WaterSMART: Water and Energy Efficiency Grants for Fiscal Year 2016 (R16-FOA-DO-004)

Coachella Valley Water District Turf Reduction Water and Energy Efficiency Program

Submitted by:
Coachella Valley Water District
P.O. Box 1058
Coachella, CA 92236

Project Manager: Patti Reyes
P.O. Box 1058
Coachella, CA 92236
Phone: (760) 398-2661, ext. 2270
Fax: (760) 398-3711
E-mail: preyes@cvwd.org

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1.1 Executive Summary

Date:	**January 20, 2016**
Applicant:	**Coachella Valley Water District**
City:	**Palm Desert**
County:	**Riverside**
State:	**California**

Coachella Valley Water District (CVWD) is applying to the *WaterSMART Water and Energy Efficiency Program* for $1,000,000 under Funding Group II to implement a comprehensive turf reduction program that would target turf removal from golf courses, commercial, and residential users within CVWD's service area. This project is an extension of CVWD's existing turf removal programs that have been highly effective at reducing outdoor water usage and associated energy demands. Removing monoculture turf with desert-friendly landscaping provides habitat to endangered and threatened species, and addresses climate-related impacts on water. This project will also prevent water-related conflicts that could arise if groundwater pumping in CVWD's service area continues to result in groundwater overdraft. Implementation of the *Turf Reduction Water and Energy Efficiency Program* began on July 1, 2015, and can be completed within two (2) years of receiving a grant award from the United States Bureau of Reclamation (Reclamation). Assuming that funds are awarded on September 30, 2016, the project would be completed by September 30, 2018. Several Federal facilities associated with conveying Colorado River water to the Coachella Valley are located within the Project Area. However, the *Turf Reduction Water and Energy Efficiency Program* is not located on any of these facilities.

1.2 Background Data

Project Map

CVWD lies within the Whitewater River watershed in the Coachella Valley, which is located within Riverside County, California. The Coachella Valley climate is characterized by low precipitation and high summer daytime temperatures. Urban water supply for the Coachella Valley is primarily groundwater pumped from two sub-basins of the Coachella Valley Groundwater Basin: the Indio Sub-Basin and the Mission Creek Sub-Basin and is recharged with Colorado River water (refer to **Figure 1-1**). CVWD's service area covers several incorporated cities, including the Palm Springs, Cathedral City, Palm Desert, Rancho Mirage, Indian Wells, and La Quinta. The *Turf Reduction Water and Energy Efficiency Program* is a rebate program that spans throughout CVWD's service area; therefore, there is not a specific distance from the program to the aforementioned cities.

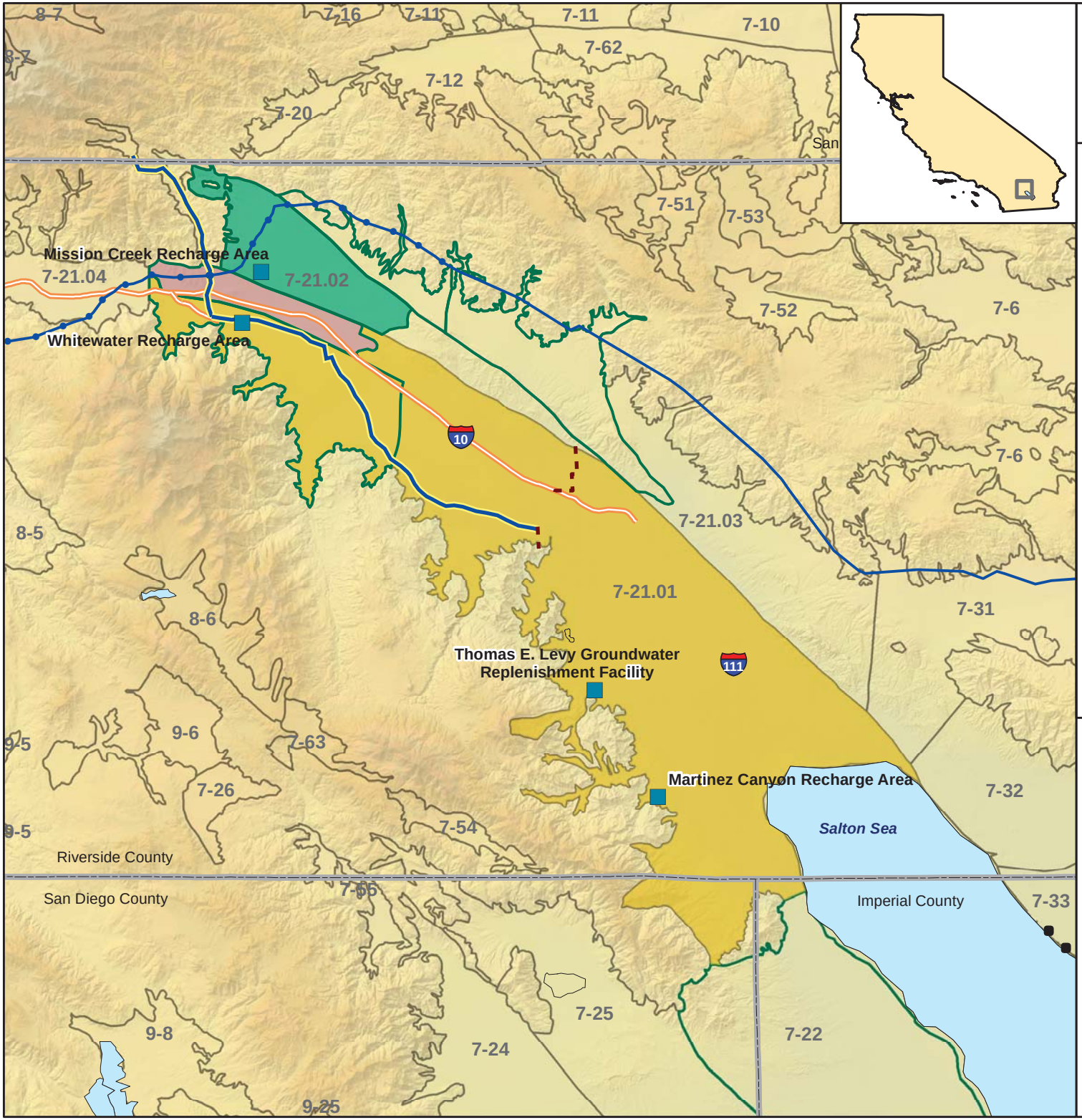

Figure 1-1: Project Map

- Recharge Area
- Division between West and East Valley
- Colorado River Aqueduct
- Coachella and All American Canals
- Whitewater River Storm Water Channel
- Coachella Valley Storm Water Channel
- Highways
- Water Bodies
- CVWD Service Area

Groundwater Basins in Coachella Valley

- Garnet Hill
- Indio/Whitewater River
- Mission Creek
- Groundwater Sub Areas
- DWR Bulletin 118 Groundwater Basins

7-X

Source: DWR Bulletin 118 & 2010 Coachella Valley Water Management Plan

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COACHELLA VALLEY IRWMP

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File Location:N:\Projects\0574 - CVWD\0574-003.03 CVWD WaterSmart Support\03_GIS\
Date Updated: Friday, January 15, 2016
Department: RMC Water & Environment

Applicant Water Supply Details and Water Rights

Groundwater is the largest source of water supply for the Region. The Coachella Valley Groundwater Basin, which includes several sub-basins, has an estimated storage capacity of 39 million acre-feet (AF) of water. The Indio sub-basin, which is the largest sub-basin of the Coachella Valley Groundwater Basin, varies geologically between the western and eastern ends of the Coachella Valley, also referred to as the West Valley and East Valley, respectively. In the West Valley, coarse-grain sediments allow for percolation through the sands and gravels directly into the groundwater aquifer. However, in the East Valley, clay layers lie between the ground surface and the main aquifer, effectively prohibiting percolation. Please note that local documents in the Coachella Valley refer to the Indio Sub-basin as the Whitewater River Sub-basin; as such, citations provided in the following sections that refer to the Whitewater River Sub-basin also refer to the Indio Sub-basin.

Due to climate and favorable soil conditions, the East Valley was predominantly an agricultural-based economy, although today the area also contains large amounts of urban development. Prior to 1949, groundwater levels in the East Valley steadily declined due to agricultural pumping. The Coachella branch of the All American Canal (Coachella Canal) was completed in 1949 and the first deliveries of Colorado River water to the Coachella Valley began in that year for agricultural irrigation. As a result, agricultural groundwater pumping was significantly reduced from 1950 to the early 1980s, and groundwater levels rose in the eastern Coachella Valley where water from the Coachella Canal is delivered. Groundwater levels stabilized in the 1970s and early 1980s, however, with increased growth, groundwater levels declined again from the 1980s-the early 2000's.[1] Today, Colorado River water that is delivered in the East Valley via the Coachella Canal (also referred to as Canal Water), is supplied to agricultural users and other irrigation users such as golf courses and urban developments. CVWD's right for imported Colorado River water that is delivered via the Coachella Canal has been affirmed by the Quantification Settlement Agreement (QSA), which stipulates shares of Colorado River for CVWD, Imperial Irrigation District, Metropolitan Water District of Southern California (Metropolitan), the State of California, and the U.S. Department of the Interior. CVWD's base allocation available through the QSA is 330,000 acre-feet per year (AFY).

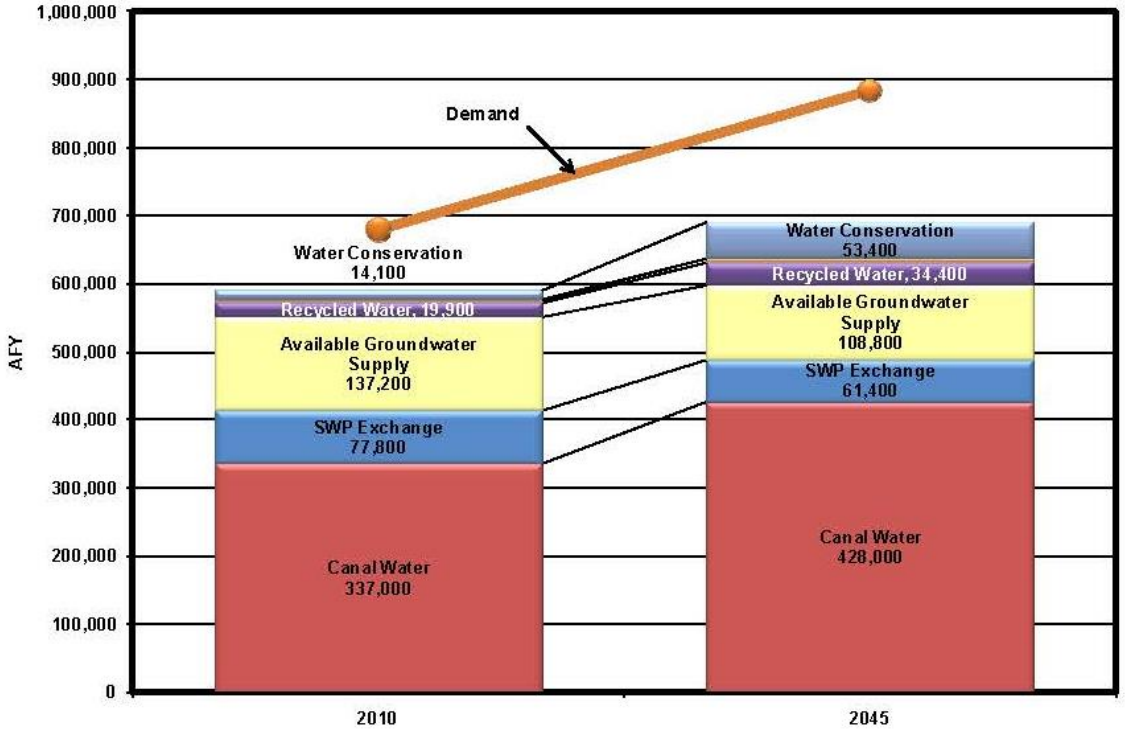
In the West Valley, the land use mix is predominately urban, including many golf courses. Recognizing the need for additional water supplies in the West Valley, CVWD and Desert Water Agency (DWA) entered into agreements with the State of California to purchase water from the State Water Project (SWP). Given the Coachella Valley's geographical distance to SWP infrastructure, SWP water cannot feasibly be delivered to the region. Therefore, CVWD and DWA also have water exchange agreements with Metropolitan, through which Metropolitan delivers an equivalent amount of Colorado River water from its aqueduct to the Coachella Valley in exchange for CVWD and DWA's SWP water. This imported water is delivered to the Whitewater Recharge Area (see **Figure 1-1**), where it is recharged to the Indio sub-basin. While groundwater levels near the recharge facility showed a response to recharge, in central portions of the Coachella Valley, a steady

