

WATER CONSERVATION FIELD SERVICES PROGRAM

Project Name

California Sprinkler Adjustment Notification System

Project Location

Orange County, California

Final Project Report



**Agreement No. R12AP35341
Municipal Water District of Orange County
18700 Ward Street
Fountain Valley, CA. 92708
December 19, 2014**

1. Recipient Information	
Recipient Name:	Municipal Water District of Orange County Attn: Joe Berg 18700 Ward Street Fountain Valley, CA. 92708 (714) 593-5008
	California Sprinkler Adjustment Notification System
Assistance Agreement No:	R12AP35341
Date of Award:	August 27, 2012
Estimated Completion Date:	September 30, 2013
Actual Completion Date:	September 30, 2014

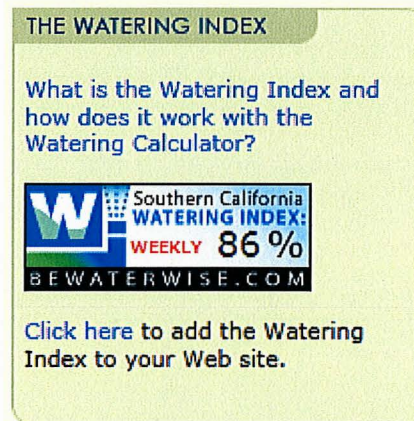
2. Final Funding Information	Funding Amount
Non-Federal Entities	
1. Municipal Water District of Orange County (In-Kind Staff Time)	\$20,672.21
2. Irvine Ranch Water District/LA Department of Water & Power	\$5,000.00
3. Metropolitan Water District of Southern Calif.	\$35,000.00
4. California Urban Water Conservation Council	\$1,100.00
<i>Non-Federal Subtotal:</i>	\$61,772.21
<i>Requested Reclamation Funding:</i>	\$34,800.00
<i>Total Project Funding:</i>	\$96,572.21

3. One Paragraph Project Summary:
<p>The California Sprinkler Adjustment Notification System (CSANS) produced a web site widget that water agencies throughout California can post on their websites. Customers are encouraged to click on the widget to register to receive regular e-mails from their water provider containing the updated irrigation factor specific to the weather at their geographic location. The factor is used to make global irrigation scheduling adjustments on irrigation timers that have a percent adjustment feature. The CSANS allows property owners to turn their "dumb" irrigation timers into smart timers at no cost. In addition to the irrigation adjustment factor, water agencies can customize these emails to include agency-specific information, such as seasonally appropriate gardening suggestions, rebate program information, water supply updates, etc.</p>

4. Final Project Description:
<p>The Municipal Water District of Orange County (WDOC) developed the CSANS through a multi-agency partnership including California Department of Water Resources (DWR), California Urban Water Conservation Council (CUWCC), Irvine Ranch Water District (IRWD), Los Angeles Department of Water and Power, Metropolitan Water District of Southern California (MWDSC), and United States Bureau of Reclamation.</p>

This CSANS index factor is similar to MWDSC's Watering Index, which is posted on the Bewaterwise.com® website (Figure 1). The difference between the CSANS and Metropolitan's Watering Index is that the CSANS sends, or pushes, the localized irrigation factor out to customers via e-mail rather than requiring the customer to pull generic information from the Bewaterwise.com website.

Figure 1
MWDSC's Watering Index posted
on Bewaterwise.com and MWDOC websites



The CSANS relies on evapotranspiration (ET) data from the California Irrigation Management Information System (CIMIS). ET is the amount of water that has evaporated from the soil and transpired from plant material in a given period of time. ET considers a number of factors, such as wind, humidity, temperature, and solar radiation. All of these characteristics of weather vary throughout the year, as do the water requirements of plants. CIMIS has a network of more than 230 weather stations throughout California. Each of the weather stations houses a suite of sensors that measure the weather parameters needed to calculate ET. The calculated ET value can be used to estimate the amount of irrigation needed to maintain the health of plants.

