

**U.S Department of the Interior  
Bureau of Reclamation**

**WaterSMART: Small-Scale Water Efficiency  
Projects  
Grants for FY 2021**

Funding Opportunity Announcement No. R21AS00300



**INVERNESS**

**INVERNESS WATER AND SANITATION DISTRICT'S  
AUTOMATED WATER METERING SYSTEM UPGRADES**

March 18, 2021

Applicant: Inverness Water and Sanitation District  
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## Section 1.0: Technical Proposal and Evaluation Criteria

### Section 1.1 Executive Summary

**Date:** March 18, 2021

**Applicant:** Inverness Water and Sanitation District,  
Douglas and Arapahoe Counties, Colorado

**Project Manager:** Luis Tovar  
District Manager  
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**Applicant Category:** Category A  
Grant Funding Request: \$75,000  
Non-Federal Matching Funds: \$ 111,799  
Total Project Cost: \$186,799  
Project Duration: 1 year  
Estimated Project Start Date: 02/2022  
Estimated Project Completion Date: 04/2022  
Located on Federal Facility: No  
Unique Entity Identified: 130859499

#### **Project Summary:**

The Inverness Water and Sanitation District (“Inverness” or “The District”), located in the Northeast corner of Douglas County, Colorado, is seeking a WaterSMART: Small-Scale Water Efficiency Grant for 2021 for \$75,000 to implement the District’s Automated Water Metering System Upgrades Project. The District will upgrade its multi-family, commercial and irrigation customers’ metering system to an Advanced Metering Infrastructure (AMI) system. The District intends to convert and/or replace customer meters throughout the District to establish a centralized meter reporting system. This system will provide real-time water use statistics for billing and system monitoring purposes as well as eliminate the requirement for field meter reading services. The District expects to improve water usage visibility for its customers and the District staff with the goal of further encouraging water conservation and informing water supply management decision making.

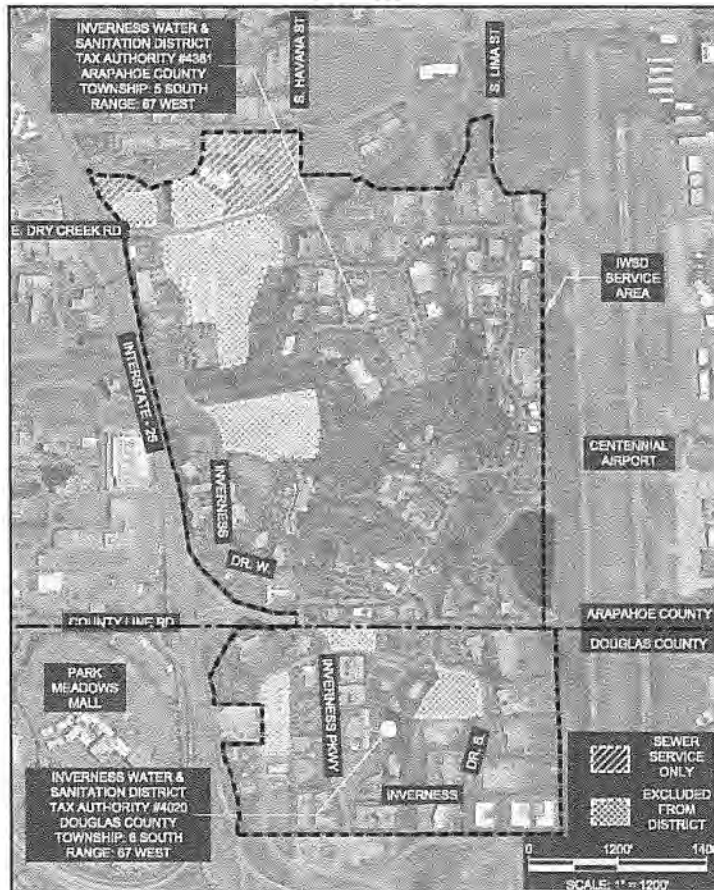
### Section 1.2 Project Location

The District was established in 1973 under Title 32 of the Colorado State Statutes as a quasi-municipal corporation and political subdivision of the State of Colorado. The purpose of the District is to provide water and sanitary sewer services to the businesses and residences in Inverness. Water services include potable domestic and irrigation as well as non-potable irrigation

water. Inverness is a business park built around a golf course. It consists primarily of commercial customers and a growing residential population. Residential development began in Inverness in 2004. There are 2,334 residential units, comprised of multi-family apartment buildings, condominiums, townhomes, row homes, duplexes and triplexes. The District serves over 140 commercial buildings and 13 irrigation services. There are multi-tenant and single tenant office buildings, office warehouses, office manufacturing and training facilities, data centers, call centers and a mixed-use building with residential condominiums above retail shops.