[1] Coachella Valley Water District (CVWD). 2012. Coachella Valley Final Water Management Plan. Available: http://www.cvwd.org/ArchiveCenter/ViewFile/Item/317

decline continued. [2] CVWD's right for SWP water is defined via a SWP contract that contains a "Table A" exhibit, defining the maximum annual amount of water CVWD can receive, excluding certain interruptible deliveries. CVWD's base Table A allotment is 23,100 AFY.

Data from the *2010 Coachella Valley Water Management Plan,* which is a regional groundwater management planning document that covers the entire Indio sub-basin, shows that currently available supplies as planned for in the 2002 Water Management Plan are not adequate to meet the current (2010) demand or the projected demands in 2045 (see **Figure 1-2**). The gap in supply and demand would be bridged via groundwater pumping, which could result in continued groundwater overdraft. Although CVWD is working on implementing additional measures to reduce groundwater overdraft and increase supplies, reducing groundwater pumping is essential for ensuring that water supply shortages (excess groundwater pumping beyond the basin's capacity) does not take place.

Figure 1-2: Supply and Demand Comparison from 2010 Water Management Plan



Most of the groundwater pumping in the Region takes place via two methods: municipal groundwater pumping and non-municipal (private) groundwater pumping. Municipal groundwater pumping takes place when the Region's water purveyors pump groundwater into their water distribution systems for delivery to customers. Private groundwater pumping takes place when groundwater is locally pumped and distributed by a private entity; one example of this is golf courses in the Region that pump groundwater onsite for irrigation purposes. It is estimated that golf course pumping accounts for 25% of all

[2] Coachella Valley Water District (CVWD). 2012. Coachella Valley Final Water Management Plan. Available: http://www.cvwd.org/ArchiveCenter/ViewFile/Item/317

groundwater pumping in the Indio sub-basin.[3] All water users in the Region that use potable water for irrigation require groundwater pumping in that the groundwater is either pumped by municipalities and delivered to customers or is pumped locally and used by private users. As such, water conservation in the Region that reduces irrigation with potable water will directly offset groundwater pumping either by municipalities or by private users.

Applicant Customers and Water Delivery System

Although CVWD's water system includes canals and other features associated with agricultural water users, this application focuses on water deliveries to municipal users and pumping from private users. As such, details about CVWD's agricultural water system are not provided.

CVWD's municipal water system includes 96 active wells, 61 distribution reservoirs, and 1,996 miles of distribution piping. CVWD has 108,599 active accounts that serve approximately 318,217 users in the CVWD service area.[4] All of the drinking water supplied to CVWD municipal users comes from the groundwater basin, which remains in a state of overdraft as of Fiscal Year (FY) 2015. [5]

The Coachella Valley has more than 120 golf courses, which are served either non-potable water (a mix of recycled water and Canal Water) or groundwater. By the end of 2015, it is estimated that more than half of the golf courses in CVWD's service area relied upon non-potable water for irrigation. CVWD's overall goal is to reduce golf course-related water use by 10% for existing courses and by 25% for new courses through increased conservation.[6]

Applicant Water Demands

In FY 2015, CVWD delivered 101,302 AF of water to its domestic customers.[7] However, given that regional water users (including private users) rely upon a large groundwater aquifer as the primary supply source, it is more accurate to view demands in terms of total inflows and outflows to the basin. Below is information for inflows and outflows from the West Valley and East Valley portion of the Indio Sub-basin (also referred to as the West Whitewater River Sub-basin and the East Whitewater River Sub-basin) for 2014.[8] [9] As demonstrated in **Table 1-1**, in 2014 there was a total loss of 49,240 AF of water storage

[3] Coachella Valley Water District (CVWD). 2012. Coachella Valley Final Water Management Plan. Available: http://www.cvwd.org/ArchiveCenter/ViewFile/Item/317
[4] CVWD. 2015. Comprehensive Annual Financial Report for the Fiscal Year Ended June 30, 2015. Available: http://www.cvwd.org/ArchiveCenter/ViewFile/Item/482
[5] CVWD. 2015. Comprehensive Annual Financial Report for the Fiscal Year Ended June 30, 2015. Available: http://www.cvwd.org/ArchiveCenter/ViewFile/Item/482
[6] Coachella Valley Water District (CVWD). 2012. Coachella Valley Final Water Management Plan. Available: http://www.cvwd.org/ArchiveCenter/ViewFile/Item/317
[7] CVWD. 2015. Comprehensive Annual Financial Report for the Fiscal Year Ended June 30, 2015. Available: http://www.cvwd.org/ArchiveCenter/ViewFile/Item/482
[8] CVWD. 2015. Coachella Valley Water District Engineer's Report on Water Supply and Replenishment Assessment for the West Whitewater River Subbasin Area of Benefit 2015/2016. Available: http://www.cvwd.org/ArchiveCenter/ViewFile/Item/255
[9] CVWD. 2015. Coachella Valley Water District Engineer's Report on Water Supply and Replenishment Assessment for the East Whitewater River Subbasin Area of Benefit 2015/2016. Available: http://www.cvwd.org/ArchiveCenter/ViewFile/Item/254

in the Indio Sub-basin. This loss in storage demonstrates that there was groundwater overdraft in the Indio Sub-basin in 2014.

Water demand projections throughout the Indio Sub-basin are explained in detail in CVWD's 2010 Water Management Plan. A summary of water demand projections by major demand source is provided in **Table 1-2** for the years 2010-2040. As shown in the table, water demands are anticipated to increase to 850,500 AF by 2040.[10]

Table 1-1: 2014 Water Balance in the Indio Sub-basin

Item	West Indio Annual Calculation (AF)	East Indio Annual Calculation (AF)
2014 Groundwater Production	-174,187	-123,465
Non-Consumptive Return	59,572	150,180
Natural Inflow	52,058	33,136
Natural Outflow	-27,907	-58,190
Artificial Replenishment	3,533	36,030
Annual Balance	**-86,931**	**37,691**
Total Annual Balance	**-49,240**	

Table 1-2: Water Demand Projections for the Coachella Valley (AF)

Demand Component	2010	2015	2020	2025	2030	2035	2040
Agricultural	317,400	302,900	282,300	258,500	238,100	213,900	189,700
Urban	236,900	263,200	300,400	348,900	392,300	440,800	489,600
Golf Course	113,800	118,800	125,900	134,600	142,400	151,900	160,700
Fish Farms and Duck Clubs	10,500	10,500	10,500	10,500	10,500	10,500	10,500
TOTAL	**678,600**	**695,400**	**719,100**	**752,500**	**783,300**	**817,100**	**850,500**

Past Working Relationships with Reclamation

CVWD has had a long-term relationship with Reclamation for over 85 years since the beginning of the Boulder Canyon Act in 1928, and the subsequent 1934 contract for construction of the All American Canal project. CVWD operates and maintains the 123 miles of the Coachella Branch of the All American Canal (Canal) and 485 miles of the irrigation distribution system on behalf of Reclamation. CVWD works with Reclamation's Yuma, Arizona and Boulder City, Nevada offices on a daily basis regarding construction, repair, relocation, and abandonment of Reclamation facilities. CVWD also meets with the Yuma office on a biannual basis to collaborate on topics of mutual concern. CVWD has also partnered with Reclamation on the following projects:

- CVWD executed Cooperative Agreement No. 05FC340010: Agricultural Conservation of Colorado River Water in the Coachella Valley, California with Reclamation in 2005. This project involved redirecting conserved agricultural water to recharge the groundwater basin, thereby banking water for future use by agricultural and urban users.

[10] Coachella Valley Water District (CVWD). 2012. Coachella Valley Final Water Management Plan. Available: http://www.cvwd.org/ArchiveCenter/ViewFile/Item/317

- CVWD worked closely with Reclamation on the recently completed Coachella Canal Lining project. This project lined 36 miles of the Coachella Canal at a total cost of $120 million.
- CVWD worked closely with Reclamation on the recently completed relocation of 4,700 feet of the Coachella Canal that had subsided through the SilverRock Golf Course in La Quinta. Work was substantially completed in December 2014
- CVWD also recently completed the construction phase of the Lateral Automation Pilot Project in November 2014 as part of Reclamation Agreement No. R12AP34007. This project automated the delivery of canal water to two farmer's reservoirs by constructing new meters, motor-operated valves, and a SCADA system to automatically deliver irrigation water based on reservoir levels. The intent of the project is to better manage and increase the efficiency of the delivery of irrigation water to farmers.

1.3 Technical Project Description

The project goal and primary benefit of the *Turf Reduction Water and Energy Efficiency Program* is to reduce water use through turf replacement, thereby decreasing groundwater pumping. Reducing water use will also save energy, because groundwater pumping will be reduced and energy requirements for CVWD's municipal distribution system will be reduced. The benefits derived from the program occur by providing rebates for the removal of high-water consuming turf grass and replacement with desert-friendly, water-efficient landscaping. The project is a multifaceted program that will make turf rebates available throughout CVWD's service area for a variety of water sectors, including: golf, residential, and commercial.

The rebate program is structured differently for golf course users vs. other users, because golf courses are private pumpers and are therefore not considered CVWD customers. Additional details about each portion of the program is provided below.

Golf Course Program

Golf courses are an important part of the Coachella Valley economy. An August 2015 assessment of the Coachella Valley golf industry found that the estimated 123 golf courses in the Coachella Valley represent approximately 14% of California's golf industry. In 2014 the golf industry in the Coachella Valley generated $476 million in gross revenue, and directly employed more than 8,000 local workers.[11] The large presence of golf courses in the Coachella Valley attracts many tourists, who generated approximately $745.6 million in tourism-related spending in 2014.[12] Given the economic benefits the golf industry has on the Coachella Valley, the economic viability of this industry is important to the regional economy.

