of the remainder of this Ordinance. The City Council hereby declares that it would have adopted this Ordinance, and each and every section, subsection, subdivision, sentence, clause, phrase, or portion thereof, irrespective of the fact that any one or more sections, subsections, subdivisions, sentences, clauses, phrases, or portions thereof be declared invalid or unconstitutional, provided, however, that if any decision of a court of competent jurisdiction

invalidates the increase of the Charges set forth in this Ordinance, then the Charges in effect on the date of adoption shall continue in existence.

Section 7. The City Clerk shall certify to the passage of this Ordinance and cause the same or a summary thereof to be published within fifteen (15) days after adoption in a newspaper of general circulation, printed and published in Coachella, California.

Section 8. A full reading of this Ordinance is hereby waived. This Ordinance was introduced at a regular meeting of the City Council of the City of Coachella, California, on March 10, 2010, and thereafter adopted at a regular meeting of the City Council held on the March 24, 2010.

PASSED AND ADOPTED on this 24th day of March, 2010, by the following vote:

AYES: Councilmember Martinez, Councilmember Villarreal and Mayor Garcia

NOES: None.

ABSTAIN: None.

ABSENT: Councilmember Ramirez and Mayor Pro Tem Hernandez.

Mayor
Eduardo Garcia

ATTEST:

City Clerk
Isabel Castillon

APPENDIX F LANDSCAPE ORDINANCE

DRAFT MODEL WATER EFFICIENT LANDSCAPE ORDINANCE
COACHELLA VALLEY WATER DISTRICT

ATTACHMENT A of ORDINANCE 1302.1

LANDSCAPE AND IRRIGATION SYSTEM DESIGN CRITERIA

Sections:

0.00.010 Purpose and Intent

A. The California State Legislature has found:

1. The waters of the state are of limited supply and are subject to ever increasing demands;
2. The continuation of California's economic prosperity is dependent on the availability of adequate supplies of water for future users;
3. It is the policy of the State to promote the conservation and efficient use of water and to prevent the waste of this valuable resource;
4. Landscapes are essential to the quality of life in California by providing areas for active and passive recreation and as an enhancement to the environment by cleaning air and water, preventing erosion, offering fire protection, and replacing ecosystems lost to development;
5. Landscape design, installation, maintenance and management can and shall be water efficient; and
6. Section 2 of Article X of the California Constitution specifies that the right to use water is limited to the amount reasonably required for the beneficial use to be served and the right does not and shall not extend to waste and unreasonable method of use.

B. Consistent with these legislative findings, the purpose of these criteria is to:

1. Promote the values and benefits of landscapes while recognizing the need to invest water and other resources as efficiently as possible;
2. Establish a structure for planning, designing, installing, maintaining and managing water efficient landscapes in new construction and rehabilitated projects;
3. Establish provisions for water management practices and water waste prevention for existing landscapes;

4. Use water efficiently without waste by setting a Maximum Applied Water Allowance (MAWA) as an upper limit for water use and reduce water use to the lowest practical amount; and

5. Promote the benefits of consistent landscape criteria with neighboring local and regional agencies.

C. It is also the purpose of these criteria to implement the requirements of the California Code of Regulations Title 23. Waters Division 2. Department of Water Resources Chapter 2.7. Model Water Efficient Landscape Ordinance, and State of California Water Conservation in Landscaping Act. Authority cited: Section 65593, Government Code, Reference: Sections 65591, 65593, 65596 Government Code.

D. It is the intent of these criteria to promote water conservation through climate-appropriate plant material and efficient irrigation systems, and to create a "Lush and Efficient" landscape theme through enhancing and improving the physical and natural environment.

E. Applicability

1. These criteria shall apply to all of the following landscape projects:

   a. New construction and rehabilitated landscapes for public agency projects and private development projects requiring a building or landscape permit, plan check or design review;

   b. New construction and rehabilitated landscapes which are developer-installed in single-family and multi-family projects requiring a building or landscape permit, plan check or design review;

   c. New construction and rehabilitated landscapes which are homeowner-provided and/or homeowner-hired in single family and multi-family residential projects with a total project landscape area equal to or greater than 5,000 square feet requiring a building or landscape permit, plan check or design review; and

   d. Existing landscapes limited to section 0.00.040 (B).

2. These criteria do not apply to:

   a. Registered local, state or federal historical sites;

   b. Ecological restoration projects that do not require a permanent irrigation system;

   c. Mined-land reclamation projects that do not require a permanent irrigation system; or

   d. Plant collections, as part of botanical gardens and arboretums open to the public.

0.00.020 Definitions

The words used in this section have the meanings set forth below:

ANTIDRAIN VALVE or CHECK VALVE - A valve located under/in a sprinkler head to hold water in the system to eliminate drainage from the lower elevation sprinkler heads.

APPLICATION RATE - The depth of water applied to a given area, usually measured in inches per hour. Also known as precipitation rate (sprinklers) or emission rate (drippers/microsprayers) in gallons per hour.

APPLIED WATER - The portion of water supplied by the irrigation system to the landscape.

AUTOMATIC CONTROLLER - An electronic or solid-state timer capable of operating valve stations to set the days, time and length of time of a water application.

BACKFLOW PREVENTION DEVICE - A safety device used to prevent pollution or contamination of the water supply due to the reverse flow of water from the irrigation system.

BENEFICIAL USE - Water used for landscape evapotranspiration.

BILLING UNITS - Units of water (100 cubic feet = 1 billing unit = 748 gallons = 1 CCF) for billing purposes. To convert gallons per year to 100 cubic feet per year, divide gallons per year by 748. (748 gallons = 100 cubic feet).

CONVERSION FACTOR (0.62) - A number that converts the Maximum Applied Water Allowance from acre-inches per acre to gallons per square foot. The conversion factor is calculated as follows:

(325,851 gallons/43,560 square feet)/12 inches	= (0.62)
325,851 gallons	= one acre-foot
43,560 square feet	= one acre
12 inches	= one foot

DESERT LANDSCAPE - A desert landscape using native plants spaced to look like a native habitat.

DISTRIBUTION UNIFORMITY - A measure of how evenly sprinklers apply water. The low-quarter measurement method (DULQ) utilized in the irrigation audit procedure is utilized for the purposes of these criteria. These criteria assume an attainable performance level of 75% DULQ for spray heads, 80% DULQ for rotor heads and 85% DULQ for recreational turf grass rotor heads.

DISTRICT – Coachella Valley Water District.

DRIP IRRIGATION - A method of irrigation where the water is applied slowly at the base of plants without watering the open space between plants.

ECOLOGICAL RESTORATION PROJECT - A project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.

EFFECTIVE PRECIPITATION or USABLE RAINFALL - The portion of total natural precipitation that is used by the plants, usually assumed to be three inches annually. Precipitation or rainfall is not considered a reliable source of water in the desert.

ELECTRONIC CONTROLLERS - Time clocks that have the capabilities of multiprogramming, water budgeting and multiple start times.

EMISSION UNIFORMITY - A measure of how evenly drip and microspray emitters apply water. The low-quarter measurement method (EULQ) utilized in the landscape irrigation evaluation procedure is utilized for the purposes of these criteria. These criteria assume 90% EULQ for drippers, microsprays and pressure compensating bubblers.

EMITTER - Drip irrigation fittings that deliver water slowly from the watering system to the soil.

ESTABLISHED LANDSCAPE - The point at which new plants in the landscape have developed roots into the soil adjacent to the root ball.

ESTABLISHMENT PERIOD - The first year after installing the plant in the landscape.

ESTIMATED TOTAL WATER USE (By hydrozone) - The portion of the estimated annual total applied water use that is derived from applied water to a specified hydrozone.

ESTIMATED ANNUAL TOTAL APPLIED WATER USE (Total of all hydrozones) - The annual total amount of water estimated to be needed by all hydrozones to keep the plants and water features in the landscaped area healthy and visually pleasing. It is based upon such factors as the local evapotranspiration rate, the size of the landscaped area, the size and type of water feature, the types of plants, and the efficiency of the irrigation system. The estimated annual total applied water use shall not exceed the Maximum Applied Water Allowance (MAWA).

EVAPOTRANSPIRATION or ET - The quantity of water evaporated from adjacent soil surfaces and transpired by plants expressed in inches during a specific time.

