



CHINO BASIN WATER CONSERVATION DISTRICT

4594 SAN BERNARDINO ST ~ MONTCLAIR, CA 91763
WWW.CBWCD.ORG ~ PHONE 909-626-2711 ~ FAX 909-626-5974

October 27, 2017

Ref: 20171544

Debra Whitney
Bureau of Reclamation
27708 Jefferson Avenue, Suite 202
Temecula, CA 92590

RE: Final Report for R12AP35343

Dear Ms. Whitney:

Attached are the final report materials for agreement R12AP35343, Chino Basin Residential Weather Based Irrigation Controller Install Program.

Project Summary:

The purpose of the Chino Basin Residential Weather Based Irrigation Controller Installation Program is to promote efficient water use, demonstrate conservation technologies, and promote water education and training. Installing weather based irrigation controllers (WBICs) at residential locations within Chino Basin Water Conservations District's boundaries will help reduce water demand, manage peak season water demand, and preserve storage in order to ensure a reliable and adequate future water supply. This project installed 300 WBICs, provided training for residents receiving them, and tracked usage to quantify water savings. Tracking data showed an average of 18.93% decrease in total household water consumption among participating properties in the first year after installation compared to the year prior to installation. Average per household water savings was 0.14 acre feet per year. Total project savings was 40.59 acre feet in the year following WBIC installation.

We have completed our final ASAP drawdown for the project.

Expenses covered by Reclamation during the implementation of the project include: staff wages, weather based irrigation controller and attached weather sensor equipment, installation supplies, and outreach materials.

DIRECTORS

TERENCE M. KING ~ *Division 1*
MARK LIGTENBERG ~ *Division 4*
GEOFFREY VANDEN HEUVEL ~ *Division 7*

MARC GRUPPOSO ~ *Division 2*
GIL ALDACO ~ *Division 5*

MARGARET HAMILTON ~ *Division 3*
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DISTRICT COUNSEL WILLIAM BRUNICK



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Sincerely,

A handwritten signature in black ink that reads "Vivian Castro".

Vivian Castro
Deputy Executive Director

Attachments:

- SF 425 Form
- Final Progress Report
- Other Deliverables: Water Use Tracking Data Spreadsheet
- Property Disposition
- Marketing Materials Package
- Release of Claims From
- Benefit Form
- Deobligation of Funds

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Directives and Standards

**Chino Basin Residential Weather Based
Irrigation Controller Install Program
San Bernardino County, CA
Final Project Report**

**Agreement # R12AP35343
Chino Basin Water Conservation District
4594 San Bernardino Street
10/17/2017**

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Final Report Format – Instructions

1. About the Final Report: The Final Report Format provided below is intended to be used by WaterSMART recipients to prepare a final program performance report (“Final Report”), upon the completion of a WaterSMART project. The Final Reports prepared by WaterSMART recipients fulfill an important requirement of the WaterSMART Program, while also providing Reclamation with a means of demonstrating the benefits of the program to others. In these days of shrinking Federal budgets, it is important to provide Congress and the public with information about the actual benefits being realized. With your help, we hope to keep this program thriving long into the future.
2. Deadline for Submission: An original and two copies of the Final Report must be submitted to Reclamation no later than 90 days following the expiration or termination of the financial assistance agreement. In some cases, Reclamation may approve an extension of the agreement if more time is needed for the recipient to collect information needed for the Final Report.
3. Final Report Form: This Final Report Format is a suggested format only; the recipient may use its own form or format. However, at a minimum, the Final Report must describe the completion of the project, quantify the project benefits, and comply with the requirements of 43 CFR 12.80 or 12.951, as applicable. A report using this suggested format will satisfy the requirements of 43 CFR 12.80 or 12.951. Failure to submit timely and acceptable progress reports, including the Final Report, places the recipient in noncompliance with the terms and conditions of the financial assistance agreement.
4. Filling out the Attached Form: You may save this format to your computer and type directly into the form in the spaces provided. The boxes will expand as text is entered. There is no page limit for the Final Report.
5. Assistance with the Final Report: For questions or assistance regarding the preparation of your Final Report, please contact your Reclamation Grants Officer Technical Representative.