Recognizing the nexus between water availability and long-term sustainability of the golf industry, the Southern California Golf Association and representatives of local golf course associations met with CVWD to form the Coachella Valley Golf and Water Task Force in 2013. The primary purpose of the Golf and Water Task Force is to reduce the amount of

[11] Tourism Economics. 2015. Economic Impact of the Coachella Valley Golf Industry.
[12] Tourism Economics. 2015. Economic Impact of the Coachella Valley Golf Industry.

water used by golf courses in the Coachella Valley. One water-wise practice that has been implemented by the golf industry to reduce water use is removing turf and replacing turf with desert landscaping in non-play areas. This practice is an effective long-term strategy to reduce water use, and falls in line with CVWD's goal of reducing golf course-related water use by 10% for existing courses and by 25% for new courses through increased conservation.[13]

Despite efforts by the Golf and Water Task Force, local golf courses have indicated that turf replacement is not affordable because the cost of turf removal and re-landscaping is approximately $30,000 per acre.[14] In addition, the majority of golf courses in the Coachella Valley that use potable water sources for irrigation rely upon local groundwater pumping from private wells for irrigation needs. Groundwater pumping is comparatively inexpensive, making economic incentives to replace turf a challenge in the Coachella Valley compared to other regions where golf courses irrigate with higher-cost municipally-supplied potable water. To increase turf reduction at golf courses, CVWD implemented a golf course turf rebate program with funding from a competitive grant awarded through Proposition 84, to provide financial incentives to reduce turf grass at local golf courses. However, these grant funds have been exhausted and local funding is not currently available for the program, and therefore, CVWD is not accepting applications for the golf course turf rebate program at this time. As mentioned previously, golf courses are largely private water users, and are therefore not CVWD customers. Due to legal restrictions associated with Proposition 218, CVWD is not able to directly provide funding from its budget to benefit users that are not CVWD customers. Therefore, funding for the golf course turf rebate program must come from outside grant funding. The $1 million grant that is being requested as part of CVWD's *Turf Reduction Water and Energy Efficiency Program* would be used exclusively to fund golf course rebates, and matching funds would be provided by the residential and commercial turf rebate program (see below) and in-kind funding from CVWD, as these are sources to which CVWD is legally able to provide funding. In summary, without grant funding supplied by Reclamation or other sources, CVWD will not be able to provide rebates to the golf industry to reduce their water footprint and energy demands associated with groundwater pumping.

Obtaining grant funding for the golf course turf rebate program is a priority for CVWD due to the local benefits imparted by this program. As described in detail in Section 1.4.1, the terms of the golf course rebate program make the program three times more effective than the residential and commercial program ($0.30/SF vs. $1/SF) at saving water and energy. Therefore, CVWD will continue to aggressively pursue grant funding to fund this program and meet goals of the 2010 Water Management Plan associated with reducing golf-related water demands.

CVWD's golf course turf rebate program is currently on hold, but had been previously implemented with grant funding from the California Department of Water Resources' Integrated Regional Water Management Program that provides funding through

[13] CVWD. 2015. Comprehensive Annual Financial Report for the Fiscal Year Ended June 30, 2015. Available: http://www.cvwd.org/ArchiveCenter/ViewFile/Item/482

[14] Reyes, Patti. 2015. CVWD Planning and Special Programs Manager. December. Personal communication. Available by telephone at: (760)398-2661, ext. 2270

Proposition 84.[15] Therefore, the grant funding that is being requested as part of this Proposal would fund an existing program, and no program development needs to take place. The established golf course rebate program provides $0.30 per square foot of turf removed. Therefore, it is anticipated that over 3 million square feet of turf would be removed through implementation of the *Turf Reduction Water and Energy Efficiency Program* (see **Table 1-3** below).

Table 1-3: Golf Course Turf Rebate Program Turf Conversion Square Footage

Total Grant Request	Total Matching Funds from CVWD	Rebate Provided	Square Feet of Turf Removed
$1,000,000	$0	$0.30 per square foot	3,333,333

General terms and requirements of the established golf course turf rebate program are:

- Applicants must submit landscape plans for all areas to be converted from turf to drought tolerant landscaping. Plans must clearly show:
  - Total project area with turf or lake removal areas clearly defined
  - Proposed landscaping
  - Proposed drip irrigation system (no overhead spray heads allowed)
  - Total estimated water savings
- Plans must be prepared in compliance with CVWD Landscape Ordinance 1302, which establishes effective water efficient landscape requirements for newly installed and rehabilitated landscapes[16]
- Applicants must commit to sharing water usage data with the Golf and Water Task Force, and working with the Golf and Water Task Force to stay within the water budget established by CVWD
- Rebates will be paid after the project has been completed, and CVWD has verified the total water savings and the total acreage of turf/lake removal

Residential and Commercial Program

CVWD has an existing high-demand rebate program for residential and commercial (including homeowners associations or HOAs) customers. The rebate program has been in place for several years, but has had a substantially increased demand since 2014. In response to the 2014 drought and the need to reduce groundwater pumping, on August 12, 2014 CVWD implemented mandatory water use restrictions across its service area. Within six weeks of the mandatory water use restrictions, CVWD received turf conversion program applications for as many turf replacement applications as the agency had received in a three-year time period. An overview of the square feet of turf and associated program funding budget for the residential and commercial program are provided in **Table 1-4**.

[15] http://www.cvwd.org/CivicAlerts.aspx?AID=40
[16] CVWD. 2003. *Ordinance No. 1302 – An Ordinance of CVWD Establishing Valley-Wide Water Efficient Landscaping Model Ordinance.* Available: http://www.cvwd.org/ArchiveCenter/ViewFile/Item/336

Table 1-4: Residential and Commercial Rebate Program Statistics

Year	Residential Square Feet of Turf Removed	Commercial/HOA Square Feet of Turf Removed	Total Square Feet of Turf Removed	Total CVWD Budget Expended
FY 2012/2013	286,938	471,170	758,108	$519,344
FY 2013/2014	193,950	663,347	857,297	$679,406
FY2014/2015	760,094	2,135,963	2,896,057	$2,816,709
FY2015/2016[1]	1,240,982	3,270,480	4,511,462	$2,123,178
TOTAL	**2,481,964**	**6,540,960**	**9,022,924**	**$6,138,637**

[1] FY 2015/2016 includes data from July 1, 2015 – January 1, 2016.

CVWD's residential and commercial rebate program is an established program that offers $1 per square foot up to a maximum of 2,000 square feet for residential customers, and $ 1 per square foot up to a maximum of 25,000 square feet for HOA and commercial customers. Given that this is an existing, ongoing program, project-related costs are limited to those associated with providing rebates.

As explained in the previous section, the grant funding in this application is being requested solely for the golf course rebate program, and the matching funds will be provided by the residential and commercial rebate program and in-kind funding from CVWD. $7,964,000 of the matching funds will be used directly for the residential and commercial rebate program, and $35,200 will be used for program administration (see following section). In total, it is estimated that 7,964,800 square feet of turf will be removed through implementation of the residential and commercial rebate program (see **Table 1-5**).

Table 1-5: Residential and Commercial Turf Rebate Program Turf Conversion Square Footage

Program Component	Total Grant Request	Total Matching Funds	Rebate Provided	Square Feet of Turf Removed
Rebates	$0	$7,964,800	$1 per square foot	7,964,800

General terms and requirements of the residential and commercial turf rebate program are:

- The Coachella Valley Water District does not offer a rebate for concrete or all-gravel yards. This program is for the replacement of an existing lawn with low water use plants that meet program guidelines.
- The Coachella Valley Water District program pays for what you remove. For example, if you take out 1,000 square feet and replant the desert landscaping, then you will get a rebate of $1,000.
- Applicant must be the property owner and a retail residential customer of the Coachella Valley Water District.
- An application must be submitted online or mailed to Droplet Technologies with sample photos per program guidelines of the existing zones in the landscape.
- A landscape plan and plant list (can be combined) must be submitted to the Coachella Valley Water District.

- The following information must be included in your plan/plant lists:
    - The plan and plants must be drawn to approximate scale.
    - The plan must include dimensions of all areas where your turf will be removed
    - The plan must include major plant materials that will be used including locations and quantities (trees, shrubs, groundcover areas)
    - The plan must include the location and dimensions of new hardscape areas to be installed such as patios, walkways, retaining walls, etc. Indicate if the hardscape materials are to be permeable or not
    - The plan must include an irrigation plan, including type of irrigation and component layout
- All projects must be pre-approved by Coachella Valley Water District to determine eligibility and site-specific requirements.
- All projects must be approved by Coachella Valley Water District following completion of the lawn removal/landscape conversion ("Project") in order to receive the incentive payment.
- Coachella Valley Water District conducts pre and/or post inspections
- Applicants must agree to leave the converted landscape in place for five years

Program Administration

The *Turf Reduction Water and Energy Efficiency Program* will be administered by CVWD conservation staff. CVWD customers interested in participating will apply. The application will be reviewed and approved by CVWD. CVWD will also conduct pre- and post-visits to customer sites, verification of successful project completion, customer support, and rebate check processing. This includes work to measure and report program progress and budgeted funds for materials and equipment necessary to implement the water-efficient landscape upgrades. In total, it is anticipated that $35,200 will be required for program administration costs, which are described in further detail in the budget.

Program Implementation Schedule

As explained in Section 1.4.6, the *Turf Reduction Water and Energy Efficiency Program* will be implemented over a four-year period from July 2015-September 2018. This implementation date assumes that grant funding will be awarded in September 2016 and that implementation will be complete within two years of that date. Information in **Table 1-6** explains how the budget will be allocated over the four-year implementation period.

It is anticipated that from 2015-2018 CVWD's budget for the commercial and residential rebate program will continue to be up to $2,000,000 per year. The $1,000,000 that is being requested for the golf course rebate program will be spent beginning in September 2016 and continue through August 2018.

Table 1-6: Implementation Schedule

Fiscal Year	Match Funding Schedule (Commercial and Residential)	Grant Funding Schedule (Golf Course Program)	Total Funding per Year
2015	$2,000,000	$0	$2,000,000
2016	$2,000,000	$500,000	$2,500,000
2017	$2,000,000	$500,000	$2,500,000
2018	$2,000,000	$0	$2,000,000

1.4 Evaluation Criteria

1.4.1 Evaluation Criterion A: Water Conservation

1.4.1.1 Sub-ECA.1: Quantifiable Water Savings

Water Savings Calculations

The *Turf Reduction Water and Energy Efficiency Program* consists of CVWD providing turf rebates to residential and commercial customers, and golf courses. Converting turf to water efficient landscapes has proven effective in reducing water use, especially in arid areas such as the Coachella Valley where a significant amount of water demands are associated with irrigation.

Golf course irrigation savings were estimated using figures from local golf course turf removal projects that have been completed and reported data to the Golf and Water Task Force. In total, these completed projects show an average savings of 5 AFY per acre of turf removed.[17] Terms of the rebate program require that turf conversions remain in place for at least five years after installation; therefore, the project is assumed to have a useful life of five years. Over the five-year useful life of the project, a total water savings of **1,915 AF** would accrue as shown in **Table 1-7**. Please note that the calculation for the amount of turf that will be replaced as part of the program is provided in **Table 1-3**.

Table 1-7: Water Savings – Golf Course Rebate Program

Amount of Turf Replaced (SF)	Amount of Turf Replaced (Acre)	Water Savings (AFY/acre)	Amount of Water Saved per Year (AFY)	Total Amount of Water Saved Over Five Years (AF)
3,333,333	76.52	5	383	1,915

Water savings that would accrue as a result of the turf rebates for the residential and commercial sectors are based on success of other programs in the Coachella Valley and regions with similar weather patterns and water use. Water savings were estimated assuming 55.8 gallons of water per year are saved per square foot (SF) of turf that is removed, based on a study done in the desert region served by the Southern Nevada

[17] Reyes, Patti. 2015. CVWD Planning and Special Programs Manager. December. Personal communication. Available by telephone at: (760)398-2661, ext. 2270

Water Authority (SNWA).[18] Terms of the rebate program require that turf conversions remain in place for five years after installation; therefore, the project is assumed to have a useful life of five years. Over the five-year useful life of the project, a total water savings of **6,820 AF** would accrue as shown in **Table 1-8**. Please note that the calculation for the amount of turf that will be replaced as part of the program is provided in **Table 1-5**.