The District is located on the east side of the I-25 corridor. Approximately 2/3 of the District is located in the City of Centennial in Arapahoe County (north of County Line Road), and 1/3 in unincorporated north central Douglas County. The District is approximately 30 minutes southeast of Denver, CO. The District encompasses approximately 900 acres and is comprised of mixed-use residential, commercial, and open space. **Figure 1** below shows the District boundaries.

**FIGURE 1**



\*Excluded parcels from the District are serviced for water and wastewater by agreement.

### Section 1.3 Project Description

The Inverness Water and Sanitation District operations staff currently hand read all meters in the District. The District collects manual meter readings, once a month, from about 393 potable and non-potable meters throughout the park for commercial, irrigation and multifamily accounts

ranging in size from ¾” up to 6” diameters. Due to the number of meters, collecting monthly reads is typically performed by three operators within a one day period. Errors or misreads frequently require a single operator to re-read a handful of meters on a subsequent workday.

With this project, the District is seeking funding assistance to retrofit its existing smart meters with AMI communications endpoints and to replace or upgrade 100% of its commercial, irrigation and multifamily customer’s meters to a “smart meter” system. Currently in Inverness, there are about 255 meters that have the “smart” component built-in. The District proposes to replace the remaining 140 meters with smart meters and to upgrade all 393 meters to the AMI system with an estimated project costs of \$186,799.

The AMI system upgrade allows each meter to send automated reads to the customers and the District via cellular network several times each day, providing real-time water use statistics for billing and system monitoring purposes and eliminating the requirement for field meter reading services. This system would improve metering accuracy and provide customers with tailored information regarding individual water use, including leak detection notification. By providing customers with frequent usage data via a web-based customer portal and smartphone application, the goal is to encourage water conservation by improving visibility. For example, customers will be able to view their overnight irrigation usage and may take steps to mitigate overwatering.

## **Section 1.4 Evaluation Criteria**

### **Evaluation Criterion A: Project Benefits (35 points)**

*Describe the expected benefits and outcomes of implementing the proposed project.*

#### **Water Savings**

The proposed project will result in increased water use efficiency and improved water supply reliability within the District. Water savings will result by: (a) improving accuracy of water metering, and (b) facilitating leak detection and making water meter data more transparent and easier to access for customers and District staff.

This project will provide a water resource management tool to the District and its customers. With the help of this project, the District will be able to provide customers and management staff the tools to achieve a reduction in outdoor watering by an estimated 10 – 12 % and we believe that meaningful results could be expected within the first 3 years from implementation of this project.

A 10 – 12 % reduction of summer demands in the District would translate to about 42 - 50 acre-feet of water conserved on a yearly basis. This volume is slightly higher than the monthly volume of potable water required to meet indoor demands during the winter months. With the automated metering system the District will be able to:

- Provide the ability to research the District’s outdoor usage patterns and monitor irrigation conservation restrictions.
- Provide a water management tool for planning purposes not only for the District but also for the District’s customers.
- Provide active volume monitoring for both the District and its customers that can detect leaks.

- Increase efficiency of meter reading – Automated reads are uploaded to the customer and District portals several times per day.

### **Water Supply Reliability**

Inverness is located in the upper reaches of Cottonwood Creek, a tributary of Cherry Creek. Cottonwood Creek alluvium does not provide for a reliably tributary aquifer, hence the ability of the District to use its water rights in Cottonwood Creek is very limited. As a result, as the District began its development in the early 1970's and up until the late 1990's, it relied on its non-tributary groundwater ("NTGW") from the Denver Basin aquifers for 100% of its supply. Beginning in the late 1980's Inverness embarked on their search for renewable supplies to offset its use of its NTGW supplies. By the end of the 1990's Inverness had been able to secure approximately 45% of its built-out water supplies from renewable supplies that are delivered today to Inverness through a partnership with Denver Water. In 2014, The District was able to secure an additional source of renewable supply through the Water, Infrastructure and Supply Efficiency ("WISE") partnership, bringing its conjunctive use of renewable and NTGW to approximately 85% and 15%, respectively.