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1. Recipient Information:	
Recipient Name: (Name, contact person, address and phone number)	Chino Basin Water Conservation District Scott Kleinrock, 4594 San Bernardino St. Montclair, CA 91763 909-267-3224
Project Name:	Chino Basin Residential Weather Based Irrigation Controller Install Program
Assistance Agreement No:	R12AP35343
Date of Award: (Month, Year)	
Estimated Completion Date (Month, Year)	
Actual Completion Date: (Month, Year)	

2. Final Funding Information	Funding Amount
Non-Federal Entities	
1. Chino Basin Water Conservation District	\$70,989.82
2.	
3.	
<i>Non-Federal Subtotal:</i>	\$70,989.82
Other Federal Entities	
1.	
2.	
3.	
<i>Other Federal Subtotal:</i>	
<i>Requested Reclamation Funding:</i>	\$70,989.82
<i>Total Project Funding:</i>	\$141,979,64

3. One Paragraph Project Summary:
<p>The purpose of the Chino Basin Residential Weather Based Irrigation Controller Installation Program is to promote efficient water use, demonstrate conservation technologies, and promote water education and training. Installing weather based irrigation controllers (WBICs) at residential locations within Chino Basin Water Conservations District's boundaries will help reduce water demand, manage peak season water demand, and preserve storage in order to ensure a reliable and adequate future water supply. This project will install 300 WBICs, provide training for residents receiving them, and track usage to quantify water savings.</p>

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4. Final Project Description: *Briefly describe components of the project and the work completed, including each element of the scope of work and the work completed at each stage of the project. Please include maps, sketches, and/or drawing of the features of the completed project, as appropriate. In addition, please describe any changes in the project scope.*

Task 1: Project Management and Administration: Issued RFP to vendors, awarded bid, purchased controllers and weather sensors.

Task 2: Residential Training Class for Weather Based Irrigation Controllers: Provided multiple training classes to train residents who receive WBICs installed at their properties. This class was a requirement to participate in the program.

Task 3: Weather Based Irrigation Controller Installation: CBWCD staff installed 300 WBICs at participating properties.

Task 4: Monitoring and Water Use Tracking: CBWCD staff recorded water use for each participating property. Water use for one year prior to installation through one year post installation was recorded to track efficacy of WBIC installations on water savings.

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5. Accomplishment of Project Goals: *Describe the goals and objectives of the project and whether each of these was met. Where appropriate, state the reasons why goals and objectives were not met, and describe any problems or delays encountered in completing the project. Please include whether or not the project was completed within cost.*

Goals and Objectives:

- 1) Install 300 Weather Based Irrigation Controllers (WBICs) at residential homes within the CBWCD service area. Completed.
- 2) Provide one year of water consumption data monitoring for each property receiving a WBIC. Completed.
- 3) Provide better irrigation management for the 300 residential accounts. Completed and verified through post installation tracking data.
- 4) Reduce water demand by approximately 225 acre feet per year. Goal not met, see discussion below, as previously reported in March 2017 Grant Progress Report. Actual reduction numbers are updated since that report to reflect final tracking data:

Water use tracking data shows an average of 18.93% decrease in total household water consumption among participating residences in the first year after installation. This totals 40.59 acre feet of water per year saved over those 300 accounts, or an average of 0.14 acre feet per year per household. Average household water use among participating properties in the year preceding installation was 0.71 acre feet per year.

This program shows strong savings compared to normally assumed water savings in our area. The Inland Empire Utility Agency's 2015 Urban Water Management Plan offers estimated savings per household to be 13,490 gallons, or 0.04 acre feet per year through using weather based irrigation controllers, compared to an average of 0.14 acre feet a year achieved in this project.

We have, however, identified what appears to be a computational error in this project's original projection of a total of 225 acre feet per year saved across the project's 300 installations. This would equate to an average household savings of 0.75 acre feet of water savings per year. Tracking of the participant accounts shows an average total household use of 0.71 acre feet per year pre WBIC installation.

Chino Basin Water Conservation District has had multiple turnovers of staff involved with this project since it was originally proposed in 2012. Currently none of the staff who worked on the proposal are still working at Chino Basin Water Conservation District. Current staff has worked to understand the original 0.75 acre feet per household per year number. The proposal reads "According to calculations obtained from the IEUA's 2005 UWMP, water savings from this project is estimated to be 0.75 acre feet per year per home....." Staff has reviewed both the conservation and demand sections of this document and can find no clear connection between the number offered in the proposal and data from IEUA's 2005 UWMP. IEUA's 2015 UWMP clearly offers a very different, much more conservative number or 13,490 gallons saved per year per household, equating to 0.04 acre feet per year.

While total water savings from this project will not equate with the original projection, they are still significant, and show greater efficacy than current regionally-used average estimated savings per household.