Table 1-8: Water Savings – Residential and Commercial Rebate Program

Amount of Turf Replaced (SF)	Water Savings (gallons saved/SF)	Amount of Water Saved per Year (gallons)	Amount of Water Saved per Year (AFY)	Total Amount of Water Saved Over Five Years (AF)
7,964,800	55.8	444,435,840	1,364	6,820

The water savings provided by both the residential and commercial, and the golf course turf rebate programs were added together to calculate total water savings of 1,747 AFY. Over the 5-year assumed lifetime of the project, the savings would be **8,735 AF** as shown in **Table 1-9**.

Table 1-9: Total Water Savings

Amount of Turf Replaced (SF)	Amount of Water Saved per Year	Total Amount of Water Saved Over Five Years (AF)
11,298,133	1,747	8,735

The total water savings associated with the *Turf Reduction Water and Energy Efficiency Program* will be measured through inspections by CVWD staff or supporting staff performing pre- and post-site inspections to measure the total area (in square feet) that is converted from turf to water-wise landscaping. CVWD conservation staff has established a detailed pre-approval inspection process and post-implementation monitoring program in which staff works with the customer to ensure water savings are sustained over at least a 5-year period for residential and commercial customers. For golf course customers, CVWD staff will work with golf courses to ensure that as a term of the rebate program, their water use stays within a water budget established by CVWD. Furthermore, CVWD tracks customer meter data, and will track pre- and post- turf conversion water use. This data is regularly compiled and made publically available at meetings of CVWD's Board of Directors.

Water Savings Details

As described above, CVWD's primary source of water comes from groundwater. CVWD purchases imported water to replenish native groundwater and mitigate groundwater overdraft concerns due to groundwater pumping. However, as shown in CVWD's 2015 Engineer's Reports for the Indio Sub-basin, in 2014 there was an overall net outflow from the basin of 49,240 AF (refer to **Table 1-1**). This means that in 2014 there was an overall loss of groundwater storage (overdraft) in the basin.

[18] Southern Nevada Water Authority (SNWA). 2005. *Xeriscape Conversion Study: Final Report*. Pg. 60 (Executive Summary and Conclusions 3).

The 2015 Engineer's Reports state that on a long-term basis, water requirements (demands) are likely to place demands on groundwater in storage and that additional replenishment (including in lieu replenishment) will be necessary to address long-term overdraft conditions.[19] [20] The water saved through the *Turf Reduction Water and Energy Efficiency Program* is considered in lieu recharge in that this water would remain in groundwater storage instead of being pumped and used for irrigation, therefore helping to directly offset groundwater overdraft.

The total average annual water supply available to CVWD was calculated based upon information from the *2010 Coachella Valley Water Management Plan*. This document demonstrates that water supplies in the Region are sourced from: water conservation (source substitution), recycled water, local groundwater, and imported water. Local groundwater supply is used to supply water to many private users that are not served water from municipal water agencies. As such, total local groundwater supply is calculated by looking at total groundwater pumping demands (678,600 AFY in 2010) and subtracting quantifiable water supply sources (water conservation, recycled water, and imported water). The difference between total demands and quantifiable water supply sources is the amount of local groundwater that is used (229,800 AFY in 2010). A summary of the total annual average supply sources available to CVWD based on 2010 values is provided in **Table 1-10**.

Table 1-10: Regional Water Supply Summary

Source	Amount of Supply (AFY)
Water Conservation	14,100
Recycled Water	19,900
Local Groundwater	229,800
Imported Water (SWP Exchange)	77,800
Imported Water (Canal Water)	337,000
Imported Water Total	*414,800*
Total	**678,600**

As shown in **Table 1-10**, the total average annual water supply is 678,600. However, this figure takes into consideration supplies from local groundwater that may not be sustainable. The *2010 Coachella Valley Water Management Plan* notes that on a long-term basin, the available groundwater supply for long-term groundwater sustainability is 137,200 AFY. Taking groundwater sustainability into consideration, the total average supply available to CVWD is **586,000 AF** (see **Table 1-11**).

As shown in **Table 1-11**, with existing available supplies, demands for groundwater would need to be reduced by 92,600 AFY (229,800 AFY – 137,200 AFY) in order to ensure that local groundwater supplies are used sustainably. The *Turf Reduction Water and Energy*

[19] CVWD. 2015. Coachella Valley Water District Engineer's Report on Water Supply and Replenishment Assessment for the West Whitewater River Subbasin Area of Benefit 2015/2016. Available: http://www.cvwd.org/ArchiveCenter/ViewFile/Item/255

[20] CVWD. 2015. Coachella Valley Water District Engineer's Report on Water Supply and Replenishment Assessment for the East Whitewater River Subbasin Area of Benefit 2015/2016. Available: http://www.cvwd.org/ArchiveCenter/ViewFile/Item/254

Efficiency Program will directly contribute to reducing demands, and therefore reducing groundwater overdraft.

Table 1-11: CVWD Water Supply Summary with Groundwater Sustainability

Source	Amount of Supply (AFY)
Water Conservation	14,100
Recycled Water	19,900
Local Groundwater	137,200
Imported Water (SWP Exchange)	77,800
Imported Water (Canal Water)	337,000
Imported Water Total	*414,800*
Total	**586,000**

Landscape Irrigation Measures – Turf Removal

CVWD's *Turf Reduction Water and Energy Efficiency Program* is a turf removal project, therefore landscape irrigation measures relative to turf removal have been provided below.

Question i: How have average annual water savings estimates been determined? Please provide all relevant calculations, assumptions, and supporting data.

and

Question ii: What is the total surface area of turf to be removed and what is the estimated average annual turf consumptive use rate per unit area?

Golf course irrigation savings were estimated using figures from local golf course turf removal projects that have been completed and reported data to the Golf and Water Task Force. In total, these completed projects show an average savings of 5 AFY per acre of turf removed. With a rebate of $0.30/SF of turf removed, the golf course turf rebate program will allow for a total of 3,333,333 SF, which equates to 76.52 acres, of turf removal. Assuming the 5 AFY of water savings, the 76.52 acres of converted turf will conserve a total of 383 AFY of water. Terms of the rebate program require that turf conversions remain in place for at least five years after installation; therefore, the project is assumed to have a useful life of five years. Over the five-year useful life of the project, a total water savings of 1,915 AF would accrue.

Water savings from the residential and commercial turf rebate program are based on success of other programs in the Region and regions with similar weather patterns and water use. Water savings were estimated assuming 55.8 gallons of water per year are saved per SF of turf that is removed based on a study done in the desert region served by the Southern Nevada Water Authority (SNWA). The residential and commercial turf rebate program will allow for a total of 7,964,800 SF of turf to be replaced with a $1/SF rebate. Assuming the 7,964,800 SF of converted turf saves 55.8 gallons of water per year per SF, a total of 1,364 AFY of water will be conserved from the residential and commercial turf rebate program. Terms of the rebate program require that turf conversions remain in place for five years after installation; therefore, the project is assumed to have a useful life of five years. Over the five-year useful life of the project, a total water savings of 6,820 AF would accrue.

In total, both the residential and commercial, and the golf course turf rebate programs will remove a total of 11,298,133 SF of turf and will conserve a total of 1,747 AFY or a total of 8,735 AF of water over the five-year lifetime of the project.

Question iii: Was historical water consumption data evaluated to estimate average annual turf consumptive use per unit area? If so, did the evaluation include a weather adjustment component?

For the golf course rebate program, water savings are based upon historical water consumption data. The 5 AFY of water savings are based upon data provided by the Golf and Water Task Force, which is local data in the Coachella Valley. These water savings take into consideration local weather considerations and historical consumption data.

The average annual turf consumptive use per unit area for commercial and residential rebates was estimated using the SNWA Study, as described above. Because CVWD has been implementing the commercial and residential rebate program for several years, the agency also has local water use consumption data related to the existing turf rebate program. This data was compared to the data provided in the SNWA Study, and was found to be relatively similar, making the findings of the study reasonable to apply to CVWD's turf rebate program. The SNWA Study did not evaluate historical water consumption data, but was used to calculate water savings for the residential and commercial turf rebate program because of the similar climate of the study area to the Coachella Valley and the large amount of data that went into the study.

Question iv: Will site audits be performed before applicants are accepted into the program?

The total water savings associated with the *Turf Reduction Water and Energy Efficiency Program* will be measured through inspections by CVWD staff or supporting staff performing pre- and post-site inspections to measure the total area (in square feet) that is converted from turf to water-wise landscaping. CVWD conservation staff has established a detailed pre-approval inspection process and post-implementation monitoring program in which staff works with the customer to ensure water savings are sustained over at least a 5-year period for residential and commercial customers. For golf course customers, CVWD staff will work with golf courses to ensure that as a term of the rebate program, their water use stays within a water budget established by CVWD. Furthermore, CVWD tracks customer meter data, and will track pre- and post- turf conversion water use. This data is regularly compiled and made publically available at meetings of CVWD's Board of Directors.

Question v: How will actual water savings be verified upon completion of the project?

CVWD currently monitors and reports on the turf rebate programs due to requirements of grant funding from DWR through the Integrated Regional Water Management (IRWM) Program. In order to verify the water savings, water use data from CVWD will be compared pre- and post-project implementation. CVWD currently collects groundwater pumping data for the golf courses and consumption data for residential, and commercial users that will receive the turf reduction rebates. Furthermore, CVWD works with local golf courses that receive rebate funds to monitor water use and ensure that golf course water use is in line with established water budgets, which is a pre-requisite of receiving

rebate funds. Therefore, local data will be available to verify water savings after implementation takes place.

1.4.1.2 Sub-ECA.2: Percentage of Total Supply

As shown in **Table 1-11**, the total average annual water supply taking into consideration groundwater sustainability is 586,000 AFY. The total amount of water that would be saved as a result of implementation of the *Turf Reduction Water and Energy Efficiency Program* is 1,747 AFY (see **Table 1-9**). Therefore, the percentage of total water supply conserved is 0.3%. However, as explained above, per the *2010 Coachella Valley Water Management Plan*, water demands would need to be reduced by a total of 92,600 AFY to ensure groundwater is used sustainably in the region. Taking into consideration this overall supply reduction that needs to take place, the *Turf Reduction Water and Energy Efficiency Program* would contribute to 2% of the Region's overall water conservation needs to ensure sustainable management of the Coachella Valley Groundwater Basin.

$$\frac{1{,}747 \text{ AFY}}{92{,}600 \text{ AFY}} = 2\%$$

1.4.2 Evaluation Criterion B: Energy-Water Nexus

1.4.2.1 Sub-ECB.1: Implementing Renewable Energy Projects Related to Water Management and Delivery

This evaluation criterion is not applicable to the *Turf Reduction Water and Energy Efficiency Program*.

1.4.2.2 Sub-ECB.2: Increasing Energy Efficiency in Water Management

By reducing demands for potable water for irrigation purposes, the *Turf Reduction Water and Energy Efficiency Program* will result in energy efficiencies. Energy efficiencies that would be achieved from implementation of the golf course rebate program are related to reduced groundwater pumping, because the golf course users targeted for this program are private users. Energy efficiencies that would be achieved from implementation of the residential and commercial rebate program would be achieved from reducing energy demands on CVWD's distribution system. Energy savings that would result from implementation of each portion of the rebate program are calculated below.

