ADVANCED METER INFRASTRUCTURE IMPLEMENTATION PROGRAM PHASE III

WaterSMART: Water and Energy Efficiency Grants for FY 2019

FOA: BOR-DO-19-F004

March 19, 2019

Proposal Submitted to: Bureau of Reclamation
Financial Assistance Management Branch
Attn: Mr. Darren Olson
Mail Code: 84-27814
P.O. Box 25007
Denver, CO 80225

Applicant Information: Moulton Niguel Water District
Attn: Joone Lopez, General Manager
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1 SF-424 APPLICATION COVER PAGE

The SF-424 Application cover page submitted via Grants.gov.

2 SF-424B ASSURANCES

The SF-424B Assurances form submitted via Grants.gov.

3 TITLE PAGE

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5 EXECUTIVE SUMMARY

Submittal Date: March 19, 2019

Applicant: Moulton Niguel Water District
Drew Atwater, Director of Finance & Water Resources
27500 La Paz Road
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Funding Group: II

Grant Funding Requested: $1,500,000

Local Matching Funds: $6,701,777

Project Duration: 34 months

Estimated Project Completion Date: June 30, 2022

Project Location: The project is located at various locations through the District's service area, within the cities of Aliso Viejo, Laguna Niguel, Laguna Hills, Mission Viejo, San Juan Capistrano and Dana Point, none of which are located on a Federal facility.

5.1 PROJECT SUMMARY

Moulton Niguel Water District ("District" or MNWD) strives to promote water sustainability by increasing water use efficiency and conservation efforts. The purpose of this project is to implement Phase III of the District's AMI program. The District, with assistance of a 2015 WaterSMART grant award, completed Phase I which included the installation of the communications network, a customer portal, and 1,368 potable irrigation connections, 1,800 residential water connections and 1,301 recycled water connections resulting in a water savings of 11% during the month of August 2017. Phase II is currently in progress with District workers converting 4,851 commercial, multi-family households, and fire protection meters from AMR to AMI. It is estimated that this will result in an estimated annual water savings of 505.41 AFY after completion scheduled for March 2020. Phase III represents the final phase in the conversion to AMI, converting 45,408 meters using contractor labor. The estimated annual savings for Phase III is 1,580.82 AFY.