It has been DWR's intent to significantly expand the use of CIMIS data through a CSANS tool; however, they have not been able to obtain all of the necessary funding for it to materialize. DWR has made two recent improvements to the CIMIS system that makes the CSANS possible, including ET data by zip code and the ET Data Protocol. Without these improvements, our ability to create the CSANS would require a significantly greater investment. The zip code improvement allows ET to be estimated at geographic locations between existing CIMIS weather stations. For example, Station 75 is located in Irvine, Station 44 is located at UC Riverside, and Station 78 is located in Pomona. Data from these stations is used to estimate evapotranspiration in any zip code between these stations. The ET Data Protocol allows smart timer manufacturers free, automated access to CIMIS data to facilitate irrigation scheduling adjustments by the smart timers they manufacture. The ET Data Protocol was developed to provide a free source of weather data to smart timer manufacturers to avoid ongoing fees for the ET data.

The CSANS produced a web site widget that water agencies throughout California can post on their websites. The CSANS registration widget is now posted on MWDOC's website to ease access to and broaden program participation. MWDOC member agencies are also in the process of placing the registration widget on their websites. An image of the registration widget is provided as Attachment A. Customers are encouraged to click on the widget to register to receive regular e-mails from their water provider containing the updated irrigation factor specific to the weather at their geographic location. There are four Simple Steps to sign up to CSANS:

1. Enter a valid email and street address at <http://csans.net>.
2. Receive an automatic confirmation email to activate the subscription.
3. Select how often you would like to receive your adjustment reminders. An option at the bottom of every email reminder will allow you to switch between weekly and monthly reminders.
4. Using the percentage recommendation to adjust your watering schedule.

The CSANS sends sprinkler adjustment recommendation emails to homeowners and businesses. CSANS users can choose between weekly or monthly e-mails. Sample CSANS e-mails are provided as Attachment B. This free tool will help save water outdoors by assisting consumers to fine tuning their watering schedule programmed into their existing sprinkler timer. Many common automatic sprinkler timers have a schedule adjustment option, labeled as Percent Adjust, Seasonal Adjust, Water Budget, or just a "%" sign.

This schedule adjustment option allows the user to adjust the irrigation schedule for all irrigation zones at once with a single percentage change more easily than manually changing the runtime minutes for each zone. The sprinkler adjustment recommendation is based on a percentage of the maximum "base schedule." The "base schedule" is the number of minutes each of the controller's watering zones is programmed based on the maximum watering need, which tends to be in the July-August time of year. Once the controller is programmed using the "base schedule," utilizing this percent adjust feature will allow the user to adjust your weekly or monthly irrigation schedule quite easily.

Traditional sprinkler timers utilize preset schedules which, without regular adjustments, can lead to excess irrigation. CSANS is designed to make watering more consistent with the plant's needs. Behind the scenes, CSANS uses the property street address and California's CIMIS stations to calculate the recommended irrigation factor.

In addition to the irrigation adjustment factor, e-mails are customized to each retail water agency, including their agency logo. Each e-mail also contains three unique educational messages of the water agency's choosing. These messages can be changed each time an e-mail is sent. Agencies have the ability to create an unlimited number of messages. Currently, MWDOC has developed a total of 23 messages which are summarized in Attachment C. Topics include Irrigation Management, Irrigation Maintenance, General Landscape, Landscape Rebates, Other Rebates, Drought, and

General Water Information.

Next Steps

In early 2015, CSANS will be implemented by the EBMUD and Bay Area Water Supply and Conservation Agency (BAWSCA) on a pilot basis. These pilots will be funded through a DWR Directed Action Grant awarded to the CUWCC and agency contributions. This pilot will assist in expanding use of CSANS beyond Orange County and will assist DWR in estimating the staff time resources for implementation of CSANS state-wide.

5. Accomplishment of Project Goals:

The initial goal for CSANS was 100 subscribers per month. As of October 15, 2014, 66 CSANS subscribers are receiving the weekly or monthly Sprinkler Adjustment Percentage e-mail notifications customized to the weather at their street address. This represents approximately 33 subscribers per month which, is well below our initial goal of 100.