Energy Savings – Golf Course Program

The golf course rebate program would provide rebates to users that are not currently served water by CVWD. These water users individually pump water from the local groundwater basin for irrigation purposes. Water savings from the project would result in energy savings associated with reduced energy required to locally pump groundwater at individual golf course sites. The golf course program energy savings were calculated based on data provided by CVWD. Due to confidentiality requirements, formal documentation is not available from CVWD to show energy requirements of onsite golf course users. However, CVWD reports that the average energy required for onsite pumping is 448.6 kWh/AF per year; email communication from CVWD is included as **Appendix A**. Given that the golf course program would save an average of 383 AFY of water, each year this rebate program would save 171,814 kWh of energy. Over the five-

year lifetime of the project 859,070 kWh of energy would be saved. Calculations for annual energy savings from reduced groundwater pumping as a result of implementation of the golf course rebate program are shown in **Table 1-12.**

Table 1-12: Energy Savings – Golf Course Rebate Program

Amount of Water Saved per Year (AFY)	Average Energy Use (kWh/AF)	Annual Energy Savings (kWh/year)	Total Amount of Energy Saved over Five Years (kWh)
383	448.60	171,814	859,070

Energy Savings – Residential and Commercial Program

The residential and commercial rebate programs would provide rebates to customers that are currently supplied water from CVWD's domestic water system. Reducing water deliveries to these customers would reduce energy demands on CVWD's domestic water system. Data from CVWD from 2013 shows that the total power bill for the domestic water system was $9.470 million. Using an average billing rate of $0.13 per kWh, this represents an overall energy use of approximately 72.8 million kWh for the year 2013. In that same year, domestic water production was approximately 115,000 AFY. Therefore, using these statistics, the energy intensity of CVWD's domestic water system is 633 kWh/AF (see **Appendix A**). Given that the residential and commercial rebate program would save an average of 1,364 AFY of water, each year this rebate program would save 863,412 kWh of energy. Over the five-year lifetime of the project, 4,317,060 kWh of energy would be saved. Calculations for annual energy savings from reduced domestic water system demands as a result of implementation of the residential and commercial rebate program are shown in **Table 1-13.**

Table 1-13: Energy Savings – Residential and Commercial Rebate Program

Amount of Water Saved per Year (AFY)	Average Energy Use (kWh/AF)	Annual Energy Savings (kWh/year)	Total Amount of Energy Saved Over Five Years (kWh)
1,364	633	863,412	4,317,060

Adding energy savings from both components of the rebate program show that annual energy savings from implementation of the *Turf Reduction Water and Energy Efficiency Program* would total **1,035,226 kWh/year**, and would add up to **5,176,130 kWh** over the five-year project life.

Additional Questions for Subcriterion B.2

Question i: Provide sufficient details of the energy savings calculations and state the estimated amount of energy savings in kWh per year.

For the golf course turf rebate program, average energy required for onsite pumping is 448.6 kWh/AF per CVWD calculations, as shown in **Appendix A**. Given that the golf course program would result in an annual water savings of 383 AFY, the total annual energy savings would be 171,814 kWh per year. The total energy savings over the 5 year lifetime of the program would be 859,070 kWh (see **Table 1-12**).

For the residential and commercial turf rebate program, the average energy required for CVWD's water system to pump and deliver water throughout its service area is 633 kWh/AF, per data provided by CVWD. Given the annual water savings of 1,364 AFY, the total annual energy savings would be 863,412 kWh per year. The total energy savings over the 5 year lifetime of the program would be 4,317,060 kWh (see **Table 1-13**).

Adding energy savings from both components of the rebate program show that annual energy savings from implementation of the *Turf Reduction Water and Energy Efficiency Program* would total **1,035,226 kWh/year**, and would add up to **5,176,130 kWh** over the five-year project life.

Question ii: Describe the current pumping requirements, including the types of pumps and how the project would impact current pumping requirements.

Information from CVWD demonstrates that each golf course generally has two groundwater pumps that pump between 500-1,000 gallons per minute (gpm).[21] Operations on each golf course generally include the use of an onsite lake into which groundwater is pumped and held prior to being used for irrigation purposes. Implementation of the golf course rebate program and coordination with the Golf and Water Task Force has demonstrated that with implementation of the golf course turf rebates, golf courses are able to stay within water budgets established by CVWD, and save an average of 5 AFY of water per year. This data also shows that pumping requirements are similarly reduced given that less water is pumped as a result of implementation of the turf rebates.

For CVWD's domestic system, CVWD has 96 active wells that pump at variable rates depending upon location and demands.[22] Given that pumping occurs as a direct function of demands, reducing demands as a result of implementation of the commercial and residential rebate program will directly reduce groundwater pumping requirements.

Question iii: Indicate whether energy savings originates from the point of diversion, or whether the estimate is based upon an alternate site of origin.

The energy savings calculated for the golf course rebate program originate from the point of diversion. Energy savings are calculated based upon the amount of onsite groundwater pumping that would be reduced as a result of program implementation. Therefore, these calculations take place at the point of diversion at the private wellhead (where groundwater leaves the basin), and not based upon an alternate site of origin.

The energy savings calculated for the residential and commercial rebate program do not originate from the point of diversions. The energy savings are calculated based on the estimated energy intensity of CVWD's entire distribution system. This calculation is reasonable, because it is not currently known where the rebates will take place, therefore specific diversion sites cannot be used in the energy savings estimate.

[21] Reyes, Patti. 2016. CVWD Planning and Special Programs Manager. December. Personal communication. Available by telephone at: (760)398-2661, ext. 2270
[22] CVWD. 2015. Comprehensive Annual Financial Report for the Fiscal Year Ended June 30, 2015. Available: http://www.cvwd.org/ArchiveCenter/ViewFile/Item/482

Question iv: Does the calculation include the energy required to treat the water?

The energy savings calculations do not include energy required to treat the water. CVWD's potable water supply primarily consists of raw groundwater, and CVWD does not currently treat its potable water prior to delivery.

However, as a direct result of recent regulations pertaining to hexavalent chromium (Cr6), CVWD will be required to treat its potable water in upcoming years. The addition of system-wide treatment for Cr6 is anticipated to increase the energy intensity of CVWD's water system compared to existing levels, because treatment is anticipated to require a substantial amount of energy. As such, the energy savings accrued by implementation of the *Turf Reduction Water and Energy Efficiency Program* will increase in future years when treatment is implemented.

Question v: Will the project result in reduced miles driven, in turn reducing carbon emissions?

The *Turf Reduction Water and Energy Efficiency Program* will not reduce or increase miles driven, thereby reducing carbon emissions. CVWD's turf rebate program is an existing program, and any associated driving (to and from site visits), is currently conducted by CVWD staff. The amount of driving required for CVWD's turf rebate programs is not expected to change substantially as a result of additional funding provided by this grant.

1.4.3 Evaluation Criterion C: Benefits to Endangered Species

The *Turf Reduction Water and Energy Efficiency Program* will not only contribute to CVWD's water and energy conservation efforts, but will also improve habitat for use by native species. Conventional landscaping primarily consists of monoculture non-native grasses, which are not considered to be climate-friendly for the arid Coachella Valley. These simplistic landscapes do not provide the vegetation variation and complexity necessary to attract and support native wildlife. A study titled *SmartScape Design Provides Improved Avian Habitat* found that landscapes planted with diverse, climate-friendly plants supported a significantly higher avian diversity, abundance, and species richness than non-native, turf dominated landscapes.[23] Further, research from the California Native Plant Society demonstrates that diverse native landscapes also attract an array of pollinators, native bees, and butterflies.[24]

To analyze species in the project area that could potentially utilize habitat that is improved as part of the project, an analysis of the U.S. Fish and Wildlife Service's Threatened and Endangered Species List, and Candidate Species List was completed in January 2016. This analysis found that in total, there are 5 bird species and 3 insect species that are known to or believed to occur in Riverside County, and thus, could reasonably benefit from habitat improved through implementation of the *Turf Reduction Water and Energy Efficiency Program*. The 5 bird species that could utilize habitat improved by the project include: Southwestern Willow flycatcher (*Empidonaz traillii*) - endangered, California gnatcatcher (*Polioptila californica californica*) - threatened, Western snowy plover

[23] Haller, Andrea D. Stivers and Associates, Inc. 2012. *SmartScape Design Provides Improved Avian Habitat*. June 2012.
[24] California Native Plant Society. *Creating Buzzing Gardens: Increasing Native Plants and Pollinators.*

(*Charadrius nivosus ssp. Nivosus*) - threatened, Yuma Clapper rail (*Rallus longirostris yumanensis*) - endangered, and Least Bell's vireo (*Vireo bellii pusillus*) - endangered. The 3 insect species include: Casey's June beetle (*Dinacoma caseyi*) - endangered, Quino Checkerspot butterfly (*Euphydeyas editha quino*) - endangered, and Delhi Sands flower-loving fly (*Rhaphiomidas terminates abdominalis*) - endangered. It is anticipated that the habitat benefits provided by the project will accrue once turf conversions are completed, and that benefits will continue to be provided as long as the landscapes are not re-converted to turf.

The project area is also a major component of the Pacific Flyway, which is one of four major migratory routes used by migratory birds in North America. Migratory birds are federally protected under the Migratory Bird Treaty Act, which is administered by the U.S. Fish and Wildlife Service. Over 400 migratory and resident bird species have been documented in the Salton Sea and surrounding area, which is designated as an internationally important staging area for shorebirds and is located within CVWD's service area.[25] Due to the known large-scale presence of migratory birds in the project area, implementation of the *Turf Reduction Water and Energy Efficiency Program* could directly benefit these species by increasing potentially suitable habitat in the region.

The species described above have an indirect relationship to local groundwater supplies. While these supplies are not directly available for use by the species, plants that directly use groundwater provide habitat, shelter, and other resources to the species. Through this indirect benefit it is not anticipated that the program would have a measurable impact related to reducing the likelihood of listing. However, the status of local and migratory bird species would be improved by improving the local habitat.

1.4.4 Evaluation Criterion D: Water Marketing

The *Turf Reduction Water and Energy Efficiency Program* will make locally conserved water available to meet other existing water supply needs (local groundwater recharge) within CVWD's service area. Because water will not be made available for uses outside of CVWD's geographic service area, this evaluation criterion is not directly applicable to the *Turf Reduction Water and Energy Efficiency Program*.

1.4.5 Evaluation Criterion E: Other Contributions to Water Supply Sustainability

1.4.5.1 Sub-ECE.1: Addressing Adaptation Strategies in a WaterSMART Basin Study

The *Southeastern California Regional Basin Study* was completed by Reclamation in cooperation with the Borrego Water District, CVWD, Imperial Irrigation District, and other interested regional stakeholders.[26] One of the potential non-structural adaptation strategies mentioned in the Basin Study is to implement a banking-exchange program to store water in the Coachella Valley Groundwater Basin. CVWD's specific role in the Basin Study was as a participating stakeholder.