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6. Discussion of Amount of Water Conserved, Marketed or Better Managed: *In responding*

to the questions set forth below, Recipients should rely on the best data or information available. Actual field measurements should be used whenever possible (e.g., baseline data or post-project data derived from measuring devices, diversion records, seepage tests, etc.) Where actual field measurements are not available, water savings (or amounts marketed or better managed) may be estimated based on studies, other similar improvement projects, or anecdotal evidence.

A. Recipient's total water supply (average, annual, available water supply in acre-feet per year):

N/A

B. Amount of water conserved, marketed or better managed as a result of the project (in acre-feet per year):

40.59 AFY conserved through demand reduction

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C. Describe how the amounts stated in response to 6.B were calculated or estimated:

In responding to this question, please address (1) – (3) below.

(1) Describe the information/data being relied on to calculate/estimate the project benefits. State how that data/information was obtained, if appropriate. Provide any other information necessary to explain how the final calculation/estimate of project benefits was made.

Water consumption data was collected for the 300 participating properties. Data of consumption in the year prior to the WBIC installation was compared to consumption data tracking water use through the year following WBIC installation. The difference between the two was totaled for each participant, then aggregated to calculate total project benefits.

(2) As appropriate, please include an explanation of any concerns or factors affecting the reliability of the data/information relied on.

There are no concerns with data reliability. A longer-term study would be useful to assess the long-term conservation benefits of WBIC installation for residential properties. However, this study would not fit into the timeline of a Bureau of Reclamation grant.

(3) Attach any relevant data, reports or other support relied on in the calculation/estimate of project benefits, if available. Please briefly describe the data/information attached, if any.

The master spreadsheet with water use data mentioned above for all 300 participants is attached. The Excel file will also be attached to the digital submission for greater legibility.

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D. Use of Conserved Water: *Please explain where the water saved, marketed, or better managed, as a result of the project is going (e.g. used by the recipient, in stream flows, available to junior water users, etc.)*

Water conserved takes place in the form of urban residential demand reduction. Conserved water relieves local retailers' water demand, and thus Inland Empire Utilities Agency's demand on water imported from the State Water Project.

E. Future tracking of project benefits: *Please state whether and how the recipient plans to track the benefits of the project (water saved, marketed or better managed) in the future. If no actual field measurements are currently available to support the estimate of project benefits in 6.B., please state whether actual field measurements will become available in the future. If so, please state whether the Recipient is willing to provide such data to Reclamation on a voluntary basis once it is available.*

CBWCD has completed one-year post installation tracking for all sites where weather based irrigation controllers were installed, per this agreement. Currently, no future tracking of these sites is planned.

7. Discussion of Amount of Renewable Energy Added: *If your project included the installation of a renewable energy component, please describe the amount of energy the system is generating annually. Please provide any data/reports in support of this calculation.*

N/A

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8. Describe how the project demonstrates collaboration, stakeholder involvement or the formation of partnerships, if applicable: *Please describe the collaboration involved in the project, and the role of any cost-share or other types of partners. If there were any additional entities that provided support (financial or otherwise), please list them.*

Chino Basin Water Conservation District collaborated with the water retailers in our service area to outreach to potential program participants. Water retailers were instrumental to the water use tracking phase of the project, supplying CBWCD staff with pre and post installation water use data for all 300 accounts. Collaborating water retailers were Monte Vista Water District, City of Ontario, City of Chino, City of Chino Hills, City of Upland, and Cucamonga Valley Water District.

9. Describe any other pertinent issues regarding the project:

N/A

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10. Feedback to Reclamation regarding the WaterSMART Program: *Please let us know if there is anything we can do to improve the WaterSMART program in general, including the process for applying for or completing a WaterSMART project. Your feedback is important to us.*

N/A

11. Attachments: *Please attach the following*

- **Any available data or information relied on in responding to paragraph 7, above;**
- **A map or illustration showing the location of the recipient's facilities (see paragraph 4, above);**
- **Maps, sketches, and/or drawings of the features of the completed project, as appropriate (see paragraph 5, above);**
- **Representative before and after photographs, if available;**
- **A table showing the total expenditures for the completed project (please see Sample Final Project Costs Table, below).**

NOTE: This Final Report Format is a suggested format only; the recipient may use its own form or format. A report in this form will satisfy the requirements of 43 CFR 12.80 or 12.951, as applicable. Failure to submit timely and acceptable progress reports places a recipient in noncompliance with the terms and conditions of the assistance agreement. Noncompliance can result in the withholding of assistance payments, suspension or termination of the assistance award and may delay further awards.

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