ET ADJUSTMENT FACTOR - A factor of 0.5 that, when applied to reference evapotranspiration, adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape. A

combined plant mix with a site-wide average 0.38 is the basis of the plant factor portion of this calculation. The irrigation efficiency for purposes of the ET adjustment factor is 0.75. Therefore, the ET adjustment factor (0.5) = (0.38/0.75).

FINISHED GRADE – Grade height after surface mulch covering has been installed.

FLOW RATE - The rate at which water flows through pipes, valves and meters (gallons per minute or cubic feet per second).

HARDSCAPE - Concrete or asphalt areas including streets, parking lots, sidewalks, driveways, patios and decks.

HEAD-TO-HEAD COVERAGE - One hundred percent sprinkler coverage of the area to be irrigated, with maximum practical uniformity.

HIGH FLOW CHECK VALVE - A valve located under/in a sprinkler head to stop the flow of water if the spray head is broken or missing.

HYDROZONE - A portion of the landscaped area having plants with similar water needs that are served by a valve or set of valves with the same schedule. A hydrozone may be irrigated or non-irrigated. For example, a naturalized area planted with native vegetation that will not need supplemental irrigation (once established) is a non-irrigated hydrozone.

INFILTRATION RATE - The rate of water entry into the soil expressed as a depth of water per unit of time (inches per hour).

IRRIGATION EFFICIENCY - The measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates of irrigation system characteristics and management practices. The minimum irrigation efficiency for purposes of these regulations is 0.75 or 75 percent. Greater irrigation efficiency can be expected from well-designed and maintained systems.

LANDSCAPE IRRIGATION AUDIT - A process to perform site inspections, evaluate irrigation systems and develop efficient irrigation schedules.

LANDSCAPED AREA - The entire parcel less the building footprint, driveways, non-irrigated portions of the parking lots, hardscapes (such as decks and patios), and other nonporous areas. Water features are included in the calculation of a site's landscaped area.

LATERAL LINE - The water delivery pipeline that supplies water to the emitters sprinklers from a valve.

LOCAL AGENCY – A city, county, or water purveyor responsible for adopting and implementing the ordinance. The local agency is also responsible for

enforcement of the ordinance, including, but not limited to, approval of a design review, permit, plan check, or inspection of a project.

MAIN LINE - The pressurized pipeline that delivers water from the water source to a valve or outlet.

MAXIMUM APPLIED WATER ALLOWANCE (MAWA) - For design purposes, the upper limit of annual applied water for the established landscape area as specified in Division 2, Title 23, California Code of Regulations, Chapter 7, Section 702. It is based upon the area's reference evapotranspiration, ET adjustment factor, and the size of the landscaped area. The estimated applied water use shall not exceed the Maximum Applied Water Allowance (MAWA).

MICROIRRIGATION - See drip irrigation.

MULCH - Any organic material such as leaves, bark, straw or inorganic material such as pebbles, stones, gravel, decorative sand or decomposed granite left loose and applied to the soil surface to reduce evaporation.

NATIVE PLANTS - Native plants are low water using plants that are:
1) indigenous to the Coachella Valley and lower Colorado Desert region of California and Arizona, 2) native to the southwestern United States and northern Mexico or 3) native to other desert regions of the world, but adapted to the Coachella Valley.

NATURAL GRADE – Grade height of native soil before application of surface mulch.

OPERATING PRESSURE - The pressure at which an irrigation system’s sprinklers, bubblers, drippers or microsprays are designed to operate, usually indicated at the base of an irrigation head.

OVERHEAD SPRINKLER IRRIGATION STATIONS - Sprinklers with high flow rates (spray heads, impulse sprinklers, gear rotors, etc.) that are utilized to apply water through the air to large irrigated areas.

OVERSPRAY - The water which is delivered beyond the landscaped area onto pavements, walks, structures or other non-landscape areas. Also known as hardscape applications.

PLANT FACTOR - A factor that, when multiplied by reference evapotranspiration, estimates the amount of water used by plants. For purposes of these criteria, the average plant factor of very low water using plants ranges from 0.01 to 0.10, for low water using plants the range is 0.10 to 0.30, for moderate water using plants the range is 0.40 to 0.60, and for high water using plants, the range is 0.70 to 0.90. Reference: Water Use Classifications of Landscape Species III (WUCOLS III).

PRESSURE COMPENSATING (PC) BUBBLER – An emission device that allows the output of water to remain constant regardless of input pressure. Typical flow rates for this type of bubbler range between 0.25 gpm to 2.0 gpm.

PRESSURE COMPENSATING SCREENS/DEVICES - Small screens/devices inserted in place of standard screens/devices that are used in sprinkler heads for radius and high pressure control.

QUALIFIED PROFESSIONAL - A person who has been certified by their professional organization or a person who has demonstrated knowledge and is locally recognized as qualified among landscape architects due to longtime experience.

RAIN-SENSING DEVICE - A system which automatically shuts off the irrigation system when it rains.

RECYCLED WATER/RECLAIMED WATER - Treated or recycled wastewater of a quality suitable for nonpotable uses such as landscape irrigation. Recycled water is not for human consumption.

RECORD DRAWING or AS-BUILTS - A set of reproducible drawings which show significant changes in the work made during construction and which are usually based on drawings marked up in the field and other data furnished by the contractor.

RECREATIONAL AREA - Areas of active play or recreation such as golf courses, sports fields, school yards, picnic grounds, or other areas with intense foot or vehicular traffic.

RECREATIONAL TURF GRASS - High traffic turf grass that serves as a playing surface for sports and recreational activities. Athletic fields, golf courses, parks and school playgrounds are all examples of areas having recreational turf grass.

RECREATIONAL TURF GRASS ET ADJUSTMENT FACTOR - A factor of 0.82 that, when applied to reference evapotranspiration, adjusts for the additional stress of high traffic on recreational turf grass and the higher irrigation efficiencies of long-range rotary sprinklers. These are the two major influences upon the amount of water that needs to be applied to a recreational landscape. A mixed cool/warm season turf grass with a seasonal average of 0.7 is the basis of the plant factor portion of this calculation. The irrigation efficiency of long-range sprinklers for purposes of the ET adjustment factor is 0.85. Therefore, the ET adjustment factor is 0.82 = 0.7/0.85.

REFERENCE EVAPOTRANSPIRATION or ETo - A standard measurement of the environmental parameters which affect the water use of plants, using cool season grass as a reference. ETo is expressed in inches per day, month or year and is an estimate of the evapotranspiration of a large field of cool-season grass that is well watered. Reference evapotranspiration is used as a basis of determining the Maximum Applied Water Allowances so that regional differences

in climate can be accommodated. For purposes of these criteria, CVWD Drawing No. 29523 will be used for ETo zones.

REHABILITATED LANDSCAPE - Any re-landscaping project in which the choice of new plant material and/or new irrigation system components is such that the calculation of the site's estimated water use will be significantly changed. The new estimated water use calculation must not exceed the Maximum Applied Water Allowance (MAWA) calculated for the site using a 0.5 ET adjustment factor.

RIPARIAN PLANTS - Riparian plants are high water using and water-loving plants that are found growing naturally along flowing rivers and lake shores. They may also be native to wet swampy areas with high water tables or poor drainage.

RUNOFF - Irrigation water which is not absorbed by the soil or landscape to which it is applied and which flows from the planted area.

SERVICE LINE - The pressurized pipeline that delivers water from the water source to the water meter.

SMART CONTROLLER – Weather-based or soil moisture-based irrigation controls that monitor and use information about environmental conditions for a specific location and landscape (such as soil moisture, rain, wind, the plants' evaporation and transpiration rates and, in some cases, plant type and more) to automatically control when to water and when not to, providing exactly the right amount of water to maintain lush, healthy growing conditions.

SOIL MOISTURE-SENSING DEVICE - A device that measures the amount of water in the soil.

SOIL TEXTURE - The classification of soil based on the percentage of sand, silt and clay in the soil.

SPRINKLER HEAD - A device which sprays water through a nozzle.

STATIC WATER PRESSURE - The pipeline or municipal water supply pressure when water is not flowing.

STATION - An area served by one valve or by a set of valves that operate simultaneously.

TURF - A surface of earth containing mowed grass with roots.

VALVE - A device used to control the flow of water in the irrigation system.

WATER FEATURE - Any water applied to the landscape for nonirrigation, decorative purposes. Fountains, streams, ponds and lakes are considered water

features. Water features use more water than efficiently irrigated turf grass and are assigned a plant factor of 1.1 for a stationary body of water and 1.2 for a moving body of water.