[25] California Department of Fish and Wildlife. 2015. *Salton Sea Birds*. Available: https://www.wildlife.ca.gov/Regions/6/Salton-Sea-Birds
[26] Reclamation. 2015. *Southeast California Regional Basin Study.* Available: http://www.usbr.gov/watersmart/bsp/docs/finalreport/secalifornia/secabasinstudy.pdf

As mentioned previously and shown in **Table 1-1**, in 2014 there was a total loss of 49,240 AF of water storage in the Indio Sub-basin, which is a sub-basin of the Coachella Valley Groundwater Basin. Overall loss in storage could potentially impact the ability to use the Coachella Valley Groundwater Basin in future years for banking purposes if water loss results in an overall loss of storage. The *Turf Reduction Water and Energy Efficiency Program* would help CVWD respond to overall water losses by reducing demands for groundwater pumping on a long-term basis. Implementing this project, therefore will help to ensure that there is enough capacity in the Coachella Valley Groundwater Basin to implement projects that would address the imbalance between water supply and demand in the region, such as using the basin as part of a storage-banking program.

It is not anticipated that implementation of the *Turf Reduction Water and Energy Efficiency Program* would directly result in further collaboration among Basin Study partners, however, by implementing long-term conservation measures to protect the status of the Coachella Valley Groundwater Basin, the project would support overall long-term goals of the Basin Study partners.

1.4.5.2 Sub-ECE.2: Expediting Future On-Farm Irrigation Improvements

This evaluation criterion is not applicable to the *Turf Reduction Water and Energy Efficiency Program*.

1.4.5.3 Sub-ECE.3: Other Water Supply Sustainability Benefits

The *Turf Reduction Water and Energy Efficiency Program* would result in additional benefits associated with alleviating water supply shortages resulting from drought, making water available to address a specific concern, making water available for economically disadvantaged communities, promoting and encouraging collaboration, and increasing awareness of water and energy conservation. Details for each of these benefits are provided below.

Alleviating Water Supply Shortages Resulting from Drought Conditions

Drought Overview in the Coachella Valley

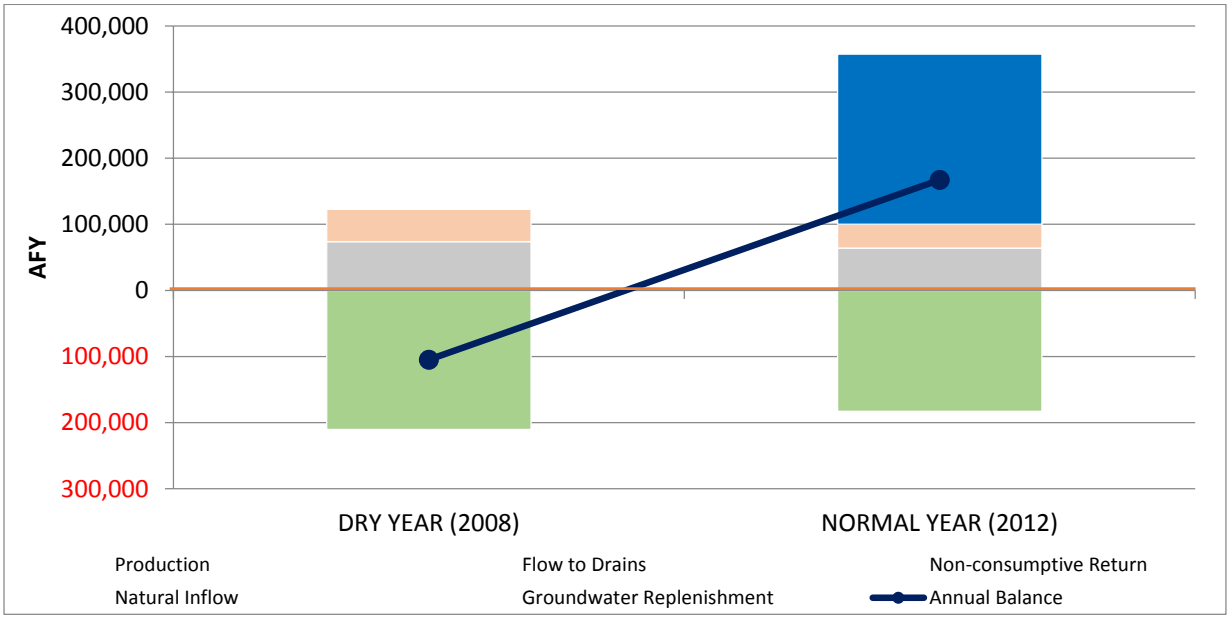
In drought years, the Coachella Valley region has experienced groundwater overdraft conditions (a negative water balance in the groundwater basin), which can be directly attributed to groundwater pumping and reduced groundwater basin replenishment. During the 2008 drought, Engineer Reports for the Indio and Mission Creek Sub-basins reported negative annual groundwater balances, or overdraft conditions. Overall in 2008, the Region received 15,984 AF of water for groundwater basin replenishment from the SWP. This value represents approximately 3% of groundwater demands given that groundwater production and natural outflow from the Indio and Mission Creek groundwater basins exceeded 500,000 AF in 2008.

In contrast, in normal year conditions, the Region has not experienced groundwater overdraft conditions as supported by a positive groundwater balance in such years. Engineer Reports show that during 2012 (a non-drought year), annual groundwater balances were positive for the Indio and Mission Creek sub-basins. The volume of water for groundwater basin replenishment in 2012 totaled 313,839 AF, which represents approximately 80% of the estimated 400,000 AF in production and natural outflow for that

year. The replenishment amount accounts for a majority of the difference between the water balances in 2008 vs. 2012, with the other components of the groundwater balance remaining relatively stable. **Figure 1-2** shows an overview of the water balance for the Indio Sub-basin in both a dry and a normal year, demonstrating a negative water balance in the dry year.

Given the historic correlation between groundwater overdraft and reduced groundwater replenishment, and the fact that 2014 and 2015 SWP deliveries are at a severely reduced level as a result of the drought, the Region is currently experiencing impacts associated with groundwater overdraft. It is anticipated that these impacts will continue until SWP deliveries are restored to average levels, which is not anticipated to take place within the next calendar year. Programs that reduce groundwater pumping are important to mitigate groundwater pumping and reduced replenishment that occur as a result of the drought.

Figure 1-2: Water Balance for Indio River Sub-Basin in Dry vs. Normal Years



Hexavalent Chromium Impacts

Reduced imported water available for replenishment as a result of the drought intensifies issues relating to hexavalent chromium (Cr6). Chromium is a constituent of concern that is naturally occurring in the groundwater sub-basins of the Coachella Valley. In 2014, state regulators in California released a maximum contaminant level (MCL) for Cr6 of 10 parts per billion. This MCL is anticipated to substantially impact operations of water agencies within the Coachella Valley, and will require installation of costly water system improvements and water treatment facilities, to reduce Cr6 concentrations.

Approximately half of the Region's drinking water supply (groundwater) is now above MCL limits for Cr6, and prolonged drought conditions are anticipated to intensify the MCL concerns. Mapping of Cr6 occurrence in groundwater in the Coachella Valley demonstrates that Cr6 levels are highest along fault lines and in areas located away from the Region's recharge facilities. Specifically, mapping shows that areas surrounding recharge facilities, such as the Thomas E. Levy Groundwater Replenishment Facility

located in the eastern Coachella Valley, are the only areas within which Cr6 does not exceed the newly-established MCL. This information shows that imported water used for groundwater basin replenishment, which does not contain Cr6, effectively dilutes Cr6 concentrations within groundwater to levels below the regulatory limit. Due to the ongoing drought, SWP imports are substantially reduced compared to normal conditions. Although some portions of the Region already exceed the MCL limits for Cr6, it is anticipated that as the drought persists and groundwater basin replenishment activities continue to decline, Cr6 levels could increase in areas within the Region where the concentration is currently below the MCL.

The overall trends for Cr6 in the Indio and Mission Creek sub-basins are shown in **Figure 1-3**. The coloring in the graphic depicts overall compliance with the Cr6 MCL where red and yellow indicate non-compliance (groundwater exceeds the MCL) and green and blue indicates compliance (groundwater is below the MCL).

Connection to Turf Reduction Water and Energy Efficiency Program

The *Turf Reduction Water and Energy Efficiency Program* will directly reduce the amount of water pumped from the Coachella Valley Groundwater Basin, and can be considered a form of source substitution. Therefore, the program will help to alleviate overdraft and Cr6 issues that are being caused by reduced replenishment activities, because it will result in less groundwater pumping.

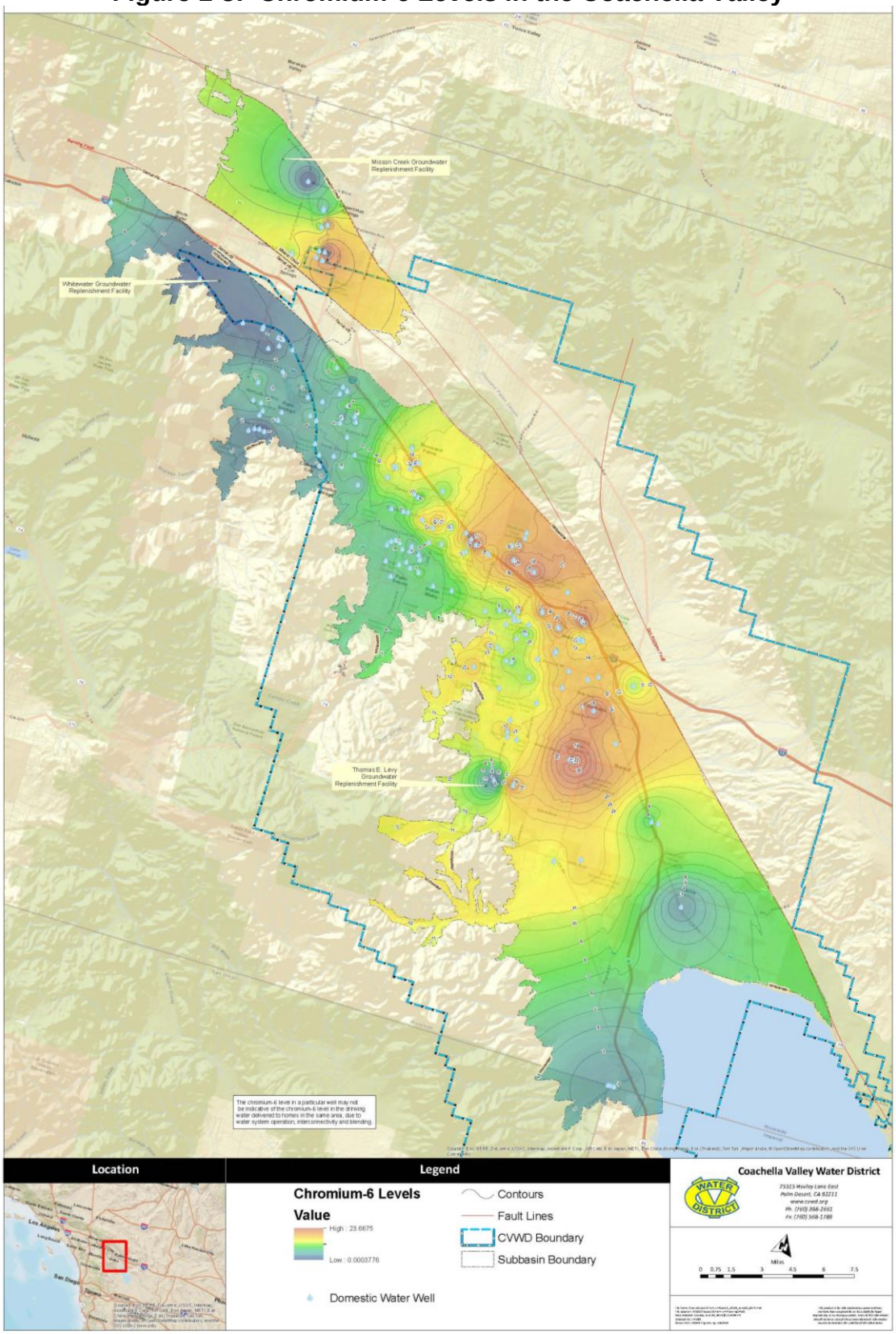
Increased Water Availability

Groundwater overdraft is a major concern in the Coachella Valley that could result in potentially significant consequences, which are heavily documented in the *2014 Coachella Valley Integrated Regional Water Management Plan.* Potentially adverse impacts associated with groundwater overdraft include:

- Land subsidence and associated permanent loss of groundwater storage capacity in some areas, along with resultant potential for ground fissures and damage to buildings, sidewalks, streets, wells, and buried pipelines;
- Increased costs to pump water and deepen wells; and
- Water quality degradation, which includes increased salinity from Salton Sea intrusion and perched water intrusion.

