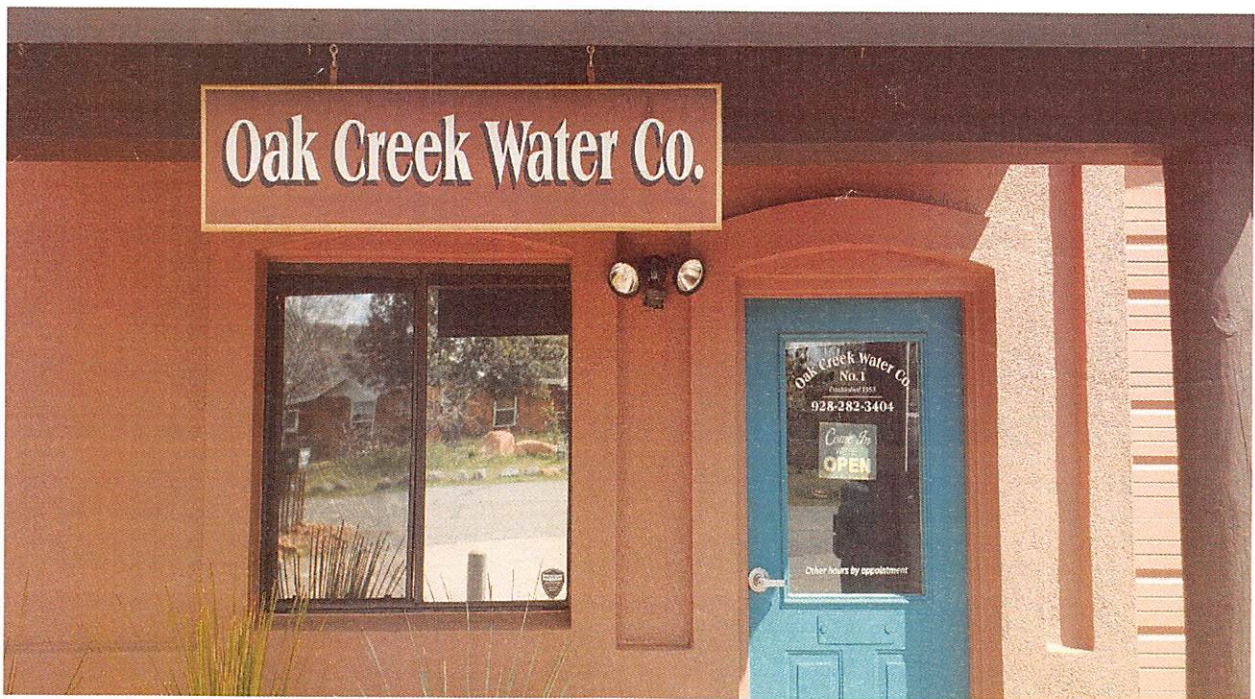


# WaterSMART Grants

## Final Performance Report

Meter Upgrade Replacement Program  
Oak Creek Water District, Sedona Arizona



Agreement/Grant number: R18AP00228  
Recipient name: Oak Creek Water District  
Date: October 19, 2023

<b>1. Recipient Information</b>	
Recipient (Name, contact person, address, phone number, and email address)	Oak Creek Water District 90 Oak Creek Blvd, Sedona Az 86336 Doug Bowen 928-282-3404 dbowen@oakcreekwater.com
Project name	Meter Upgrade Replacement Program
Agreement/Grant number	R18AP00228
Date of award (Month, Year)	8/7/2019
Estimated completion date (Month, Year)	1/1/21
Actual completion date (Month, Year)	5/2/23

<b>2. Final Funding Information</b>	<b>Funding Amount</b>
<b>Non-Federal Entities</b>	
1. Oak Creek Water	\$118,750.69
2.	
3.	
<i>Non-Federal Subtotal:</i>	
<b>Other Federal Entities</b>	
1. (USDA match refinanced \$74,500 over 40 yrs at 1.325%)	
2.	
3.	
<i>Other Federal Subtotal:</i>	
<i>Requested Reclamation Funding:</i>	\$ 74,500.00
<i>Total Project Funding:</i>	\$190,750.69

**3. One paragraph project summary**

Replace 540 inaccurate low flow analog meters with electronic smart e-meters. Most of these meters have passed their useful age life or have passed their gallon through put limit. The next step was to install the Badger/Beacon software system so that these meters could be read remotely once transmitters were installed on them.