A study of the WaterDex conducted by the Irvine Ranch Water District quantified a 39 gallon per day water savings (or 3.3 percent of residential landscape water use) at homes using the WaterDex. CSANS is very similar to WaterDex, but does not require the purchase of the WaterDex device. WaterDex homes were sent an irrigation index adjustment e-mail from the product manufacturer. CSANS also pushes the weekly or monthly irrigation index to consumers via e-mail. The index essentially converts a dumb timer into a smart timer without replacing the irrigation timer or adding a WaterDex device. Also unique to CSANS is the educational messaging. Each consumer receives 36 to 156 educational messages per year depending, on a monthly or weekly subscription.

Based on 66 CSANS subscribers and 39 gallons per day savings, current savings totals 2,574 gallons per day or 2.9 acre feet per year.

With scheduled marketing activities, it is anticipated the number of CSANS subscriptions will increase dramatically over the next several months. MWDOC will be happy to provide periodic progress reports regarding subscriptions in Orange County, BAWSCA and EBMUD, as well as a listing of agencies who choose to implement CSANS in their service areas, both inside and outside of the Metropolitan service area.

6. Describe how the project demonstrates collaboration, stakeholder involvement or formation of partnerships, if applicable:

The CSANS was created in partnership with seven local, state, and federal organizations including:

- Municipal Water District of Orange County
- Metropolitan Water District of Southern California

- Los Angeles Department of Water and Power
- Irvine Ranch Water District
- East Bay Municipal Utility District
- California Urban Water Conservation Council
- California Department of Water Resources
- Bay Area Water Supply and Conservation Agency

These agencies contributed funding and staff time to create CSANS. The funding partnership is identified in Section 2 above. Considerable staff time was invested by these agencies on a project advisory committee (PAC) that oversaw the development of CSANS. The PAC met regularly to monitor progress, test CSANS functionality, and refine CSANS graphics and script.

More broadly, there is significant interest to implement CSANS in other parts of the state. Both East Bay Municipal Utilities District (EBMUD) and Bay Area Water Supply and Conservation Agency (BAWSCA) are moving forward with implementation of CSANS in their service areas. Eventually, it is hoped that the California Department of Water Resources (DWR) will implement CSANS state-wide. DWR is asking MWDOC and EBMUD to monitor our time commitment to implement CSANS locally to allow for DWR To develop a time estimate for state-wide implementation.

7. Describe any other pertinent issues regarding the project:

Future plans to further develop CSANS include both short-term and long-term activities. Short-term activities include the incorporation of a drought response percent range and a Base Irrigation Schedule Calculator. Longer-term activities include a smart phone application and implementation of CSANS state-wide by DWR.

The drought response percentage range will emphasize the need for consumers to respond to voluntary and mandatory drought curtailments. For example, if the normal percent adjustment is 80% and water agencies are requesting consumers to conserve 20%, a percent range adjust of 60 to 80% will be provided in the e-mails, along with information on how to use the range as a drought response measure. This will reinforce the need for consumers to respond to the drought and give them the choice on how they respond by reducing outdoor use, indoor use, or both. The other short-term activity is the development of an Irrigation Scheduling Calculator. This Graphical User Interface-Based calculator will be a picture-based tool to assist CSANS users to develop their base irrigation schedule, customized to the characteristics of their landscape, for use in CSANS. Funding for these short-term activities has already been secured through contributions from MWDOC, Bureau of Reclamation, CUWCC and DWR. Development of the Irrigation Scheduling Calculator is scheduled to begin in fall of 2014.

The smart phone application will provide access to the CSANS via smart phones. All of the same features of CSANS will be made available via the application without the use of e-mails. Consumers will be given the opportunity to choose between an e-mail or an application for access to CSANS information. The other long-term activity is

implementation of CSANS state-wide by DWR. The scopes of work have been established for the long-term additions, along with cost estimates. In light of the drought and a desire to greatly expand the use of the California Irrigation Management Information System, DWR is very interested in both activities. No funding has been secured at this time; however, DWR is looking for funding for implementation as soon as possible.

8. Feedback to Reclamation regarding the Field Services Program:

On behalf of the 32 retail water agencies in Orange County, the Municipal Water District of Orange County extends a very grateful "Thank You" to the Bureau of Reclamation for the many Field Services Program grant awards. We have benefited immensely from this program over the years. We are especially excited to have been given the opportunity to develop CSANS that is fast becoming a tool that can be used throughout the state.