The *Turf Reduction Water and Energy Efficiency Program* will directly address specific concerns associated with groundwater overdraft, as it will result in conservation and reduced groundwater pumping. Specifically, as shown in *Section 1.4.1.2,* the project will result in annual savings totaling 1,747 AFY. Local documentation demonstrates that per year groundwater pumping demands need to be decreased by 92,600 AFY to ensure that groundwater is not extracted beyond sustainable levels. Therefore, the *Turf Reduction Water and Energy Efficiency Program* will result in water savings that contribute to 2% of the region's overall water conservation needs to ensure groundwater overdraft does not take place.

Figure 1-3: Chromium-6 Levels in the Coachella Valley



Water for Disadvantaged Communities

The *Turf Reduction Water and Energy Efficiency Program* will benefit economically disadvantaged communities (DACs) in CVWD's service area by reducing groundwater pumping. Reduced groundwater pumping will benefit all users of the groundwater basin, but could provide additional benefits to DACs. Issues that may arise as a result of groundwater overdraft (subsidence, treatment, increased well depth, etc.) could result in increased water costs to groundwater users. Given the economic status of DACs, increased water costs could disproportionately impact DACs compared to other users. Therefore, by implementing long-term conservation measures, the program could benefit DACs by helping to reduce long-term water costs in the region.

Promote and Encourage Collaboration

The golf industry is an integral part of the Coachella Valley economy. CVWD and representatives of the golf course associations formed the Coachella Valley Golf and Water Task Force in 2013, creating a collaborative group to address water availability and long-term sustainability of the golf industry. The primary purpose of the Golf and Water Task Force is to reduce the amount of water used by golf courses in the Coachella Valley. One water-wise practice that has been implemented by the golf industry to reduce water use is removing turf and replacing turf with desert landscaping in non-play areas. This practice is an effective long-term strategy to reduce water use, and falls in line with CVWD's goal of reducing golf course-related water use by 10% for existing courses and by 25% for new courses through increased conservation.

The *Turf Reduction Water and Energy Efficiency Program* will assist CVWD in providing the needed incentive to make golf course turf removal feasible, and will further promote and encourage collaboration between CVWD and the local golf industry. A golf course association member of the Coachella Valley Golf and Water Task Force has provided a letter of support for this program, attached as **Appendix B**.

Increase Awareness of Water and Energy Conservation

CVWD currently provides outreach within its service area for existing turf rebate programs, and participates in a regional conservation effort called CV Water Counts. The CV Water Counts Program is a collaboration among the five public water agencies in the Coachella Valley, and the program website provides residents of the region with information regarding their water purveyor and the availability of rebate programs that they may be eligible for, as well as additional water conservation information.[27] CVWD will continue to promote its rebate programs, including the *Turf Reduction Water and Energy Efficiency Program* on the CV Water Counts website and through its internal outreach program, and therefore will increase awareness of water and energy conservation and efficiency efforts across the Coachella Valley.

[27] www.cvwatercounts.com

1.4.6 Evaluation Criterion F: Implementation and Results

1.4.6.1 Sub-ECF.1: Project Planning

The goal of the *2010 Coachella Valley Water Management Plan* is to guide CVWD in water management within its service area to ensure adequate quantities of safe, high-quality water supply. The Water Management Plan calls for water efficient landscaping, and golf course conservation measures. The Golf Course Turf Restrictions and Maximum Allowable Water Allowances measures from the Water Management Plan are both addressed by the *Turf Reduction Water and Energy Efficiency Program*, which aims to provide financial incentives to reduce golf course-related water use.

CVWD adopted the Landscape and Irrigation System Design Criteria Ordinance in November 2009 to provide provisions for new or rehabilitated landscaping with the goal of reducing landscape irrigation. The *Turf Reduction Water and Energy Efficiency Program* supports this ordinance by incentivizing drought tolerant landscaping for residential and commercial users, as well as golf courses.

CVWD's Water Shortage Contingency Plan is described in detail in the agency's *2010 Urban Water Management Plan* (UWMP). The Water Shortage Contingency Plan includes provisions to reach the agency's SBx7-7 conservation goals of reducing urban water use by 20% by 2020. One of the demand management measures outlined in the UWMP to meet overall conservation goals is reducing outdoor irrigation by providing financial incentives, such as rebates. Therefore, the *Turf Reduction Water and Efficiency Program* is supported by CVWD's Water Shortage Contingency Plan and overall agency-wide conservation goals.

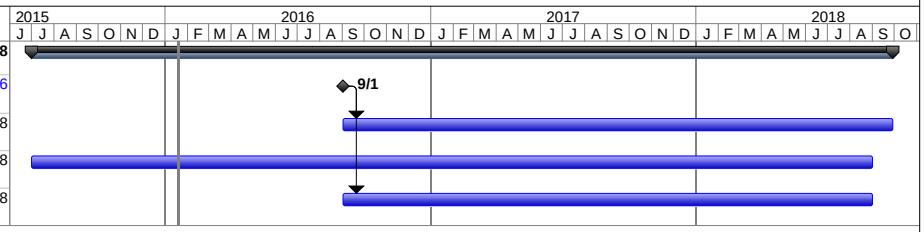
1.4.6.2 Sub-ECF.2: Readiness to Proceed

The *Turf Reduction Water and Energy Efficiency Program* began implementation on July 1, 2015. CVWD currently has a residential and commercial turf rebate program in place, which is currently being implemented and will provide the majority of matching funds for the *Turf Reduction Water and Energy Efficiency Program.* CVWD has previously implemented a golf course rebate program; however, there is not currently an eligible source of funding for this program, so it is currently on hold. This $1 million in requested grant funding will support ongoing implementation of golf course turf rebates. Therefore, this project is considered immediately ready to proceed.

As shown in the schedule in **Figure 1-4**, it is anticipated that CVWD will complete grant-related reporting and administration from the time the grant is awarded and through the two-year grant period. Work on the rebate program will end in August 2018 to allow for an additional month to finalize grant-related reporting requirements.

Figure 1-4: Project Schedule

ID	Task Name	Duration	Start	Finish
1	**CVWD Turf Reduction Water and Energy Efficiency Program**	**848 days**	**Wed 7/1/15**	**Fri 9/28/18**
2	USBR Announces Final Awards for WaterSMART Grant Program (estimated)	0 days	Thu 9/1/16	Thu 9/1/16
3	Grant Administration and Reporting	541 days	Fri 9/2/16	Fri 9/28/18
4	Residential and Commercial Turf Reduction Program	828 days	Wed 7/1/15	Fri 8/31/18
5	Golf Course Turf Reduction Program	521 days	Fri 9/2/16	Fri 8/31/18



Task		External Tasks		Manual Task		Finish-only	
Split		External Milestone		Duration-only		Progress	
Milestone		Inactive Task		Manual Summary Rollup		Deadline	
Summary		Inactive Milestone		Manual Summary			
Project Summary		Inactive Summary		Start-only			

1.4.6.3 Sub-ECF.3: Performance Measures

The *Turf Reduction Water and Energy Efficiency Program* is a landscape water efficiency project that will convert water-intensive turf grass to desert-friendly landscaping for golf, residential, and commercial users, which will save both water and energy.

CVWD has previously been awarded grant funding for a similar turf rebate program from the California Department of Water Resources' Proposition 84 Integrated Regional Water Management (IRWM) Program. The Proposition 84 IRWM Program grant requires preparation of a performance monitoring plan to track and quantify project-related benefits. Therefore, with its current monitoring and reporting strategy, CVWD will be able to accurately track benefits of the *Turf Reduction Water and Energy Efficiency Program*, and report benefits to Reclamation.

There are two primary quantifiable benefits from the *Turf Reduction Water and Energy Efficiency Program,* which are detailed in Evaluation Criterion A and Evaluation Criterion B. CVWD's proposed method of quantifying the benefits of the program are detailed in the following sections.

Water Savings

CVWD will perform pre-inspection and post-inspection of golf course, residential, and commercial turf replacement sites to ensure that the amount of turf that is replaced occurs in accordance with the rebate program. Individual customer pre- and post-inspection reports will also include data about the customer's water use before and after turf has been removed. The difference in water use before and after turf replacements have been completed will be used to track and measure overall water savings resulting from program implementation. This data will be reported to Reclamation as required in applicable grant agreements.

Energy Savings

For golf course customers, pre- and post-inspection reports will also include information about groundwater pumping before and after installation of desert-friendly landscapes. Therefore, data in these reports will be used to determine the reduction in groundwater pumping (and associated energy use) that occurs as a result of direct implementation of the *Turf Reduction Water and Energy Efficiency Program.*

For residential and commercial customers, pre- and post- inspection reports will include data about the amount of water used before and after implementation of the *Turf Reduction Water and Energy Efficiency Program.* Because CVWD is not an energy provider, it does not have access to customer energy meter data. Therefore, energy savings that accrue as a result of water conservation will be extrapolated from the water conservation data. This extrapolation will require a calculation of the energy intensity of CVWD's distribution system (kWh per AFY of water served) to determine how much energy is saved as a direct implementation of the *Turf Reduction Water and Energy Efficiency Program.*

1.4.6.4 Sub-ECF.4: Reasonableness of Costs

As described in previous sections, the total project cost is directly related to the amount of water and energy savings that would accrue as a result of project implementation. The amount of square feet of turf that would be replaced as a result of implementation is directly related to the budget, because the majority of the project budget ($8,964,800 of $9,000,000) will be used to directly fund turf rebates. The terms of the rebates vary for the residential and commercial and golf rebate programs, and the energy and water savings vary due to the nature of the projects.

A pre-requisite of both the commercial and residential and golf course rebate programs is that rebate recipients agree to maintain turf replacements for at least five years. Therefore, it is reasonable to assume a conservative project life of five years for the *Turf Reduction Water and Energy Efficiency Program.* In addition, rebate recipients must agree to provide user data to CVWD to allow CVWD to effectively track and quantify water and energy savings. Therefore, it is reasonable to assume that CVWD will be able to accurately track and quantify water and energy savings that accrue as a result of program implementation.

A summary of program-related costs and benefits is provided in **Table 1-14**. Once the program has been implemented, it is assumed that benefits will remain in place over the five-year useful life of the project.