WATER SYSTEM - The network of piping, valves and irrigation heads.

WUCOLS III - Water Use Classifications of Landscape Species III

0.00.030 Provisions for new or rehabilitated landscapes

A. Submittal and Approval of a Landscape Documentation Package

1. Prior to construction, the project applicant shall:

   a. Submit two copies of a Landscape Documentation Package to the Coachella Valley Water District (District) that conform to this chapter. No water meter will be issued until the District reviews and approves the Landscape Documentation Package.

   b. Submit one copy of the Landscape Documentation Package to the local agency (city/county).

2. Upon receipt of the Landscape Documentation Package, the District shall:

   a. Review the Landscape Documentation Package.

   b. Approve or deny the Landscape Documentation Package.

3. Upon approval of the Landscape Documentation Package, the District will:

   a. Sign and date the approved plans and return them to the project applicant.

   b. Submit a copy of the project's Water Efficient Landscape Worksheet (Appendix B) to the local agency.

4. Upon approval of the Landscape Documentation Package by the local agency, the project applicant shall:

   a. Receive an approval of the landscape design review or plan check.

   b. Finalize the Certificate of Completion, including recording the date of the approval.

   c. File the Certificate of Completion with the District and the local agency, and provide a copy to the property owner or designee.

d. Submit a copy of the approved Landscape Documentation Package, along with the record drawings and any other information, to the property owner or designee.

5. Each Landscape Documentation Package shall include the following elements:

   a. A completed Landscape Documentation Package Checklist (Appendix A), which includes the date, project applicant, and project address information. This checklist serves to verify that the elements of the Landscape Documentation Package have been completed.

   b. Total landscaped area (square feet)

   c. Project type (e.g., new, rehabilitated, public, private, cemetery, homeowner-installed, etc.)

   d. Water Efficient Landscape Worksheet (Appendix B), which may be imbedded in the plan sheets of the Landscape Documentation Package, and include the following:

      i. Hydrozone Information Table (reference Appendix C)

   e. Water Budget Calculations (reference Appendix D) that adhere to the following requirements:

      i. The plant factor used shall be from WUCOLS. The plant factors ranges from 0 to 0.3 for the low use plants, from 0.4 to 0.6 for the moderate use plants, from 0.7 to 1.0 for the high use plants and 1.1 to 1.2 for water features.

      ii. All water features shall be included in the 1.1 to 1.2 hydrozone and temporary irrigated areas shall be included in the low water use hydrozone.. For the calculation of the Maximum Applied Water Allowance (MAWA) and Estimated Total Water Use, a project applicant shall use ETo values from the Reference Evapotranspiration Table, Appendix C. For geographic areas not covered in Appendix C, use data from other cities located nearby in the same reference evapotranspiration zone.

   f. Landscape Design Plan

   g. Irrigation Design Plan

   h. Grading Design Plan (as required)

   i. Soil Management Report (as required)

   j All plans must contain a signature block for both the local agency and the District.

6. The Landscape Documentation Package shall be submitted by the following procedure:

   a. The applicant or applicant's representative may bring, send or ship copies of the Landscape Documentation Package to the District,

and the local agency, as applicable. Appropriate fees must accompany the Landscape Documentation Package.

b. The plans will normally be returned to the applicant or local agency with comments by the District (Water Management Department) within ten working days of receipt.

c. After noted corrections have been made, the applicant shall re-submit the Landscape Documentation Package to the District for approval and signing by the Water Management Department and Development Services Department for the District.

d. Signed plans will be held at the District's Palm Desert office for applicant pick up or sent by certified shipping at the applicant's request and expense.

e. For direct communication:

Telephone No.:	(760) 398-2651 Water Management Department
Mailing Address:	Coachella Valley Water District Attention: Water Management Department Post Office Box 1058 Coachella, California 92236
Hand Delivery or Shipping Address:	Coachella Valley Water District Attention: Water Management Department 85-995 Avenue 52 Coachella, California 92236
Hand Delivery or Shipping Address:	Coachella Valley Water District Attention: Water Management Department 75-525 Hovley Lane East Palm Desert, California 92211

f. The District will inspect the landscaped area(s) for conformance with the approved Landscape Documentation Package. Landscaping that does not conform to the approved Landscape Documentation Package is subject to penalties as provided in Section 0.00.070.

7. Upon review and approval of the Landscape Documentation Package by the District, the project applicant shall:

   a. Submit a copy of the District-approved Landscape Documentation Package and Water Efficient Landscape Worksheet to the local agency.

   b. Provide the property owner or site manager a copy of the District-approved Landscape Documentation Package, in addition to the record drawings and any other information normally forwarded to the property owner or site manager.

8. Upon review and approval of the Landscape Documentation Package by the local agency, the project applicant shall:

   a. Record the date of the permit on the Certificate of Completion.

   b. Provide the property owner or designee a copy of the local-agency approved Landscape Documentation Package, in addition to the record drawings, and any other information normally forwarded to the property owner or designee.

B. Landscape Design Plan

A landscape design plan meeting the following design criteria shall be submitted as part of the Landscape Documentation package. For the efficient use of water, a landscape shall be carefully designed and planned for the intended function of the project.

1. Any plant may be selected for the landscape, providing the Estimated Total Water Use in the landscape area does not exceed the Maximum Applied Water Allowance (MAWA). To encourage the efficient use of water the following is highly recommended:

   a. Protection and preservation of native species and natural vegetation;

   b. Selection of water-conserving plant and turf species;

   c. Selection of trees based on applicable local tree ordinances or tree shading guidelines; and

   d. Selection of plants from local and regional landscape program plant lists.

2. Specifications for Landscape Design Plan
   The landscape design plan shall be drawn on 36-inch by 24-inch project base sheets at a scale that accurately and clearly identifies the following:

   a. Tract name, tract number or parcel map number on cover sheet.

   b. Proposed planting areas.

   c. Plant material location and size.

   d. Plant botanical and common names.

   e. Plant spacing, where applicable.

   f. Natural features including, but not limited to, rock outcroppings, and existing trees and shrubs that will remain incorporated into the new landscape.

   g. Vicinity map showing site location on top sheet or on cover sheet.

   h. Title block on each sheet with the name and address of the project, and the name and address of the professional design company with its signed professional stamp, if applicable.

   i. Reserve two 6-inch by 3-inch spaces for a) the local agency signature block and b) a District signature block in lower right corner of the cover sheet and on all of the landscape, irrigation design/detail/specification sheets.

   j. Show plan scale and north arrow on design sheets.

   k. Show graphic scale on all design sheets.

   l. Show all property lines and street names.

   m. Show all paved areas, such as driveways, walkways and streets.

n. Show all pools, ponds, lakes, fountains, water features, fences and retaining walls.

o. Show locations of all overhead and underground utilities within project area.

p. Provide an index map, as necessary, showing the overall project, including all 1/4 and 1/16 section lines and section numbers.

q. Show a note on each design sheet stating, "Trees, plants, walls, sidewalks and permanent structures of any kind shall not be planted, installed or built in CVWD, USBR and local agency easements or rights-of-way without first obtaining an encroachment permit from CVWD and the local agency."

r. Show Maximum Applied Water Allowance (MAWA) for the proposed project. (See formula in Appendix C and Sample MAWA, Appendix D.)

s. Show total landscaped area in square feet. Separate area square footages by hydrozone. Show the total percentage area of each hydrozone. Include total area of all water features as separate hydrozones of still or moving water. Show Estimated Total Water Use, for each major plant group hydrozone and water feature hydrozone expressed in either seasonal (turf grass) or annual (trees, shrubs, groundcovers and water features) billing units.

t. Show Total Estimated Total Water Use for each major plant group hydrozone and water feature hydrozone expressed in either seasonal (turf grass) or annual (trees, shrubs, groundcovers and water features) billing units.

u. Show Total Estimated Water Use for the entire project. (Formula in Appendix C and on Sample Calculation Estimated Water Use, Appendix D.) The Total Estimated Use shall not exceed the Maximum Applied Water Allowance (MAWA).

v. Designate recreational areas and recreational turf areas.

w. When model homes are included, show the Maximum Applied Water Allowance (MAWA) and Estimated Total Water Use (by hydrozone with totals) for each model unit.