**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.*

Oak Creek Water District had 423 meters that were over 16 years old and/or had water usage that exceeded 1.5 million gallons and also had exceeded their life expectancy. The District had an additional 179 meters that were between 10 and 15 years old and/or had usage exceeding 1.0 million gallons and were approaching their life expectancy

The program was to replace these meters with e-series smart meters to catch potential water loss caused by customers with low flow leaks and accounts with leaking irrigation systems. The smart meter program was also desired to eliminate time utilized by our operator, our only full-time employee.

The project was modified per our letter dated November 2, 2021. Our system is old and, in some areas, when replacing meters, we had to shut off up to 7 valves to stop enough water to switch meters. This resulted in 25% of our water system going without water during these times. Besides residents this included timeshares, local businesses and restaurants. Replacing these inoperable valves is part of a USDA grant/loan water replacement project. Due to inflation and shortage of materials the project will be starting in December of 2023 instead of the estimated March of 2023. The meters on these streets with this issue will be replaced in parallel to the USDA construction project.

**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.*

To date there have been 600 smart meters installed. Of those installed, 402 of them have transmitters installed making them capable of utilizing the Badger-Beacon remote reading software.

The delays mentioned in Section 4 shifted our priorities and instead of installing just the smart meters we installed transmitters on the meters we could install. This has enabled us to utilize the Badger Beacon software system soon then later. We went live with the system in March of 2023 with 68 meters read remotely. As of October 2023, we are up to 402 meters read remotely.

During the first six months of going live with Badger-Beacon remote readings we have discovered six leaks that were not detected by the user. In March there were 10% of meters read remotely and in September 45% of the meters read remotely. As more and more meters are added to the system, the number of detectable leaks should increase. This reduces the amount of water required to be produced, which in turn reduces electrical costs.

The new system has reduced the number of man hours our operator has to spend reading meters each month. Prior to March it took our operator 6 days to complete the monthly readings. This month it has only taken him 2 days to complete the monthly readings.

The new system is building customer relations. The customers that we contacted with early detection of a possible leak has saved them money. They don't have to wait until they receive an outrageous water bill before calling their landscaper. By the time this is accomplished, sometimes its two full months of extreme water bills. Once the system is fully on-line customers will be able to create their own software account and see how their water usage fluctuates in real time.

**6. Discussion of the benefits to the Recipient's water supply delivery system and the amount of water conserved, marketed, or better managed.** *In responding to the questions 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, similar improvement projects, or anecdotal evidence.*

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

The following data is taken from our May, 2003 reporting to Arizona Department of Water Resources for the 2022 Annual Reporting. Total Water withdrawn 252.6 acre-feet, water delivered to customers 280.9 acre-feet, storage amount 470,000,000 gallons and population served 1,500 people. New meters have been installed with the USDA grant/loan Arsenic Removal project. The accuracy of the above numbers will not be as accurate as future reporting.

**B. Amount of water conserved, marketed, or better managed as a result of the project (in acre-feet per year):** The system went live in March of 2023 with 68 of its 750 meters being read remotely. Since March, our Operator has been able to install about 50 additional meters each month, while continuing to read the remaining manually. As of October 2023, there are 402 meters being remotely read. The new system has identified six irrigation leaks since March, 2023 and customers have been called immediately. To measure or estimate that amount conserved would be an estimate with over 1000% deviation.

**C. Describe how the amounts stated in response to question 6B were calculated or estimated.** *In responding to this question, please address (1) to (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.**

We are a small department of one full-time operator and two part-time employees. To spend the time trying to figure out this amount would not be cost-effective for our users. This summer we completed the new Arsenic removal system at both of our well sites which included new meters. We will be able to better measure water produced compared to water billed. Unfortunately, previous years of comparing these numbers would not be accurate. If there are other means of making this determination that we are unaware of, we welcome the assistance.