The water conserved through avoided losses would decrease the amount of water required for pumping from the NTGW sources to meet the District demands, hence helping Inverness reduce its reliance on its non-renewable supplies.

### **Geographic Scope**

The South Metro area water providers have historically been heavily reliant on NTGW to meet demands. In 2004, the group came together in a joint effort to support and fund the South Metro Water Supply Study. This study evaluated the ability of the Denver Basin aquifers to meet the long-term demands of current and future South Metro area water users. The study found that the NTGW sources were being drawn down over time and were not an economically viable or sustainable long-term source of supply. Study authors recommended that reliance on NTGW be reduced and replaced through a series of measures. These included 1) demand reduction or water conservation, 2) full reuse of both NTGW and renewable water sources, 3) full development of local renewable water sources, and 4) import of additional renewable water supply. Water savings from implementing this project would decrease the demand on limited aquifer supply. Data collected from an AMI system would help the District with the management of its supplies, both in the short and long-term. Importantly, a reliable water supply is key to economic growth.

Through the District's initiatives to invest in renewable sources of supply, the reliance on NTGW has decreased significantly over the last decade. Currently, about 26% of the District's supply is from NTGW wells.

### **Increased Collaboration & Information Sharing**

Over the past 25 years, the District has worked diligently to create and strengthen relationships with other area providers. Inverness has a great working relationship with Denver Water and the Arapahoe County Water and Wastewater Authority. As a member of the South Metro Water Supply Authority, a partnership of 13 metro area water providers, Inverness is able to collaborate, compare and share data for the benefit of other providers.

### **Positive Impacts to Local Sectors & Economies**

The District has been working with commercial property owners over the past several years to help optimize outdoor water usage in order to a) stay within their allocation and reduce monthly billings and b) improve water conservation. Two years ago the District successfully completed a meter installation project to install sub-meters for commercial and multi-family customers in order to separately monitor both indoor and outdoor water use on a monthly basis. Through the proposed project to upgrade and replace meters, the District will be capable of objectively monitoring water conservation compliance, identify leaks or unusual service demands more quickly, and provide improved assistance to customers wanting to evaluate their outdoor water use.

### **Customer Service Improvement**

We want to improve the level of service provided today and help our customers understand and take any additional steps necessary to reinforce their efforts towards water conservation. Implementing this new automated system with the available software would engage the customer in the conservation process. The ability to monitor their individual water use on a daily basis will encourage conservation and reduce our customer's water costs.

The District would also have the ability to use the data collected to work together with its customers whenever there are challenges with their indoor and/or outdoor water usage staying at or below their monthly allocation. We want to improve the response time for customers who are unknowingly experiencing water losses in their system well before the next water meter/billing cycle occurs.

### **Efficiency of Operations**

District operators currently walk the District to obtain meter readings. Each month a handful of meter reading errors occur and the operators need to re-read those accounts. The typical reading process requires two or three operators to set aside a significant portion of a day each month. In an effort to complete other daily tasks the reading process is often split over two days. The AMI system upgrade would free up valuable operator time for other essential duties.

### **Evaluation Criterion B: Planning Efforts Supporting the Project (35 points)**

*Describe how your project is supported by an existing planning effort.*

The District strongly believes in proactive water conservation and has been practicing reuse for more than thirty years. Non-potable water is used for all outdoor irrigation in Inverness. In fact, the District functions as a "closed system" with no wastewater discharge. All of IWSD's wastewater flows to the Lone Tree Creek Reuse Facility operated by neighboring Arapahoe County Water and Wastewater Authority (ACWWA). Following treatment, reuse water is returned to the District and stored in a central storage reservoir with a capacity of 440 AF. The water is then lightly chlorinated and distributed throughout the District via a dedicated system for irrigation use.