3. Landscape Design Criteria

a. The landscape design must be carefully planned and take into account the intended function of the project.

b. Plants' appropriateness shall be selected based upon their adaptability to the climatic, geologic and topographical conditions of the site.

c. Selection of water-efficient and low-maintenance plant material is required.

d. All planted areas must be a minimum of one inch below adjacent hardscapes to eliminate runoff and overflow.

e. Long, narrow or irregularly shaped turf areas shall not be designed because of the difficulty in irrigating uniformly without overspray onto hardscaped areas, streets and sidewalks. Areas less than 8 feet in width shall not be designed with turf. Turf will be allowed in these areas only if irrigation design reflects the use of subsurface irrigation or a surface flow/wick irrigation system.

f. Turf areas irrigated with spray/rotor systems must be set back at least 24 inches from curbs, driveways, sidewalks or any other area that may result in runoff of water onto streets. An undulating landscape buffer area created by the setback shall be designed with rocks, cobble or decomposed granite and/or can be landscaped with drip irrigated shrubs/accents or covered with a suitable ground cover.

g. Plants having similar water use shall be grouped together in distinct hydrozones.

h. The use of a soil covering mulch or a mineral groundcover of a minimum two-inch depth to reduce soil surface evaporation is required around trees, shrubs and on nonirrigated areas. The use of boulders and cobble shall be considered to reduce the total vegetation area.

i. Annual color plantings shall be used only in areas of high visual impact close to where people can appreciate them. Otherwise, drip irrigated, perennial plantings should be the primary source of color.

j. Native desert plants shall be specified to be planted in a shallow, wide, rough hole two times the root ball width. The root ball will be set on either undisturbed native soil or a firmed native soil. The root ball top will be set even with the finished surface grade or above grade if the soil is poorly drained. The hole must be backfilled with native soil. Extra soil may be used to mound up around plants where the soil is poorly drained.

k. Landscaping must not obstruct or interfere with street signs, lights or road/walkway visibility. Screening may be provided by walls, berms or plantings.

l. Use locally approved plant materials lists in the selection of appropriate plants.

m. Planter islands in parking lots with canopy trees shall be sized to meet local land use agency requirements.

n. A landscape plan in fire-prone areas shall address fire safety and prevention. A defensible space or zone around a building or structure is required per Public Resources Code Section 4291 (a) and (b). Avoid fire-prone plant material and highly flammable mulches.

o. The use of invasive and/or noxious plant species is prohibited.

p. The architectural guidelines of a common interest development, which includes community apartment projects, condominiums, planned developments and stock cooperatives, shall not prohibit or include conditions that have the effect of prohibiting the use of low-water use plants as a group (California Civil Code, Section 1353.8).

D. Grading Design Plan

1. For efficient use of water, grading of a project site shall be designed to minimize soil erosion, runoff and water waste. A grading plan shall be submitted as part of the Landscape Documentation Package. A comprehensive grading plan prepared by a civil engineer for other local agency permits satisfies this requirement.

2. The project applicant shall submit a landscape grading plan that indicates finished configurations and elevations of the landscape area including;

   a. Height of graded slopes;

   b. Drainage patterns;

   c. Pad elevations;

   d. Finish grade; and

   e. Stormwater retention improvements, if applicable.

3. To prevent excessive erosion and runoff, it is highly recommended, and per local agency requirements, that project applicants:

   a. Grade so that all irrigation and normal rainfall remains within property lines and does not drain on to non-permeable hardscapes;

   b. Avoid disruption of natural drainage patterns and undisturbed soil; and

   c. Avoid soil compaction in landscape areas.

4. The grading design plan shall contain the following statement: "I have complied with the criteria of the ordinance and applied them accordingly for the efficient use of water in the grading plan."

5. Turf is not allowed on slopes greater than 25% where the toe of the slope is adjacent to an impermeable hardscape and where 25% means 1 foot of vertical elevation change for every 4 feet of horizontal length (rise divided by run x 100 = slope percent).

6. Slopes greater than 25% shall not be irrigated with an irrigation system with a precipitation rate exceeding 0.75 inches per hour. This restriction may be modified if the landscape designer specifies an alternative design or technology, as part of the Landscape Documentation Package, and clearly demonstrates no runoff or erosion will occur. Prevention of runoff must be confirmed during an irrigation audit.

7. All grading must retain normal stormwater runoff and provide for an area of containment. All irrigation water must be retained within

property lines and not allowed to flow into public streets or public rights-of-way. Where appropriate, a simulated dry creek bed may be used to convey storm drainage into retention areas. A drywell shall be installed if the retention basin is to be used as a recreational area.

8. Mounded or sloped planting areas that contribute to runoff onto hardscape are prohibited. Sloped planting areas above a hardscaped area shall be avoided unless there is a drainage swale at toe of slope to direct runoff away from hardscape.

9. Median islands must be graded to prevent stormwater and excess irrigation runoff.

E. Irrigation Design Plan

For the efficient use of water, an irrigation system shall meet all the requirements listed in this section and the manufactures recommendations. The irrigation system and its related components shall be planned and designed to allow for proper installation, management, and maintenance. An irrigation design plan meeting the following criteria shall be submitted as part of the Landscape Documentation Package.

Separate landscape water meters shall be installed for all projects except single family homes. When irrigation water is from a well, the well shall be metered. The irrigation design plan shall be drawn on project base sheets. It should be separate from, but use the same format as, the landscape design plan. The irrigation system specifications shall accurately and clearly identify the following:

1. Specifications for Irrigation Design.

   a. Control valves, manufacturer's model number, size and location.

   b. Irrigation head manufacturer's model number, radius, operating pressure, gallons per minute/gallons per hour (gpm/gph) and location.

   c. Piping type, size and location.

   d. Point of connection or source of water and static water pressure.

   e. Meter location and size (where applicable).

   f. Pump station location and pumping capacity (where applicable).

   g. Power supply/electrical access and location.

   h. Plan scale and north arrow on all sheets.

   i. Graphic scaling on all irrigation design sheets.

   j. Irrigation installation details and notes/specifications.

   k. The irrigation system shall be automatic, constructed to discourage vandalism and simple to maintain.

   l. All equipment shall be of proven design with local service available.

   m. Show location, station number, size, and design gpm of each valve on plan. Control valves shall be rated at 200 psi.

n. Visible sprinklers near hardscape shall be of pop-up design.

o. All heads should have a minimum number of wearing pieces with an extended life cycle.

p. Sprinklers, drippers, valves, etc., must be operated within manufacturer's specifications.

q. Manual shut-off valves shall be fully ported ball valves or butterfly valves. Manual shut-off valves are required upstream of automatic valve manifolds.

r. Master valves shall be metal, located as close to the point of connection as possible, and be metal piped between the master valve and the water meter.

s. High flow sensors that detect and report high flow conditions created by system damage or malfunction shall be specified for all projects excluding single family and multi-family dwellings.

t. The following statement "I have complied with the criteria of the ordinance and have applied them accordingly for the efficient use of water in the irrigation design plan;" and

u. The signature of a licensed landscape architect, certified irrigation designer, irrigation consultant, landscape contractor or any other person authorized to design an irrigation system.

2. Specifications for Irrigation Efficiency

The minimum irrigation efficiency shall be 0.75 (75%). Greater irrigation efficiencies are expected from well-designed and maintained systems. The following are required:

a. Design spray head and rotor head stations with consideration for worst wind conditions. Close spacing and low-angle nozzles are required in high and frequent wind areas (ETo Zone No. 5).

b. Spacing of sprinkler heads shall not exceed manufacturer's maximum recommendations for proper coverage. The plan design shall show a minimum of 0.75 (75%) distribution uniformity.

c. Only irrigation heads with matched precipitation rates shall be circuited on the same valve.

d. Valve circuiting shall be designed to be consistent with hydrozones.

e. Individual hydrozones that mix plants that are moderate and low water use may be allowed if:

(i) plant factor calculation is based on the proportions of the respective plant water uses and their plant factor; or

(ii) the plant factor of the higher water using plant is used for the calculations.

f. Individual hydrozones that mix high and low water use plants shall not be permitted.

g. On the landscape design plan and irrigation design plan, hydrozone areas shall be designated by number, letter, or other designation. On the irrigation design plan, designate the areas irrigated by each valve, and assign a number to each valve. Use this valve number in the hydrozone information table. This table can assist with pre-inspection and final inspection of the irrigation system, and programming the controller.