Attachment A



Promoting Effective Irrigation

The *California Sprinkler Adjustment Notification System*, or CSANS, sends periodic sprinkler adjustment reminder emails with optimal percentages to homeowners and businesses that subscribe to this free public service. If you reside in California, own an irrigation controller that supports the "percent adjust" or similar feature, and wish to receive this free reminder please subscribe below.

1

Is this for me?

If you reside in California, have an irrigation controller (a.k.a. sprinkler timer or clock) that supports the "percent adjust", seasonal adjust, water budget, or similar feature* you can take advantage of this program. This may not be for you if you have a self adjusting weather based smart timer.

2

Subscribe

Fill in the form to the right to subscribe.

3

Adjust and Save

You can choose to receive weekly or monthly adjustment emails from this system. The first adjustment email will be sent immediately after you confirm your subscription. Adjust your controller using the recommended percentages and begin using water more efficiently and saving money.

* Consult your owner's manual or visit the manufacturer's website for further details.

SAVE MONEY

Get FREE **CSANS** sprinkler adjustment email reminders

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The Family of Orange
County Water Agencies

Attachment B

Joe Berg

From: sanswebmaster@gmail.com
Sent: Friday, August 15, 2014 4:02 AM
To: Joe Berg
Subject: CSANS Weekly Sprinkler Adjustment

**Santa Margarita
Water District**



Here's your Sprinkler Adjustment Percentage

Thank you for using water wisely

Santa Margarita Water District
26111 Antonio Parkway
Rancho Santa Margarita, CA 92688

Please adjust your controller to 100%

Effective for the week of 8/15/2014
for property located in Rancho Santa Margarita, CA 92688 (using historic average)



Be Smart About Irrigation

The Municipal Water District of Orange County, in collaboration with the Metropolitan Water District of Southern California and your retail water provider, offers rebates designed to help you reduce your water use, decrease irrigation runoff, and improve the efficiency of your irrigation system. [Read More](#)



New Outdoor Water Use Restrictions

Are you aware of that the State Water Resources Board has adopted NEW regulations? These include using an automatic shut off hose, not allowing excess runoff, and restrictions on fountains using potable water. [Read More](#)



Interested in Turf Removal?

You could qualify for a rebate if you want to remove your water-thirsty turfgrass and replace it with a more water-wise California-Friendly landscape [Read More](#)

Want less frequent adjustments? Switch to [monthly](#) delivery. You may also [unsubscribe](#) or [email](#) the CSANS Program Administrator.



Attachment C

IRRIGATION MAINTENANCE

1. Irrigation Fixes

Experts estimate that as much as half of the water we use outdoors is being wasted due to evaporation, wind, or runoff caused by inefficient irrigation methods and systems. [Click here](#) for some tips to improve the efficiency of your irrigation system.

<http://www.mwdoc.com/cms2/ckfinder/files/files/Sprinklers0312.pdf>

DIY- Distribution Uniformity

Uniformity of your irrigation system refers to how evenly water is applied. Here's a simple way to evaluate the uniformity of the irrigation distribution in your own yard. [Read More](#)

http://mwdoc.com/filesgallery/The_Science_of_Irrigation_part_2.pdf

IRRIGATION MANAGEMENT

2. How to set my Base Schedule?

3. Do I have watering days?

Due to current drought conditions, allocations may be coming, check with your local retail water agency to find out if there are watering restrictions in affect in your area.

(link of agencies)

4. Why does irrigation conservation matter?

Homes with automatically timed irrigation systems use about 50 percent more water outdoors than those without. Your system can waste even more if it's programmed incorrectly, a sprinkler head is pointed in the wrong direction, or you have a leak.

(infographic from EPA)

5. Don't let your system water unnecessarily.

Soil moisture sensors a great tool to bypass unneeded future irrigation events. They detect the soil moisture below ground which comes from either rainfall or previous irrigation events. (Reduce outdoor water usage by up to 70%) [Read More](#)

<http://www.mwdoc.com/services/rebates>

6. Why does my water use percent change each month?

Throughout the year, seasonal changes occur, such as wind, humidity, temperature, and solar radiation, which affect the amount of water that plants require.