Inverness continually seeks ways to work towards the measures outlined in the South Metro regional study. Even prior to the completion of the study, Inverness worked to reduce reliance on NTGW by initiating a water conservation program in 2003. The primary factor in this program was and continues to be using tiered water rates that greatly penalize those who exceed a base need

for water supply. Use of low flow water fixtures and efficient irrigation systems are encouraged through an extensive rebate program.

Prior to the 2003 conservation program, District demands were expected to climb proportionally with development. At the time, Inverness was approximately 60% developed. However, with the implementation of conservation efforts, the Inverness demand curve did not follow the sharp incline predicted in 2003. In 2020, the District was approximately 97% developed; however, maximum potable system demands for that year were only 16.5% higher than 2002 demands.

In 2011, in partnership with Douglas County, Inverness completed a Water Conservation Plan as part of the Regional Water Conservation Plan submitted to the Colorado Water Conservation Board. The proposed project, Automated Water Metering System Upgrades, is consistent with the Plan, which identifies conservation methods to encourage and support efficient water use by its customers. Specifically, the Plan identifies the need to reduce system water losses that result from customer metering inaccuracies, data errors, and leakage on mains and service lines. We anticipate that all of these challenges will be addressed through the proposed project.

**Evaluation Criterion C: Project Implementation (10 points)**

*Implementation Plan*

Inverness will publicize a formal Request for Proposal requesting sealed proposals from qualified companies and follow protocol according to Title 2 of the Code of Federal Regulations §200.320 – Methods of procurement to be followed. Due to the varying nature of the meter settings, locations, sizes and customer availability the District will structure the Request for Proposal to solicit service fees for installation on a unit cost basis rather than an hourly basis to effectively review and compare competing proposals.

Upon completion of the financial assistance agreement with the Bureau, the District will provide a Notice to Proceed to the contractors selected for the project. The District plan for implementation is detailed in **Table 1** on the following page.



**TABLE 1**  
Estimated Project Schedule

<b>Project Stage</b>	<b>Duration</b>	<b>Milestones</b>	<b>Start Date</b>	<b>Completion Date</b>
<b>Project Bid &amp; Contractor Selection</b>	Six to eight weeks	Publicize Invitation to Bid; Review and due diligence of contractor qualifications	November 29, 2021	January 24, 2022
<b>Procure Materials &amp; Equipment</b>	Two months	Order and stock meters and endpoints for installation	January 31, 2022	March 31, 2022
<b>Customer Outreach</b>	Two months	Notify customers of upcoming meter replacements; Schedule installations and water outages	January 31, 2022	March 31, 2022
<b>Meter Replacement &amp; Endpoint Installation</b>	Four weeks	Remove/replace existing meters; install endpoints and connect new meters; achieve commercial AMI system milestone	April 1, 2022	April 29, 2022
<b>Quality Control</b>	Two months	Verify meter communication and troubleshoot errors; integrate billing software; verify customer portal and app functionality	April 1, 2022	May 31, 2022
<b>Final Performance Report</b>	Seven months	Daily project management; review pay applications; prepare reports to be used for management staff to complete the requirements of USBR Grant Reporting	November 29, 2021	June 30, 2022

**Required Permits:**

There are no permits or approvals required for this work.

**Project Engineering & Design Work:**

No engineering or design work is necessary for project completion. Work for this project entails purchasing equipment, scheduling and completing installations with District customers.

**Policies & Administrative Actions:**

There are no new policies or administrative actions needed to implement the project.

**Environmental & Cultural Resource Compliance:**

The proposed project is expected to fall within a Categorical Exclusion to NEPA pursuant to the Categorical Exclusion Checklist published by the Council for Environmental Quality in June of 2020. The project will not impact the surrounding environment. The work will be completed within the District service area.

**Evaluation Criterion D: Nexus to Reclamation (10 points)**

*Is the proposed project connected to a Reclamation project or activity?*

This project is not connected to a Reclamation project or activity.

*Does the applicant receive Reclamation project water?*

Inverness Water and Sanitation does not receive any Reclamation project water.

*Is the project on Reclamation project lands or involving Reclamation facilities?*

This project will be completed within the District service area and not on Reclamation project lands or facilities.