3. Irrigation System Criteria

a. Reduced pressure backflow prevention devices shall be installed behind meter at curb by the District.

b. Show location, station number, size and design gpm of each valve on plan.

c. Smart Controllers shall be specified for all projects. This includes climate based or sensor based controllers, which can automatically adjust for local weather and/or site conditions.

d. High flow check valves shall be installed in or under all heads adjacent to street curbing, parking lots and where damage could occur to property due to flooding, unless controllers with flow sensor capabilities are specified that can automatically shut off individual control valves when excess flow is detected.

e. Pressure compensating screens/devices shall be specified on all spray heads to reduce radius as needed to prevent overthrow onto hardscape and/or to control high pressure misting.

f. All irrigation systems shall be designed to avoid runoff onto hardscape from low head drainage, overspray and other similar conditions where water flows onto adjacent property, nonirrigated areas, walks, roadways or structures.

g. Rotor type heads shall be set back a minimum of 4 feet from hardscape.

h. The use of drip, microirrigation or pressure compensating bubblers or other systems with efficiencies of 90 percent or greater is required for all shrubs and trees. Small, narrow (less than 8 feet), irregularly shaped or sloping areas shall be irrigated with drip, microspray or PC (pressure-compensating) bubbler heads.

i. Trees in turf areas shall be on a separate station to provide proper deep watering.

j. Street median irrigation

i. No overhead sprinkler irrigation system shall be installed in median strips or in islands.

ii. Median islands or strips shall be designed with either a drip emitter to each plant or subsurface irrigation. Bubblers used for trees must be fixed-flow pressure compensating type. Adjustable bubblers are prohibited

k. Meter sizing for landscape purposes shall be 33 gpm per planted acre. Maximum design meter flow rates are: 3/4" = 23 gpm, 1" = 37 gpm, 1-1/2" = 80 gpm, 2" = 120 gpm

l. Large projects located outside Improvement District No. 1 of the Coachella Valley Water District shall connect to or provide future connection to recycled water if such water is available. Large projects located inside Improvement District No. 1 may be required to connect to canal irrigation water or recycled water if such water is available. **(See attached boundary map.)**

4. Drip Irrigation System Criteria

a. The drip system must be sized for mature-size plants.

b. The irrigation system should complete all irrigation cycles during peak use in about 12 hours. Normally, each irrigation controller should not have more than four drip stations that operate simultaneously.

c. Field installed below ground pipe connections shall be threaded PVC or glued PVC. Surface laid hose and tubing is prohibited. Polyethylene tubing is allowed only in subsurface installations. Drip emitter installation shall be directly into polyethylene tubing on a ¼ inch thick-walled riser. Multi-port outlet devices and multi-port distribution is prohibited.

d. Proportion gallons per day per plant according to plant size. The following sizing chart is for peak water use. The low to high end of the range is according to the relative water requirements of the plants. The low end is for desert natives and the high end is for medium water use type plants.

Size of Plant	Gallons Per Day
Large trees (over 30-foot diameter)	58+ to 97+
Medium trees (about 18-foot diameter)	21 to 35
Small trees/large shrubs (9-foot diameter)	6 to 10
Medium shrubs (3.5-foot diameter)	.8 to 1.3
Small shrubs/groundcover	.5 or less

e. Plants with widely differing water requirements shall be valved separately. As an example, separate trees from small shrubs and cactus from other shrubs. Multiple emitter point sources of water for large shrubs and trees must provide continuous bands of moisture from the root ball out to the mature drip line plus

20 percent of the plant diameter. See Appendix C for more information on emitter spacing and wetted area.

f. Most plants require 50 percent or more of the soil volume within the drip line to be wetted by the irrigation system. See Appendix C for more information. For additional information on plant watering and plant relative water needs, see the plant list section of the "Lush and Efficient, Landscape Gardening in the Coachella Valley" or a list provided by the local agency.

5. Recycled Water Specifications

a. When a site has recycled water available or is in an area that will have recycled water available as irrigation water, the irrigation system shall be installed using the industry standard purple colored or marked “Recycled Water Do Not Drink” on pipes, valves and sprinkler heads.

b. The backup groundwater supply (well water or domestic water) shall be metered. Backup supply water is only for emergencies when recycled water is not available.

c. Recycled water users must comply with all county, state and federal health regulations. Cross connection control shall require a 6-inch air gap system or a reduced pressure backflow device. All retrofitted systems shall be dye tested before being put into service.

d. Where available, recycled water shall be used as a source for decorative water features.

e. Sites using recycled water are not exempted from the Maximum Applied Water Allowance (MAWA), prescribed water audits or the provisions of these criteria.

f. A Recycled Water Checklist (Appendix G) shall be submitted to the District upon submittal of the first plan check of the landscape design plan and the irrigation design plan.

6. Irrigation Water (Nonpotable) Specifications

a. When a site is using nonpotable irrigation water that is not recycled water (from an on-site well or canal water) all hose bibs shall be loose key type and quick coupler valves shall be of locking type with nonpotable markings to prevent possible accidental drinking of this water.

b. Sites using nonpotable irrigation water are not exempted from the Maximum Applied Water Allowance (MAWA), prescribed water audits or the provisions of these criteria.

7. Groundwater Water Specifications

a. Sites using groundwater irrigation water from wells are not exempted from the Maximum Applied Water Allowance

(MAWA), prescribed water audits, or the provisions of these criteria.

8. Golf Course Criteria

   a. For all new golf courses and additions or renovations to existing golf courses, the area of irrigated turf used for tees, fairways, greens and practice areas shall be limited. The total turf area of the golf course shall be limited to a maximum of four (4) irrigated acres average per golf hole. Practice areas such as driving ranges and short game areas shall not exceed ten (10) acres of turf. The golf course design shall reflect the natural topography and drainage ways of the site, minimize the clearing of vegetation and be flexible and water efficient in design.

   b. All nonturf areas such as ponds, lakes, artificial water courses, bunkers and irrigated landscapes within the golf course project area must not exceed the Maximum Applied Water Allowance (MAWA) calculations set forth within these criteria.

0.00.040 Other Provisions

A. Landscape Audit, Irrigation Survey, and Irrigation Water Use Analysis for New Construction and Rehabilitated Landscapes

1. This section shall apply to new construction and rehabilitated landscape projects installed after January 1, 2010 as described in Section 0.00.030.

2. All landscape irrigation audits shall be conducted by a certified landscape irrigation auditor.

3. The project applicant shall submit an irrigation audit report with the Certificate of Completion to the local agency that may include, but not be limited to, inspection, system tune-up, system test with distribution uniformity, reporting overspray or run-off that causes overland flow, and preparation of an irrigation schedule;

4. The District will administer programs that may include, but not be limited to, irrigation water use analysis, irrigation audits and irrigation surveys for compliance with the Maximum Applied Water Allowance (MAWA).

5. The owner of the landscaped area shall bear the cost of the audit.

B. Irrigation Audit, Irrigation Survey and Irrigation Water Use Analysis for Existing Landscapes

1. This section shall apply to all existing landscapes that were installed before January 1, 2010 and are over one (1) acre in size.

2. The District will administer programs that may include, but not be limited to, irrigation water analysis, irrigation surveys and irrigation audits that verify landscape water use does not exceed the Maximum Applied Water Allowance (MAWA) for existing landscapes. The Maximum Applied Water Allowance (MAWA) for existing landscapes shall be calculated as:

MAWA = (.70) (ETo) (LA) (.62/748) unless landscape plans were submitted and approved under a more water conserving ordinance.

C. Water Waste Prevention

1. Water Waste Prevention. Water waste resulting from inefficient landscape irrigation including run-off, low-head drainage, overspray, or other similar conditions where water flows onto adjacent property, nonirrigated areas, walks, roadways, or structures is prohibited. All broken heads and pipes must be repaired within 72 hours of notification. Penalties for violation of these prohibitions are established in Section 0.00.070.

2. Water service to customers who cause water waste may have their service discontinued.

3. Customers who appear to be exceeding the Maximum Applied Water Allowance (MAWA) may be interviewed by the District Water Management Department to verify customer water usage to ensure compliance.