7. What is your smart irrigation IQ?

The new generations of "smart" irrigation systems have the capability to monitor weather, soil moisture, evaporation, and plant water use. To test your smart irrigation IQ, [click here](#).

http://www.mwdoc.com/filesgallery/The_Science_of_Irrigation__part_3.pdf

8. What is Cycle and Soak?

Rather than watering hard, compacted soil all at once, set your sprinklers to water grass for short increments for a few times in the day. This reduces runoff by allowing the soil to be able to absorb more of the water, avoiding runoff.

LANDSCAPE GENERAL

9. Right place, right plant

By planting plants with similar needs in the same area, this will help the plants thrive and increase water efficiency. [Read More](#)

When landscaping, it is important to place plants in separate zones based on their needs. Select different plants that like to live together because they have the same requirements for sun or shade, water needs, root depth, soil type, and hardiness or temperature adaptation. In doing so, this will ensure that these plants will both thrive in your landscape and increase your water efficiency. Check www.Bewaterwise.com for information on California Friendly plants, design ideas, tips.

10. OC Garden Friendly

OC Garden Friendly has partnered with various garden supply and home improvement stores throughout Orange County to hold outdoor plant sales complete with local experts on water-efficient landscaping, vendor displays, and special discounts on plants that are ideal for Southern California. To find out when the next event will be held in your area, [click here](#).

<http://www.overwateringisout.org/oc-garden-friendly/>

11. Overwatering is Out!

To join the Overwatering Is Out campaign and get tips on how to be part of the solution, [click here](#).

<http://www.overwateringisout.org/>

12. Need some landscaping ideas?

Visit a demonstration garden for some ideas and resources on how you can design and maintain a California Friendly landscape.

http://www.mwdoc.com/pages.php?id_pge=97

Interested in taking a landscape training class?

The California Friendly Landscape Training Classes will teach you about: Evaluating Your Site, Managing Your Irrigation; Using Rainwater as a Resource; Building a Healthy Soil Sponge; (and more). To find out when the next class will be held in your area, [click here](http://www.mwdoc.com/pages.php?id_pge=95).
http://www.mwdoc.com/pages.php?id_pge=95

LANDSCAPE REBATES

13. What is drip irrigation?

Drip irrigation increases efficiency by delivering water to specific locations at or near plant root zones. [Read More](#)

<http://www.mwdoc.com/wue/drip>

14. Interested in Turf Removal?

You could qualify for a rebate if you want to remove your water-thirsty turfgrass and replace it with a more water-wise California-Friendly landscape, [click here](#).

<http://www.mwdoc.com/services/turf-removal>

15. Capture today, use tomorrow!

You can use a rain barrel to be able to capture rain water from your roof and store it to water your plants tomorrow.

<http://socalwatersmart.com/index.php/qualifyingproducts/rain-barrels>

16. Not all nozzles are the same!

As compared to conventional spray nozzles, high efficiency (commonly referred to as rotating nozzles) have reduced application rates, increased uniformity, and increased water droplet sizes. These differences can potentially result in benefits relating to runoff and overspray reduction.

OTHER REBATES

17. Home Certification Program

Did you know that you are eligible for a FREE home water survey to score your home's water use efficiency and identify improvements that can be made to help you reduce your water use. [READ MORE](#)

<http://www.mwdoc.com/services/watersmarthome>

18. Water Use Efficiency Rebates

Worried about the cost of upgrading your appliances? [Click here](#) to learn about the rebate programs that you may qualify for.

<http://www.mwdoc.com/services/rebates>

19. Time for an Upgrade

Upgrading to more efficient appliances will help conserve your water usage. [Read More](#)

<http://www.mwdoc.com/services/rebates>

DROUGHT

20. Drought Update

To learn more about what is being done in response to California's recent drought emergency, [click here](#).

(Drought infographic)

GENERAL

21. What does a 20% water decrease look like?

For some easy water saving tips so you can make a difference, [click here](#).

(20% infographic)

22. Keep it out of the gutters!

Avoid runoff and overspray by adjusting the direction of your sprinklers, replacing sprinkler nozzles. [Read More](#)

23. Looking for leaks?

Orange County Water Smart Home Program allows you to get your home surveyed in terms of water use efficiency and will check for leaks and other improvements that need to be made.

<http://mwdoc.com/services/watersmarthome>