*Is the project in the same basin as a Reclamation project or activity?*

Yes. A portion of the Colorado Big Thompson Project is located in the South Platte Basin. While Inverness is located in the South Platte basin, Inverness is not located within the service area of the Big Thompson Project and does not receive project water.

*Will the proposed work contribute water to a basin where a Reclamation project is located?*

This project will not contribute water to a basin where a Reclamation project is located.

*Will the project benefit any tribe?*

This project will not provide benefit to any tribe.

## Section 2.0 Project Budget

### 2.1 Funding Plan and Letters of Commitment

#### *How Non-Federal Funds Will Be Obtained*

The Inverness Water and Sanitation District will fund costs not supported by Federal funds through collection of customer service fees. No third-party funding has been requested from any funding partners, Federal or private, hence no letters of commitment are provided.

#### *Project Costs Incurred Before the Project Start Date*

Prior to the project start date of February 2022, the District staff will complete its due diligence in gathering information, developing a Request for Proposal and researching the options available for service. These services will not be funded through this request.

### 2.2 Budget Proposal

**Table 1** below details the funding sources for the proposed project. The total budget for the proposed project is \$186,799. The District is requesting the maximum amount of funding from Reclamation, \$75,000, about 40% of the overall budget. No other federal funding has been requested.

**TABLE 2 – Total Project Cost Table**

<b>Funding Sources</b>	<b>Funding Amount</b>
Federal Funding	\$75,000
Applicant Funding	\$102,894
Third-party Funding	\$0
<b>Total Project Costs</b>	<b>\$177,894</b>

The budget proposal is detailed in **Table 3** on the following page.

**TABLE 3 – Budget Proposal for  
Inverness Water & Sanitation District – Automated Water Metering System Upgrades Project**

BUDGET ITEM DESCRIPTION	COMPUTATION		Quantity Type	TOTAL COST
	\$/Unit	Quantity		
<b>Salaries and Wages</b>				
Not applicable				\$ -
<b>Fringe Benefits</b>				
Not applicable				\$ -
<b>Travel</b>				
Not applicable				\$ -
<b>Equipment</b>				
¾" Meter	\$ 156	9	each	\$ 1,404
1" Meter	\$ 175	9	each	\$ 1,575
1.5" Meter	\$ 558	41	each	\$ 22,878
2" Meter	\$ 750	70	each	\$ 52,500
3" Meter	\$ 1,975	7	each	\$ 13,825
4" Meter	\$ 2,400	2	each	\$ 4,800
Endpoints	\$ 119	393	each	\$ 46,767
<i>Subtotal Equipment</i>				\$ 143,749
<b>Supplies and Materials</b>				
Not applicable				\$ -
<b>Contractual/Construction</b>				
Contractor (TBD through public bid process)				
¾" Meter Installation	\$ 110	9	each	\$ 990
1" Meter Installation	\$ 159	9	each	\$ 1,431
1.5" & 2" Meter Installation	\$ 229	111	each	\$ 25,419
3" & 4" Meter Installation	\$ 1,690	9	each	\$ 15,210
<i>Subtotal Contractual</i>				\$ 43,050
<b>Other/Environmental or Regulatory Costs</b>				
Not applicable				\$ -
<b>TOTAL DIRECT COSTS</b>				<b>\$ 186,799</b>
<b>Indirect Costs</b>				
Not applicable				\$ -
<b>TOTAL ESTIMATED PROJECT COSTS</b>				<b>\$ 186,799</b>

## **2.3 Budget Narrative**

### **Salaries, Wages, Fringe Benefits and Travel**

The District Operations Department will complete retrofit endpoint installations for 255 existing smart meters. These costs and quantities are not included in this project. Inverness will not be seeking reimbursement for staff salaries, wages, fringe benefits or travel related to project management, including compliance with reporting requirements and performance reporting, customer service, and operations assistance. The District, through a third-party contract will engage a contractor to complete the meter replacement and endpoint installation noted on Table 2.

### **Equipment**

The District will purchase 138 meters and 393 endpoints from the selected contractor. 255 out of the 393 endpoints are intended for retrofit to existing meters in Inverness that have the smart-ready capability. The total estimated equipment cost is \$143,749.