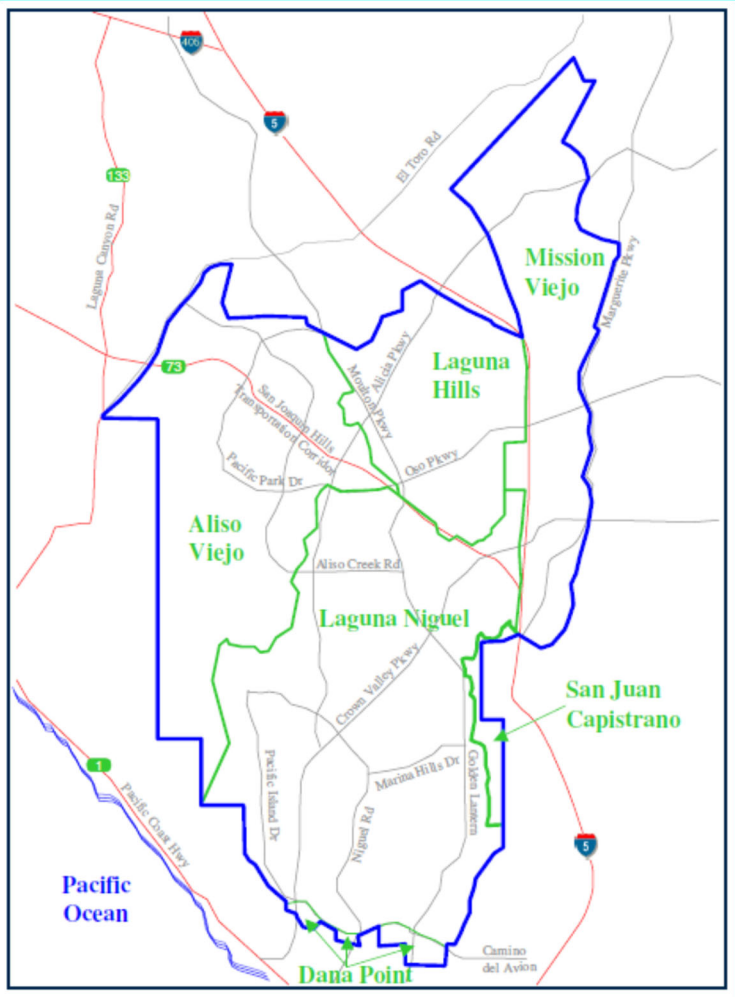
6 BACKGROUND DATA

6.1 PROJECT BACKGROUND

6.1.1 Water Supply and Water Rights

Established in 1960, the District provides water, recycled water, and wastewater service to more than 170,000 people within a 37 square mile service area located within the southern portion of Orange County. The District service area includes the cities of Aliso Viejo, Laguna Niguel, Laguna Hills, Mission Viejo, San Juan Capistrano, and Dana Point. The following Figure 6-1 denotes the District service area, which serves as the boundaries for the proposed AMI project.

Figure 6-1: Geographic Location of Project Area



All of the potable water supply for the District is imported from the Metropolitan Water District of southern California (MWD) via its wholesale supplier, the Municipal Water District of Orange County (MWDOC). The imported water is treated at the Diemer Filtration Plant or at the Baker Water Treatment Plant and delivered

to the District through three dedicated pipelines. The District operates and maintains approximately 663 miles of potable water distribution pipelines. In addition, the District has 26 steel tank reservoirs and two pre-stressed concrete operational storage reservoirs for a total potable water storage capacity within the District of approximately 70 million gallons. The District owns capacity rights in several adjoining water agencies' reservoirs and pipelines such as El Toro Water District R-6 Reservoir; Santa Margarita Water District (SMWD) Upper Chiquita Reservoir; Joint Transmission Main (a joint powers agreement between the District and other water agencies); Eastern Transmission Main jointly owned by the District and the City of San Juan Capistrano; and the South County Pipeline, which conveys water from the AMP to several south county water agencies. The District also operates 22 pump stations to pump water from lower pressure zones to the higher-pressure zones and 20 pressure reducing stations and flow control facilities to convey water from high to low zones. 100 percent of the potable water demand is met with imported water. On average, approximately 43 percent of the imported water has been from the State Water Project and 57 percent has been from the Colorado River Aqueduct. The San Juan Basin Authority has water rights for approximately 10,000 AFY, and the District is a member of the San Juan Basin Authority; however, due to the brackish water quality and the very limited supply, the District has not been able to utilize any of this water.

In addition to water facilities, the District maintains approximately 504 miles of wastewater collection pipelines. The District's wastewater system has 16 lift stations that pump wastewater over the ridge lines to the various treatment plants for treatment and recycling. The District participates in the South Orange County Wastewater Authority (SOCWA), a joint powers agency comprised of ten governmental agencies, which operates three regional treatment plants which the District owns capacity in and two ocean outfalls. The District also owns a fourth wastewater treatment plant, Plant 3A, which is operated by SMWD by agreement. It is the policy of the District to promote the use of recycled water to provide for the conservation and reuse of all water resources, and to utilize this resource for any approved purpose to the maximum extent possible under the laws of the State of California. In 1974, the District became one of the first water providers in Orange County to deliver recycled water for irrigation use. The District owns two Advanced Wastewater Treatment (AWT) facilities providing expansive recycled water service for landscaping. The District has constructed approximately 140 miles of recycled water distribution pipelines with five pre-stressed concrete and six steel storage reservoirs to service the recycled water system. The District operates 10 recycled-water pump stations. In addition, the District owns 1,000 acre-feet of capacity rights in the Upper Oso recycled water reservoir, owned by Santa Margarita Water District. The projected annual demand of the recycled water system will be approximately 8,000-acre feet per year over the next few years. Tertiary treated wastewater that would otherwise be sent to the ocean is treated and recycled. Recycled water currently meets 23 percent of the District's overall demand. Currently, approximately 50 percent of dedicated irrigation meters are served with recycled water and about two-thirds of all dedicated irrigation water use is met with recycled water.

The climate of the District's service area is characterized by mild, dry summers and winters with temperatures ranging from an average of 55 degrees Fahrenheit in January to 73 degrees Fahrenheit in August, and occasional interruptions of periods of hot weather and strong winter storms. Rainfall averages 14 inches annually.