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

**(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. N/A**

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

Water saved from detecting these leaks early means less water required to be pumped from our wells. It also results in a reduction in our electric bill and extends the life expectancy of our pumps and media utilized for our new arsenic removal system.

**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 question 6B, please state whether actual field measurements will become available in the future. If so, please state whether you are willing to provide such data to Reclamation on a voluntary basis once it is available.*

We are willing to share whatever data we have. Most likely it will be the number of accounts we assist with leaks we discover through our new system.

**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.*

There were no renewal energy components added for this project. As mentioned earlier, the early detection of leaks in the systems conserves energy by requiring less water to be produced from our wells.

**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. If the project complements or will complement work done in collaboration with the Natural Resources Conservation Service (NRCS), please describe.*

USDA Rural Development included our matching portion into their program. The \$72,500 match is now being absorbed into our 40 year loan at an interest rate of 1.375%.

**9. Describe any pertinent issues regarding the project, not already described above.**

N/A

**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);
- 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.

**METER UPGRADE REPLACEMENT PROGRAM**

<b>Vendor</b>	<b>Items</b>		<b>Total Invoice</b>	<b>Grant Draws</b>	<b>Reclamation Grant Portion</b>	<b>Oak Creek Water Portion</b>
National Meter	1 meter	1 1/2"	\$ 555.04		\$ -	\$ 555.04
National Meter	1 meter	1"	\$ 251.24		\$ -	\$ 251.24
National Meter	12 meters	3/4"	\$ 2,355.16		\$ -	\$ 2,355.16
National Meter	12 meters	3/4"	\$ 2,070.80		\$ -	\$ 2,070.80
National Meter	12 meters	3/4"	\$ 2,070.80		\$ -	\$ 2,070.80
National Meter	6 meters	1"	\$ 1,297.58		\$ -	\$ 1,297.58
National Meter	12 meters	3/4"	\$ 2,070.80		\$ -	\$ 2,070.80
National Meter	6 meters	1"	\$ 1,316.55		\$ -	\$ 1,316.55
National Meter	1 meter	2"	\$ 879.44		\$ -	\$ 879.44
National Meter	100 meters	3/4"	\$ 17,189.71	1	\$ 8,594.85	\$ 8,594.86
National Meters	16 connectors	3/4"	\$ 2,736.41		\$ -	\$ 2,736.41
Badger Meter	12 connectors	3/4"	\$ 2,078.59		\$ -	\$ 2,078.59
Badger Meter	60 meters	3/4"	\$ 10,342.65	2	\$ 5,171.32	\$ 5,171.33
Badger Meter	100 meters	3/4"	\$ 16,640.64	3	\$ 8,320.32	\$ 8,320.32
Badger Meter	100 meters	3/4"	\$ 16,640.64	4	\$ 8,320.32	\$ 8,320.32
Badger Meter	6 meters	1"	\$ 1,281.05	4	\$ 640.53	\$ 640.52
Badger Meter	100 meters	3/4"	\$ 16,708.41	5	\$ 8,354.21	\$ 8,354.20
Badger Meter	4 meters	1"	\$ 871.35	6	\$ 435.68	\$ 435.67
Badger Meter	60 meters	3/4"	\$ 10,050.53	7	\$ 5,025.27	\$ 5,025.26
Badger Meter	20 meters	1"	\$ 4,254.00	8	\$ 2,127.00	\$ 2,127.00
Badger Meter	software		\$ 4,785.75	8	\$ 2,392.50	\$ 2,393.25
Caselle	software setup		\$ 1,050.00		\$ -	\$ 1,050.00
Knowlt	software setup		\$ 712.76		\$ -	\$ 712.76
SPMR	software setup		\$ 2,498.00		\$ -	\$ 2,498.00
Badger Meter	billing integrate		\$ 3,350.03		\$ -	\$ 3,350.03
Badger Meter	200 endpoints		\$ 24,194.63	9	\$ 12,096.31	\$ 12,098.32
Badger Meter	250 endpoints		\$ 29,910.94	10	\$ 10,521.69	\$ 19,389.25
Badger Meter	50 install kits		\$ 302.36		\$ -	\$ 302.36
Core & Main	128 poly boxes		\$ 8,923.77		\$ -	\$ 8,923.77
Ferguson Waterwork	60 splice kits		\$ 308.79		\$ -	\$ 308.79
Ferguson Waterwork	25 jump harness		\$ 386.86		\$ -	\$ 386.86
Ferguson Waterwork	25 jump harness		\$ 329.01		\$ -	\$ 329.01
SPMR	annual support		\$ 2,336.40		\$ -	\$ 2,336.40
			\$ -		\$ -	\$ -
			\$ -		\$ -	\$ -
			\$ 190,750.69		\$ 72,000.00	\$ 118,750.69