### **Materials and Supplies**

Each meter purchase, as detailed above, will include the necessary components for installation, including the endpoints and wiring to connect the smart meters to the cellular network. There will be no additional materials or supplies needed.

### **Contractual**

Inverness will publicize the Request for Proposal to request sealed proposals from qualified companies and follow protocol according to Title 2 of the Code of Federal Regulations §200.320 – Methods of Procurement to be Followed. In order for the District to effectively review and compare competing proposals, the District will structure the Request for Proposal so that any service fees for installation are provided on a unit cost basis rather than employee hourly basis. The project will be broken down into two proposals, one for equipment and one for installation services. Following a due diligence period to review contractor qualifications and pricing, the District will negotiate a contract for services.

### **Third-party In-Kind Contributions**

There are no third-party in-kind contributions for the proposed project.

### **Environmental and Regulatory Compliance Costs**

No budget is included for this category. This project is anticipated to fall within a Categorical Exclusion to NEPA. Costs associated with filing associated documentation are expected to be minimal and the District will not seek funding related to those efforts.

### **Other Expenses**

Not applicable. The District will complete associated documentation and required reporting related to this project. These costs will be covered by the District and not a part of this funding request.

### **Indirect Costs**

Not applicable. There are no indirect costs listed with this budget proposal.

### **Section 3.0 Environmental and Cultural Resources Compliance**

- *Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)?*

No. The proposed project involves upgrading, replacing and installing new meter components for a new automated meter reading system. There will be no ground disturbances impacting the surrounding environment.

- *Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?*

No. There is no ground disturbance involved with this project and the project therefore poses no threat to endangered species or critical habitat area. This project will be completed within the District's developed service area. The meters to be upgraded are located either inside of building's mechanical rooms or an outdoor meter pit. As far as the new endpoints upgrade to the existing 377 – 3/4" residential meters, the upgrade will take place within the homes' basements and/or crawl spaces.

- *Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States?" If so, please describe and estimate any impacts the proposed project may have.*

No. The project will not impact any wetlands or surface waters that fall under CWA jurisdiction.

- *When was the water delivery system constructed?*

The Inverness Water and Sanitation District was established in 1980. The initial distribution system was constructed in 1981 and subsequently expanded over the years as new filings were added to the Inverness subdivision.

- *Will the proposed project result in any modification of or effects to, individual features of an irrigation system (e.g., head gates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.*

No. This project will not result in any modifications of or effects to an irrigation system.

- *Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local Reclamation office or the State Historic Preservation Office can assist in answering this question.*

No. There are no buildings, structures or features within the scope of the proposed project listed or eligible for listing on the National Register of Historic Places.

*•Are there any known archeological sites in the proposed project area?*

No. There are no known archeological sites in the proposed project area.

*•Will the proposed project have a disproportionately high and adverse effect on low income or minority populations?*

No. The proposed project will not have a disproportionately high and adverse effect on low income or minority populations. In fact, this project could provide some financial benefits to customers through a reduction of water usage fees with the leak detection feature offered to customers.

*•Will the proposed project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?*

No. This project does not limit access to and ceremonial use of Indian sacred sites or result in other impacts to tribal lands.

*•Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?*

No. The proposed project does not involve any ground disturbances that could potentially contribute to noxious weeds or non-native invasive species introduction or growth.

#### **Section 4.0 Required Permits or Approvals**

The proposed project does not require any permits or approvals for completion. The District contractor will work with customers to schedule access to the meter location to perform the necessary upgrade or replacement.

#### **Section 5.0 Official Resolution**

The Inverness Water and Sanitation District Board of Directors approved the enclosed Resolution on February 24, 2021, attached as **Appendix A**. This Resolution authorizes the General Manager of the District to complete the WaterSMART Grant application and all necessary documents required to complete the process and enter into a funding agreement with Reclamation. The District has the ability to fund its portion of project costs through the collection of service fees.

#### **Section 6.0 Unique Entity Identifier and System for Award Management**

The District's unique entity identifier is: 130859499. The District has initiated registration on March 3, 2021 with the System for Award Management and is awaiting their approval. Once approved, the District will maintain its registration during the period of federal assistance.