D. Soil Management Report

1. In order to reduce runoff and encourage healthy plant growth, a soil management report shall be completed by the project applicant or designee as follows:

   a. Submit soil samples to a laboratory for analysis and recommendation.

   b. Soil sampling shall be conducted in accordance with laboratory protocol, including protocols regarding adequate sampling depth for the intended plants.

   c. The soil analysis may include:

      i. Determination of soil texture, indicating the available water holding capacity.

      ii. An approximate soil infiltration rate (either) measured or derived from soil texture/infiltration rate tables. A range of infiltration rates shall be noted where appropriate.

      iii. Measure of pH, total soluble salts and percent organic matter.

   d. The project applicant or designee shall comply with one of the following:

      i. If significant mass grading is not planned, the soil analysis report shall be submitted to the local agency as part of the Landscape Documentation Package; or

      ii. If significant mass grading is planned, the soil analysis report shall be submitted to the local agency as part of the Certificate of Completion.

   e. The soil analysis report shall be made available, in a timely manner, to the professionals preparing the landscape design plans

and the irrigation plans to make any necessary adjustments to the design plans.

f. The project applicant or designee shall submit documentation verifying implementation of soil analysis report recommendations to the local agency with the Certificate of Completion.

E. Developer-Provided Documentation

1. The developer/applicant/designee shall provide an approved copy of the Landscape Documentation Package and the following information for the homeowner or irrigation system operator. The package/information shall include a set of drawings, a recommended monthly irrigation schedule, and a recommended irrigation system maintenance schedule as described in Section 0.00.040G.

2. Irrigation Schedules. For the efficient use of water, all irrigation schedules shall be developed, managed, and evaluated to utilize the minimum amount of water to maintain plant health. Irrigation schedules shall meet the following criteria:

a. An annual irrigation program with monthly irrigation schedules shall be required for the plant establishment period, for the established landscape, and for any temporarily irrigated areas. The irrigation schedule shall:

i. Include run time (in minutes per cycle), suggested number of cycles per day, and frequency of irrigation for each station.

ii. Provide the amount of applied water (in hundred cubic feet) recommended on a monthly and annual basis.

iii. Whenever possible, incorporate the use of evapotranspiration data, such as those from the California Irrigation Management Information System (CIMIS) weather stations, to apply the appropriate levels of water for different climates.

iv. Whenever possible, be scheduled between 8:00 p.m. and 10:00 a.m. to avoid irrigating during times of high wind or high temperature.

G. Maintenance Schedules

A regular maintenance schedule satisfying the following conditions shall be submitted as part of the Landscape Documentation Package:

1. Landscapes shall be maintained to ensure water efficiency. A regular maintenance schedule shall include but not be limited to checking, adjusting, cleaning and repairing equipment; resetting the automatic controller, aerating and dethatching turf areas; replenishing mulch; fertilizing; pruning; and weeding in all landscaped areas.

2. Repair of irrigation equipment shall be done with the originally specified materials or their approved equal.

3. A project applicant is encouraged to implement sustainable or environmentally-friendly practices for the overall landscape maintenance.

H. Certificate of Completion

1. The Certificate of Completion (Appendix E) shall include the following:
   a. Submittal and Approval Dates of the Landscape Documentation Package and Submittal Date of the Water Efficient Landscape Worksheet
   b. Project Name
   c. Project Address and Location
   d. Applicant Name, Telephone and Mailing Address
   e. Property Owners Name, Telephone, and Mailing Address
2. Certification by either the signer of the landscape design plan, the signer of the irrigation design plan, or the licensed landscape contractor that the landscape project has been installed per the approved Landscape Documentation Package.
3. Irrigation scheduling parameters used to set the controller.
4. Landscape and irrigation maintenance schedule.
5. Irrigation audit report.
6. Soil analysis report and documentation verifying implementation of soil report recommendations.
7. The project applicant shall:
   a. Submit the signed Certificate of Completion to both the local agency and the District for review and approval.
   b. Ensure that copies of the Certificate of Completion with all approvals are submitted to the local agency, the District, and property owner or his or her designee.
8. The District and the local agency shall:
   a. Receive the signed Certificate of Completion from the project applicant.
   b. Approve or deny the Certificate of Completion. If the Certificate of Completion is denied, the local agency shall provide information to the project applicant regarding reapplication, appeal or other assistance.

I. Stormwater Management

1. Stormwater management practices minimize runoff and increase infiltration which recharges groundwater and improves water quality. Implementing stormwater best management practices into the landscape and grading design plans to minimize runoff and to increase on-site retention and infiltration are encouraged.

2. Project applicants shall refer to the District, the local agency, and/or Regional Water Quality Control Board for information on any applicable stormwater ordinances and stormwater management plans.

3. Rain gardens and other landscape features that increase rain water capture and infiltration are recommended.

J. Public Education

1. Public education is a critical component to promote the efficient use of water in landscapes. The use of appropriate principles of design, installation, management and maintenance that save water is encouraged in the community.

2. The District and the local agency shall provide information to owners of new, single family residential homes regarding the design, installation, management and maintenance of water efficient landscapes.

0.00.050 Review and Program Monitoring Fees

A. Review and Program Monitoring fees are deemed necessary to review Landscape Documentation Packages and monitor landscape irrigation audits and shall be imposed on the subject applicant, property owner or designee.

B. A Landscape Documentation Package review fee will be due at the time of initial project application submission to the District.

C. The Board of Directors, by resolution, shall establish the amount of the above fees in accordance with applicable law.

0.00.060 Appeals

A. Appeal to General Manager-Chief Engineer. An applicant, property owner or designee of any applicable project may appeal decisions made by the Water Management Department or Service Director other than imposition of penalties (see Sections 0.00.070 – 0.00.090 regarding imposition of penalties) to the General Manager-Chief Engineer, in writing, within fifteen (15) days of notification of decision. The General Manager-Chief Engineer's decision shall become final on the fifteenth (15^{th}) day following service of written notification of said decision unless a timely appeal is filed pursuant to 0.00.060 B.

B. Appeal to Board of Directors. An applicant, property owner or designee of any applicable project may appeal decisions made by the General Manager-Chief Engineer pursuant to Section 0.00.060 A. to the Board of Directors. Said appeal must be written and submitted to the Secretary of the Board of Directors within fifteen (15) days of the date of notification of the General Manager-Chief Engineer's decision. The Board of Directors' decision shall be final upon its adoption.

0.00.070 Penalties

A. Violation of any part of Ordinance No. 1302.1 may result in any or all of the following penalties:

1. Monetary. See Appendix F for schedule of monetary penalties.

2. Termination of Service.

B. Notice. The District shall issue a written notice of imposition of penalty. The notice shall set forth penalty imposed and the reason for imposition of it. The notice shall be served on the customer by registered or certified mail and shall advise that the customer may request review of the imposition of penalty by filing a written request for a hearing pursuant to the provision of Section 0.00.080.

0.00.080 Hearing Regarding Penalties

A. Request for Hearing. Customers who have received notice of imposition of penalty may make a written request for a hearing. The District must receive the request for hearing no later than fifteen (15) days from the date of the notice of imposition of penalty. The request for hearing shall set forth, in detail, all facts supporting the request. Upon District's receipt of a timely request for a hearing, imposition of penalty shall be stayed until the Statement of Decision after hearing becomes final, or, if the Statement of Decision is timely appealed, the Board of Directors' order on appeal is adopted.

B. Notice of Hearing. Within ten (10) days of the District's receipt of the request for hearing, the District shall provide written notice to the customer of the date, time and place of the hearing. The hearing date shall be within thirty (30) days of the mailing of the notice of hearing, unless the parties agree, in writing, to a later date.

C. Hearing. The General Manager-Chief Engineer, or his designee, shall act as the Hearing Officer. At the hearing, the customer shall have an opportunity to respond to the allegations set forth in the notice of imposition of penalty by producing written and/or oral evidence.

D. Statement of Decision. Within ten (10) days following the hearing, the Hearing Officer shall prepare a written Statement of Decision, which shall set forth the facts upon which the decision is based. The Statement of Decision shall be served by personal delivery or registered or certified mail on the customer. The Statement of Decision shall become final on the sixteenth (16^{th}) day after service on the customer unless a request for appeal is timely filed with the Board of Directors pursuant to Section 0.00.090.

0.00.090 Appeal of Penalties

A. Request for Appeal. A customer may appeal a Statement of Decision by filing a written request for appeal with the Board of Directors before the date the Statement of Decision becomes final, i.e., no later than the fifteenth (15^{th}) day following service of the Statement of Decision on the customer. The request for appeal shall set forth, in detail, all the issues in dispute and all facts supporting the request.