**Oak Creek Domestic Water Improvement District  
Custom Transaction Detail Report**

January 1, 2018 through October 19, 2023

Type	Date	Num	Name	Memo	Account	Debit
<b>Badger Meter Inc</b>						
Check	04/12/2018	70064	Badger Meter Inc	1" E Meter	334 · Meters & Meter In...	231.52
Check	04/19/2018	70074	Badger Meter Inc	12 - 3/4" e-meters	334 · Meters & Meter In...	2,222.10
Check	06/12/2018	70130	Badger Meter Inc	QTY 6 - 3/4 e-meters	334 · Meters & Meter In...	1,149.25
Check	06/29/2018	70150	Badger Meter Inc	QTY 12 - 3/4 Badger e-meters	334 · Meters & Meter In...	2,264.30
Check	10/10/2018	70216	Badger Meter Inc	QTY 12 - 3/4 Badger e-meters	334 · Meters & Meter In...	2,194.55
Check	02/27/2019	70351	Badger Meter Inc	E112 SS 11/2", HR-E LCD ENCODER, ...	334 · Meters & Meter In...	555.04
Check	04/03/2019	70385	Badger Meter Inc	Invoice S1112063.001	334 · Meters & Meter In...	251.24
Check	04/15/2019	70402	Badger Meter Inc	Invoice S1112691.001	334 · Meters & Meter In...	2,355.16
Check	04/29/2019	70419	Badger Meter Inc	Invoice S1112564.001	334 · Meters & Meter In...	3,365.78
Check	06/10/2019	70449	Badger Meter Inc	Invoice S1112564.001	334 · Meters & Meter In...	2,070.80
Check	06/24/2019	70463	Badger Meter Inc	Invoice S1115775.001	334 · Meters & Meter In...	3,368.38
Check	08/12/2019	70522	Badger Meter Inc	Invoice S1117354.001	334 · Meters & Meter In...	3,387.35
Check	10/02/2019	70566	Badger Meter Inc	Invoice S1119487.001 100 SMART	334 · Meters & Meter In...	17,189.71
Check	10/02/2019	70567	Badger Meter Inc	Invoice: S1119437.001	334 · Meters & Meter In...	879.44
Check	11/18/2019	70614	Badger Meter Inc	Invoice S1121451.001	334 · Meters & Meter In...	2,736.41
Check	12/30/2019	70655	Badger Meter Inc	Invoice S1122794.001	334 · Meters & Meter In...	2,078.59
Check	02/18/2020	70710	Badger Meter Inc	Invoice S1123944.001	334 · Meters & Meter In...	1,582.37
Check	03/02/2020	70722	Badger Meter Inc	Invoice S1124232.001 100 SMART Meters	334 · Meters & Meter In...	10,342.65
Check	08/10/2020	70847	Badger Meter Inc	.100 Smart meters OK	105 927 · SMART Mete...	16,640.64
Check	10/19/2020	70916	Badger Meter Inc	Inv #1391525 Meters	334 · Meters & Meter In...	228.51
Check	10/19/2020	70917	Badger Meter Inc	Inv #1393435 Meters 100 + 6	334 · Meters & Meter In...	17,921.69
Check	02/24/2021	71027	Badger Meter Inc	Meters 100	334 · Meters & Meter In...	16,708.41
Check	05/03/2021	71066	Badger Meter Inc	4 X 1" Meters	334 · Meters & Meter In...	871.35
Check	07/26/2021	71112	Badger Meter Inc	60 - 3/4" Meters	334 · Meters & Meter In...	10,050.53
Bill	02/10/2022	1486972	Badger Meter Inc	20 - 1" meters item #100-1670	334 · Meters & Meter In...	4,254.00
Bill	09/26/2022	1530140	Badger Meter Inc	200 Rem #103-6671 radio transmitters	334 · Meters & Meter In...	24,194.63
Bill	09/28/2022	1530890	Badger Meter Inc	50 Install kits item #64394-030	334 · Meters & Meter In...	302.36
Bill	11/21/2022	1541725	Badger Meter Inc	250 Radio transmitters, item #100-2810	334 · Meters & Meter In...	29,910.94
Bill	01/30/2023	80117...	Badger Meter Inc	Orion Cellular Serv Unit 64	334 · Meters & Meter In...	61.26
<b>Total Badger Meter Inc</b>						<b>179,368.96</b>
<b>Core &amp; Main LP</b>						
Check	10/19/2020	70912	Core & Main LP	Inv# N130097	334 · Meters & Meter In...	420.94
Bill	04/17/2023	211396	Core & Main LP	128 poly meter boxes	339 · Other Plant & Mis...	8,923.77
<b>Total Core &amp; Main LP</b>						<b>9,344.71</b>
<b>Ferguson Waterworks #3083</b>						
Bill	03/24/2023	493838	Ferguson Waterworks...	25, #68825-001 Jumper harness	334 · Meters & Meter In...	386.86
Bill	03/24/2023	493838	Ferguson Waterworks...	25, #69527-001 Jumper harness	334 · Meters & Meter In...	329.01
Bill	08/22/2023	0510693	Ferguson Waterworks...	60 Splice kits	334 · Meters & Meter In...	308.79
<b>Total Ferguson Waterworks #3083</b>						<b>1,024.66</b>
<b>TOTAL</b>						<b>189,738.33</b>