Table 1-14: Summary of Benefits and Costs

Parameter	Residential and Commercial Rebate Program	Golf Course Rebate Program	Turf Reduction Water and Energy Efficiency Program
Total Budget	$7,964,800	$1,000,000	$9,000,000[1]
Total Water Savings (AF)	6,820	1,915	8,735
Total Energy Savings (kWh)	4,317,060	859,070	5,176,129
Cost/Benefit Ratio ($/AF)			$1,030/AF
Cost/Benefit Ratio ($/kWh)			$0.17/kWh

[1]Includes additional budget for program administration

1.4.7 Evaluation Criterion G: Additional Non-Federal Funding

As explained in further detail in *Section 5 Project Budget*, CVWD proposes to provide a total non-Federal funding match of $8,000,000 from its existing budget for the residential and commercial turf rebate program and from in-kind staff time. This equates to an 89% overall funding match for the *Turf Reduction Water and Energy Efficiency Program.*

$$\frac{\text{\$8,000,000 CVWD Cost Share (Non-Federal Funding)}}{\text{\$9,000,000 Total Project Cost}} = 89\%$$

1.4.8 Evaluation Criterion H: Connection to Reclamation Project Activities

The Coachella Canal and irrigation distribution system was constructed by Reclamation as part of the Boulder Canyon Project Act of 1928 to deliver Colorado River water into the Imperial Valley and the Coachella Valley. Colorado River water has been delivered to the Coachella Valley from the Coachella Canal since 1949, and has been used to supplement groundwater pumping. CVWD continues to operate and maintain the Coachella Canal and distribution system.

Although the *Turf Reduction Water and Energy Efficiency Program* is not on Reclamation project lands, it is indirectly involved with the Coachella Canal. Water that is delivered to the Coachella Valley via the Canal is considered a form of in lieu recharge in that irrigation users use Canal water rather than pumping groundwater. The *Turf Reduction Water and Energy Efficiency Program* is also considered an in lieu recharge project, because irrigation users will replace high water-consuming turf with desert friendly landscaping, therefore reducing water demands and pumping less groundwater.

Although the projects are not directly connected, they do have similar overall goals and are located in the same basin (the Southeast California Regional Basin). The *Turf Reduction Water and Energy Efficiency Program* will, therefore contribute water (via in lieu recharge) to a basin where a Reclamation project is located.

2 Performance Measures

Performance measures associated with the *Turf Reduction Water and Energy Efficiency Program* are detailed in *Section 1.4.6.3*, which is in line with requirements of *Subcriterion No. F.3.*

3 Environmental and Cultural Resources Compliance

Environmental documentation is not required for the *Turf Reduction Water and Energy Efficiency Program*, because it would not be considered a "project" per definitions established in the National Environmental Policy Act (NEPA) or the California Environmental Quality Act (CEQA). Therefore, the questions presented in the FOA are not applicable to the *Turf Reduction Water and Energy Efficiency Program.*

3.1 Impacts to the Surrounding Environment

The *Turf Reduction Water and Energy Efficiency Program* is a rebate program that provides financial incentives to remove turf grass and replace it with water-wise landscaping. Earth-disturbing work would be minimal, and would include removing existing turf and re-landscaping those areas with water-wise landscaping. Furthermore, onsite irrigation and other retrofits that take place in conjunction with the turf retrofits must not result in nuisance runoff that would result in stormwater-related issues. Given the small-scale and temporary nature of this earth-disturbing work and the fact that the program does not qualify as a project per NEPA or CEQA, impacts would not occur to the surrounding environment as a direct result of project implementation.

3.2 Listed Species

Although there are listed species within the project area, as detailed under Evaluation Criterion C, the *Turf Reduction Water and Energy Efficiency Program* would potentially benefit those species by replacing monoculture turf with desert-friendly landscaping that could be used as habitat by local birds and insects. Given the small-scale and temporary nature of work associated with the program and the fact that the program would provide habitat-related benefits, listed or proposed to be listed species or designated critical habitat would not be adversely affected by any activities associated with the *Turf Reduction Water and Energy Efficiency Program.*

3.3 Wetlands or Surface Water

Several surface waters within CVWD's service area fall within Clean Water Act jurisdiction, including the Whitewater River Stormwater Channel and its tributaries. The *Turf Reduction Water and Efficiency Program* would not adversely impact these surface water bodies. The program does not qualify as a project under NEPA or CEQA, and would be located on private lands.

3.4 Water Delivery System

The *Turf Reduction Water and Efficiency Program* would not impact or affect CVWD's water delivery system.

3.5 Irrigation Systems

The *Turf Reduction Water and Efficiency Program* would not modify or affect individual features of CVWD's irrigation system.

3.6 Buildings and Structures

The *Turf Reduction Water and Efficiency Program* would not modify or affect any buildings, structures, or features. Therefore, cultural resources would not be affected as a result of program implementation.

3.7 Archaeological Sites

There are multiple Native American tribes and associated Tribal Lands located within the Coachella Valley. These lands and sites throughout the Coachella Valley contain known archaeological sites. However, the *Turf Reduction Water and Efficiency Program* would not result in significant ground-disturbing activity that would pose a significant threat to archaeological sites.

3.8 Environmental Justice Considerations

The rebate program that would be funded through the *Turf Reduction Water and Efficiency Program* would be available to all CVWD customers and golf courses in CVWD's service area, which includes both low-income and minority populations. Given that the rebates would be distributed throughout CVWD's service area, any potential impacts or benefits from program implementation would also be distributed throughout the service area. Therefore, no disproportionately high and adverse effects would occur on low income or minority populations in CVWD's service area.

3.9 Tribal Lands

There are sacred sites and Tribal Lands located within the Coachella Valley. These lands and sites would not be impacted as a result of the *Turf Reduction Water and Efficiency Program*, and access to these sites would not be affected.

3.10 Noxious Weeds or Invasive Species

CVWD has established a palette of acceptable plants and desert-friendly landscaping options that may be implemented as part of the *Turf Reduction Water and Efficiency Program.* The approved plants must be used by recipients of the rebate, and do not include any noxious weed or non-native invasive species. Therefore, the program would not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species.

4 Required Permits or Approvals

The *Turf Reduction Water and Energy Efficiency Program* is based upon CVWD's existing turf rebate programs that have been implemented by CVWD for several years. Through implementation of CVWD's existing programs, CVWD has determined that additional permits or approvals are not required for implementation. As such, no permitting work is necessary for this project. Funding is not being requested for this task and costs are not included in the budget.

5 Letters of Support

In January 2016 the Southern California Golf Association provided a support letter to indicate its strong support for the golf course portion of the *Turf Reduction Water and Energy Efficiency Program*, which would be funded by the grant funds that are being requested by Reclamation. The support letter is provided as **Appendix B**.

6 Official Resolution

On December 22, 2015 CVWD's Board of Directors passed Resolution No. 2015-87 (see **Figure 6-1**), which verifies the following:

- Identify of the official with legal authority to enter into agreement (General Manager)
- Board of Directors who supports the application
- Capability of the applicant to provide the funding match
- Willingness of applicant to work with Reclamation to meet established deadlines for entering into a cooperative agreement

Figure 6-1: CVWD Official Resolution

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

I, MARICELA CABRAL, Acting Assistant 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. 2015-87 adopted by the Board of Directors of said District at a regular meeting thereof duly held and convened on the 22nd day of December 2015, at which meeting a quorum of said Board was present and acting throughout. The Resolution was adopted by the following vote:

Ayes:	Five
Directors:	Powell, Nelson, O'Dowd, Pack, Estrada
Nos:	None

Dated this 22nd day of December, 2015.

(SEAL)

Maricela Cabral
Acting Assistant Secretary

Lindsey Wilcox

From: Lindsey Wilcox
Sent: Monday, December 01, 2014 12:43 PM
To: Lindsey Wilcox
Subject: FW: Water and energy Savings

From: Patti Reyes [mailto:PReyes@cvwd.org]
Sent: Friday, November 14, 2014 3:23 PM
To: Dan Farris; Crystal Mohr
Cc: Olivia Bennett
Subject: RE: Water and energy Savings

Thank you, Dan.

From: Dan Farris
Sent: Friday, November 14, 2014 3:20 PM
To: Patti Reyes; Crystal Mohr
Cc: Olivia Bennett
Subject: RE: Water and energy Savings

Hi,

You may notice the higher KWH value for domestic water use compared to golf courses. This is chiefly because golf courses use the water right on site, and for domestic use, the district maintains booster pumps at higher pressures moving the water around the valley. The golf course KWH value used here is only the well. If golf courses pump the water within the course, that cost is excluded from the value. This is because if we were to put nonpotable water into their lake system, they would still have their internal booster pumps to operate above and beyond the value used to set the nonpotable water price.

Hope this made sense.

Thanks,
Dan

From: Patti Reyes
Sent: Friday, November 14, 2014 3:13 PM
To: Crystal Mohr
Cc: Dan Farris; Olivia Bennett
Subject: FW: Water and energy Savings

Hi Crystal,

Staff asked me not to share their spreadsheet data because of it's confidential nature relative to our pending lawsuit over golf course water data. However the bottom line is that they calculated that 448.6 KWH per af is the average energy use for golf courses to pump from their wells. And the average cost over our service area is $0.13 per kwh.

For domestic water, our total power bill last year (2013) was $9.470 million. Using a cost of $0.13 per kwh, this represents about 72.8 million kwh's. Our total domestic water production was about 115,000 afy. So the result is 633 kwh per af. I am not sure why the domestic water cost is higher however, my guess is that if you averaged the pumping depth of all our DW wells. The average depth to water would be greater than the average depth to water for golf

courses. This is because there are more DW wells than GC in the west valley – especially toward Cathedral city and Desert Hot Springs, and there are more GC wells in the East Valley.

I hope this helps.

Please let me know if you need additional data.

Patti

Appendix B: Golf Course Industry Support Letter

SCGA
YOUR PASSION. OUR PURPOSE.

January 5, 2016

Bureau of Reclamation
Financial Assistance Branch
Attn: Ms. Janeen Koza
Mail Code: 84-27852
PO Box 25007
Denver, CO 80225

Dear Ms. Koza:

I am writing on behalf of the 150,000-member Southern California Golf Association to express our organization's support of the Coachella Valley Water District's application for Turf Reduction Program funding through various Water Energy Grant programs.

The demand for turf buyback programs proved so strong in Southern California last year that the Metropolitan Water District (MWD) had to discontinue it prematurely after granting more than $400 million in domestic and commercial turf rebates. Los Angeles Water & Power and San Diego Public Utilities enjoyed similar traction with their independent turf rebate programs and have continued to commit funds thereto.

Recognizing that the most reliable way to permanently reduce its water footprint is to reduce the amount of its irrigated turf, the Southern California golf industry has begun to design, build and then implement massive turf reduction projects en masse. Because these projects are expensive to design, construct and then maintain (always a million + proposition), these rebate programs provide a healthy incentive to an industry that simultaneously recognizes the need to reduce water consumption and continues to suffer during the agonizingly slow recovery from the "Great Recession."

Reductions of water footprints always spell corresponding reductions in energy footprints. The Coachella Valley has significant areas of irrigated turf. With a population in the 300,000 range it hosts a whopping 13.9% of California's golf courses – a full 27.3% of Southern California's golf stock. Implementing drought tolerant landscaping will save significant amounts of water and in the process reduce energy consumption by decreasing the need for groundwater pumping, which has corresponding benefits for the long term integrity of the aquifer in addition thereto.

Because of that low population number, funding for this program would greatly assist the Coachella Water District in their ongoing efforts to provide incentives for their customers to reduce water use. The Southern California Golf Association urges you to give this project careful consideration.

On behalf of the Association's 150,000 members I want to thank you for considering our views on the subject. Please feel free to contact me if you have any questions or would appreciate additional information.

Sincerely,

Craig Kessler
Director of Governmental Affairs [ckessler@scga.org / (310) 941-4803]