B. Notice of Appeal Hearing. No later than thirty (30) days after receipt of the request for appeal, the Board of Directors shall set the matter for a hearing. Written notice of said hearing of appeal shall be served on the appellant by personal delivery or registered or certified mail. The hearing date shall be a date within thirty (30) days of service of the notice of hearing of appeal, unless the parties agree, in writing, to a later date. If the Board of Directors does not hear the appeal within the required time due to acts or omissions of the appellant, the Statement of Decision shall become final on the thirty-first (31^{st}) day after service of notice of hearing of appeal on the customer.

C. Determination and Order on Appeal. After the hearing of appeal, the Board of Directors shall issue an order affirming, modifying or reversing the General Manager-Chief Engineer's decision. The Board of Directors shall set forth its Determination and Order, in writing, and shall serve the Determination and Order to the customer by personal delivery or registered or certified mail within thirty (30) days following the hearing. The Determination and Order of the Board of Directors shall be final upon its adoption.

APPENDIX A

Landscape Documentation Package Checklist

Project Site: _____ Tract or Parcel Number: _____

Project Assessor's Parcel Number (APN): _____

Project Location: _____

Landscape Architect/Irrigation Designer/Contractor and Name and Contact Information: _____

Included in this Landscape Documentation Package are: (Check to indicate completion)

____ 1. Water Efficient Landscape Worksheet (Appendix B)
WATER BUDGET CALCULATIONS (Appendix D)

____ 2. Maximum Applied Water Allowance (MAWA):

Conventional Landscape: _____ 100 cubic feet/year
+ Recreational Turf grass Landscape: _____ 100 cubic feet/year (if applicable)
Maximum Applied Water Allowance: _____ 100 cubic feet/year

____ 3. Estimated Total Water Use by Hydrozone:
Turf grass Hydrozones: _____ 100 cubic feet/year
Recreational Turf grass Hydrozones: _____ 100 cubic feet/year
Low Plant Hydrozones: _____ 100 cubic feet/year
Medium Plant Hydrozones: _____ 100 cubic feet/year
High Plant Hydrozones: _____ 100 cubic feet/year
Water Features: _____ 100 cubic feet/year
Other _____: _____ 100 cubic feet/year
Estimated Total Water Use: _____ 100 cubic feet/year

____ 4. ETWU < MAWA
PLAN SETS

____ 5. Landscape Design Plan

____ 6. Irrigation Design Plan

____ 7. Grading Design Plan

____ 8. Soil Management Report

I agree to comply with the requirements of the water efficient landscape ordinance and submit a complete Landscape Documentation Package.

Date: _____ Applicant: _____

APPENDIX B

SAMPLE WATER EFFICIENT LANDSCAPE WORKSHEET

This worksheet is filled out by the project applicant and is a required element of the Landscape Documentation Package.

PROJECT INFORMATION

Project Name		
Name of Project Applicant	Telephone No.	
	Fax No.	
Title	Email Address	
Company	Street Address	
City	State	Zip Code

SECTION A. HYDROZONE INFORMATION TABLE

Please complete the hydrozone table(s) for each irrigation point of connection. Use as many tables as necessary to provide the square footage of landscape area per valve.

Irrigation Point of Connection (P.O.C.) No. _____					
Controller No.	**Valve Circuit No.**	**Plant Types(s)***	**Irrigation Method****	**Area (Sq. Ft.)**	**% of Landscape Area**
Total					**100%**

***Plant Type**
Cst = Cool Season Turf
WST = Warm Season Turf
HW = High Water Use Plants
MW = Moderate Water Use Plants
LW = Low Water Use Plants

****Irrigation Method**
MS = Microspray
S = Spray
R = Rotor
B = Bubbler
D = Drip
O = Other

APPENDIX C

ET PROFILE AND PLANT FACTORS

	Jan>	<Feb	Mar	Apr>	<May	Jun	Jul	Aug	Sep>	<Oct	Nov	Dec	Totals	Totals
Monthly ETo (inches)	.....												Inches	Feet
Zone No. 1-Coves	1.71	2.84	4.00	5.70	6.84	7.98	7.98	6.27	5.70	4.00	2.28	1.71	57.01	4.75
Zone No. 2-COD	2.00	3.36	4.68	6.68	8.02	9.35	9.35	7.35	6.68	4.68	2.67	2.00	66.82	5.57
Zone No. 3-EMC	2.25	3.75	5.25	7.50	9.00	10.50	10.50	8.25	7.50	5.25	3.00	2.25	75.00	6.25
Zone No. 4-TH	2.64	4.40	6.16	8.80	10.56	12.32	12.32	9.68	8.80	6.16	3.52	2.64	88.00	7.33
Zone No. 5-I10	2.82	4.68	6.57	9.39	11.27	13.15	13.15	10.33	9.39	6.57	3.76	2.82	93.90	7.83
% Annual ETo per Month	3	5	7	10	12	14	14	11	10	7	4	3		

Zone No. 1 = Most protected cove areas with minimum wind, longest mountain shadows, higher rainfall, Palm Can. to La Q. Cove

Zone No. 2 = Lower cove areas, light winds, long afternoon shadows from mountains, typ. Hwy 111 from Cathedral City to La Quinta

Zone No. 3, 4 = Moderate winds, minimum mountain shadows, some blowing sand and dust; 3) Upper valley predominate wind from northwest, 4) Lower valley has lower elevation and more summer southeast wind

Zone No.5 = Frequent strong northwest winds, heavy blowing sand and dust, typical of I-10 corridor to Washington Street

Maximum Applied Water Allowance (CCF) = ETo (in inches for season) X .50 X Area (in square feet) X .62 / 748

ET Adjustment Factor = .38 Plant Factor / .75 Irrigation System Efficiency = 0.50

.62 = gallons per square foot per inch deep

CCF = 100 cubic feet = 1 billing unit = 748 gallons

Estimated Total Water Use (CCF) = $\frac{\text{ETo (in inches for season) X Plant Factor X Area (in square feet) X 0.62 / 748}}{\text{Irrigation System Efficiency}}$

Target Irrigation Efficiency = .80 Turf Rotor

= .75 Sprayheads

= .90 Drip/Micro/PC Bubbler

Emitters per Plant Estimate = $\frac{\text{Area Of Plant In Square Feet X \% Of Area To Be Wet}}{\text{Square Feet Wet Per Emitter}}$

Soil Type	(inches water holding capacity per inch of depth)		Emitter Wetted Area Square Feet Each	Emitter Spacing
Very Coarse Sand	0.05	Typical of high on an alluvial fan	.75 to 1.75	10"
Blow Sand	0.07	Typical of mid valley ridge area	1.75 to 3	18"
Fine Sand	0.10	Typical of low on alluvial fans from Rancho Mirage to Indian Wells	3 to 5	3'
Very Fine Silty Sand	0.15	Typical of lowest alluvial fans from La Quinta, Indio, & Coachella	5 to 10	4'
Silt Loam	0.17	Typical of lower valley agricultural areas located below sea level	10 to 28	4.5'

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
Plant Factor (Kc)													
Cool Turf 100%**	1.00	1.00	1.00	NR	NR	NR	NR	NR	NR	1.00	1.00	1.00	1.00
Warm Turf 100%**	NR	NR	NR	0.80	0.80	0.80	0.80	0.80	0.80	NR	NR	NR	0.80
Cool Turf 80%*	0.80	0.80	0.80	0.70	NR	NR	NR	NR	NR	0.80	0.80	0.80	0.79
Warm Turf 60%*	NR	NR	NR	0.60	0.60	0.60	0.60	0.60	0.60	0.60	NR	NR	0.60
Combined TurfSav*	0.80	0.80	0.80	0.70	0.60	0.60	0.60	0.60	0.60	0.70	0.80	0.80	0.70
Tree/Shrub/GC L*	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Tree/Shrub/GC L**	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Tree/Shrub/GC M*	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Tree/Shrub/GC M**	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Tree/Shrub/GC H*	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Tree/Shrub/GC H**	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Open WaterFactor	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10

(Approx. Evaporation from a still water surface, higher factor (1.2) with falls and fountains.) Reference; WUCOLS III

CombinedTurfSav = Combination of cool and warm season turf according to normal management in the Coachella Valley

* = Normal irrigation level to maintain established planting

** = Normal irrigation level during plant establishment

GC = Groundcover

L = Low water use Kc .1 to .3

M = Moderate water use Kc .4 to .6

H = High water use Kc .7 to .9

NR = Not Recommended

APPENDIX D

SAMPLE CALCULATION/ESTIMATED TOTAL WATER USE (by Hydrozone)

Using the following formula from Appendix C:

ETWU = (ETo) x (PF) x (LA) x (.62)] / (748) / (IE)
ETWU = Estimated Water Use (hundred cubic feet)
ETo = Reference Evapotranspiration (inches) [for period of estimate]
PF = Plant Factor (Kc)
LA = Landscaped Area (in square feet)
.62 = Conversion Factor (to gallons per square foot)
748 = Conversion Factor (to hundred cubic feet)
IE = Irrigation System Efficiency

Project Site Example: Total landscaped area 60,000 square feet in Palm Desert near the intersection of Cook Street and Country Club Drive in Zone No. 3 (75.0" Annual ETo).