- TRAN CONNCTIONS

2023

89.00  
1,000  
700  
3350  
1050  
2300

**Oak Creek Domestic Water Improvement District**  
**Account QuickReport**  
As of October 23, 2023

Type	Date	Num	Name	Memo	Amount	Balance
<b>340.1 - Computer and Software</b>						81,255.50
Bill	01/01/2022	68116	Wired Up Systems L...	IQ Panel upgrade	599.00	81,854.50
Bill	02/04/2022	1486130	Badger Meter Inc	Beacon-Engagement int...	4,785.75	86,640.25
Bill	03/21/2022	1446	Know IT Consulting ...	Caselle upgrade	1,780.41	88,420.66
Credit Card Charge	05/12/2022	051222	Intuit	QB Enterprise 2022	1,911.39	90,332.05
Bill	11/02/2022	3583	SPMR, LLC	SPMR setup fees one-ti...	2,498.00	92,830.05
Bill	01/13/2023	1603	Know IT Consulting ...	Poly CCX 400, APC 100...	712.76	93,542.81
Bill	01/31/2023	1556038	Badger Meter Inc	Billing integration	3,350.03	96,892.84
Credit Card Charge	05/12/2023	051223	Intuit	QB Enterprise 2023	2,010.26	98,903.10
Bill	05/24/2023	124911	Caselle, Inc.	Beacon Badger Intergrati...	1,050.00	99,953.10
General Journal	06/30/2023	UC19		To exp and prepay the Q...	(2,010.26)	97,942.84
Bill	10/02/2023	3813	SPMR, LLC	SPMR annual support	2,336.40	100,279.24
Total 340.1 - Computer and Software					19,023.74	100,279.24
<b>TOTAL</b>					<b>19,023.74</b>	<b>100,279.24</b>