- 16,500 square feet of turf grass overseeded with rye grass in winter, irrigated with low angle rotor sprinklers.
- 28,200 square feet of "low" desert native plantings on drip irrigation.
- 15,300 square feet of "moderate" water using plantings on drip irrigation.

See Appendix C for formula factors. ETo is totaled for season. Turf grass plant factors are the average for the season and tree/shrub/groundcover plant factors are considered constant annually.

Plant Factors

Turf Grass	Low Native Plants	Moderate Shrubs
0.70	0.20	0.50

ETWU = [(ETo) x (PF) x (LA) x (.62) / (748)] / (IE) = CCF

Overseeded Turf Grass: Season = 75.0 x .7 x 16,500 x .62 / 748 /.80 = 897 CCF
Seasonal Turf ETWU = 897 CCF

"Low" Native Plants: Annual = 75.0 x .2 x 28,200 x .62 / 748 / .90 = 389 CCF
"Low" Native ETWU = 389 CCF

"Moderate" Shrubs and Ground Cover: Annual = 75.0 x .5 x 15,300 x .62 / 748 / .90 = 528 CCF
"Moderate" ETWU = 528 CCF
Project Total ETWU = 1,814 CCF

APPENDIX D

SAMPLE CALCULATION

Maximum Applied Water Allowance (MAWA)

Using the following formula:

MAWA = [(ETo) x (0.50) x (LA) x (0.62)] / (748)
MAWA = Maximum Applied Water Allowance (CCF or hundred cubic feet)
ETo = Reference Evapotranspiration (inches per year)
0.50 = ET adjustment factor = .38 PF / .75 IE
LA = Landscaped Area (square feet)
0.62 = Conversion Factor (to gallons per square foot)
748 = Conversion Factor (to hundred cubic feet)

Using the project for the Estimated Total Water Use example:

Landscaped area of 60,000 square feet in Palm Desert near the intersection of Cook Street and Country Club Drive in Zone No. 3 (75.0" Annual ETo).

MAWA = 75.0 (ETo) x (0.50) x (LA) x (0.62) / (748)
= [75.0(.50) (60,000) (0.62)] / (748)
MAWA = 1,864 CCF

ETWU total of 1,814 CCF is < the MAWA of 1,865 CCF

APPENDIX E

SAMPLE CERTIFICATE OF COMPLETION

Project Name:_____

Parcel Map or Tract No.:_____ APN:_____

Project Location:_____

Maximum Applied Water Allowance (MAWA):_____ (in hundred cubic feet)

Estimated Annual Total Applied Water Use:_____ (in hundred cubic feet)

Preliminary project documentation submitted (initials indicate submittal)

_____1. Grading design plan

_____2. Landscape design plan

_____3. Irrigation design plan

_____4. Irrigation schedules

Post Installation inspection (initials indicate completion)

_____1. Plants installed as specified

_____2. Irrigation System installed as designed

Comments:_____

_____

_____

A copy of this certification has been provided to the owner/developer, the local agency and to the District. I certify the work has been completed in accordance with District Ordinance 1302.1, Landscape and Irrigation System Design Criteria.

_____

Landscape Architect/Designee Signature License No. Date

1. Date the Landscape Documentation Package was submitted to the Local Agency: _____

2. Date the Landscape Documentation Package was approved by the Local Agency: _____

3. Date a copy of the Water Efficient Landscape Worksheet (including the Water Budget

Calculation) was submitted to the District: _____

APPENDIX F

SCHEDULE OF MONETARY PENALTIES

1. $250 upon receipt of first written Notice of Non-compliance.
2. An additional $250 (for a total of $500) upon receipt of the second Notice of Non-compliance issued thirty (30) days after the receipt of the first Notice of Non-compliance.

APPENDIX G

Recycled Water Checklist

1. Obtain coverage under the general waste discharge requirements for discharge of recycled water for golf course and landscape irrigation Order No. 97-700 or equivalent version of this permit from the California Regional Water Quality Control Board of the Colorado River Basin Region (Regional Board) by submitting a Notice of Intent to the Regional Board and paying application/annual fees.

2. Enter into an agreement with CVWD for receiving nonpotable water for golf course and landscape irrigation. The agreement between discharger and CVWD must be provided to the Regional Board within 90 days of receiving coverage under the permit referenced above in item #1.

3. Landscape and Irrigation system plans must meet regulatory requirements of Order 97-700 or equivalent version of this permit, the State Board's Recycled Water Policy, and California Department of Public Health (CDPH) Statutes and Regulations related to recycled water, such as the Health and Safety Code, the Water Code, Title 17 and Title 22 Code of Regulations. These requirements include but are not limited to the following:

    a. An air-gap separation, a vertically measured distance between supply pipe and receiving vessel must be present and meet the required distance for the size of the supply pipe.

    b. The appropriate type of backflow protection is to be installed for auxiliary water supplies and recycled water.

    c. The required separation distance between recycled water lines and impoundments and application area; and domestic wells and water lines is maintained and approved by CDPH.

    d. The design of the irrigation system shall not cause the occurrence of ponding anywhere in the reuse area, and overspray or mist around dwellings, outdoor eating areas and/or food handling facilities is eliminated. Irrigation runoff shall be confined to the recycled water use area unless authorized by CDPH.

    e. Drinking fountains will be protected from spray, mist or runoff by use of a drinking fountain cover or shelter approved for this purpose.

    f. Hose bibs are not allowed on portions of the recycled water systems accessible to the general public. Quick couplers that differ from those used on the potable water system are allowed.

g. Signs are posted in areas that the public has access to that are no less than 4 inches high by 8 inches wide and include "RECYCLED WATER—DO NOT DRINK" and the international do not drink symbol as indicated in CCR Title 22 Division 4 Chapter 3 Article 4 Section as figure 60310-A. The number and locations of these signs will be approved by CDPH.

h. The recycled water irrigation system is able to be operated during a time of day that will minimize contact with the public.

i. All pipes installed above or below ground on or after June 1, 1993 designed to carry recycled water are to be colored purple or wrapped in purple tape.

j. Golf course pump houses utilizing recycled water are appropriately tagged with warning signs with proper wording of sufficient size to warn the public that recycled water is not safe for drinking. All new and replacement at grade valve boxes shall be purple or appropriately tagged for water reuse purposes. All other appurtenances and equipment used for recycled water must be identified as used for recycled water distribution per the recommendations of CDPH.

4. Prior to construction, landscape and irrigation system plans must be submitted for approval to the following agencies (please allow for a 30 day comment period):
    a. Regional Board Water Quality Control Board,
    b. California Department of Public Health, and
    c. CVWD.

5. Upon approval from the Regional Board and CDPH, the discharger shall provide notification that recycled water will be used for irrigation to people who reside adjacent to the recycled water use area and to golf course patrons though a method approved by the Regional Board's Executive Officer and CDPH at least 30 days prior to use of recycled water.

6. A Use Site Supervisor must be designated and his or her name and contact information must be provided in writing to CVWD and the Regional Board 30 days prior to discharge of recycled water. This person will be available to be contacted and receive periodic education and training on the uses and restrictions of recycled water.

7. A cross-connection control test will be performed on the irrigation and domestic systems prior to the discharge of recycled water and at least once every four years thereafter. This test is to be conducted by an American Water Works Association (AWWA) certified cross-connection control program specialist or equivalent. The results of these tests are to be submitted to CVWD, CDPH, and the Regional Board within 30 days of test completion.

8. "As-Built" plans and specifications showing the domestic and irrigation systems, location of all potable and recycled water connections and location of all on-site and nearby wells to CDPH, as per the CDPH requested time frame.

APPENDIX G NOTICE OF PUBLIC HEARING

APPENDIX H RESOLUTION FOR PLAN ADOPTION