All of the District's water connections are metered. Most commercial customers and multi-family properties have two metered connections, an irrigation meter and a commercial meter, while residential customers have a single metered connection.

6.1.2 Water Demand

The current total water demand for retail customers served by the District is approximately 34,249 acre-feet per year. The potable water demand for Fiscal Year 2018 was 25,950 acre-feet (79 percent) and recycled water demand was 7,009 acre-feet (21 percent). Prior to the drought, a demand high of 41,692 acre-feet occurred in fiscal year 2007. Since then, active conservation measures have contributed to a significant reduction in water demand. Average annual potable water uses for calendar years 2014-2018 was 25,481 AFY, and the average amount of recycled water used during this period was 7,218 AFY.

6.1.2.1 Demographics

The population for the District service area is projected to increase minimally over the next 25 years with the area almost entirely built-out. The vast majority of future growth will be from in-fill densification projects. Projections from the 2015 Urban Water Management Plan for the District are shown in the following table.

Table 6-1: Service Area Population Projections (2015 to 2040)

MNWD Population - Current and Projected						
Population Served	2015	2020	2025	2030	2035	2040*(opt)*
	170,326	172,876	174,115	175,512	176,539	177,425
NOTES: Provided by the California State University at Fullerton Center for Demographic Research.						

6.1.2.2 Land Use

The four major land uses in the District service area include residential (single-family and multiple-family), commercial (retail and light industrial), schools, and parks. Single family residential developments are most predominant in the service area.

6.1.3 Water Use by Customer Type

There are currently 55,030 potable and recycled customer connections to the District water distribution system. All of the connections in the District system are metered, and it is anticipated that approximately 1,000 more connections will be added to the system by 2035. The majority of the water demand is residential and accounts for approximately 60 percent of the total water demand. Commercial/industrial/institutional (CII) use, including dedicated landscape, consumes about 40 percent of the system water supply. There is no water supply for agricultural use, with the exception of water used by commercial nursery operations, which are accounted for in the commercial sector use figures.

Table 6-2 provides a summary of past, current, and projected water use by customer class in five-year increments from 2010 to 2040.

Table 6-2: Past, Current and Projected Water Demand by Water Use Sector

Use Type	Actual		Projected				
	2010	2015	2020	2025	2030	2035	2040
Single Family	17,589	16,426	16,737	16,454	16,221	16,241	16,296
Multi-Family	2,600	2,218	2,656	3,031	2,997	3,000	3,008
Commercial	2,678	2,450	2,537	2,517	2,482	2,485	2,494
Irrigation	3,201	3,641	3,933	1,949	1,787	1,801	1,839
Real Losses	2,369	1,700	1,727	1,542	1,478	1,447	1,420
Apparent Losses		183	196	178	175	175	175
Total	28,437	26,618	27,786	25,850	25,319	25,331	25,850

6.1.3.1 Residential

Residential accounts for approximately 60 percent of the total water demand, and this is expected to remain relatively consistent for the next 25 years. Multi-family residential accounts for less than 10 percent and single-family residential accounts for about 50 percent of the total water demand.

6.1.3.2 Non-Residential

There are a mix of commercial uses (i.e., markets, restaurants, etc.), public entities (i.e., schools, fire stations, and government offices), office complexes, light industrial, warehouses, and facilities serving the public within the District service area. Approximately 10 percent of the total demand is from CII water uses excluding large landscape, and the remaining 30 percent is attributed to demands from large landscapes, such as golf courses and parks. Of the landscape demands, about 60 percent is met by the recycled water supply. These percentages are expected to remain consistent over the next 25 years.

6.1.3.3 Sales to Other Agencies

The District regularly supplies the City of San Juan Capistrano annually with approximately 50 AF of recycled water per year. The District also moves El Toro Water District's share of the water treated at the Baker Water Treatment Plant (approximately 350 AF per month) through its system to convey the water. The District does not export water to other agencies except in the case of emergencies.

6.1.3.4 Non-Revenue Water

Non-revenue water is defined by the International Water Association (IWA) as the difference between distribution systems input volume (i.e. production) and billed authorized consumption. There are three primary components of non-revenue water: (1) unbilled authorized consumption (i.e., hydrant flushing and firefighting); (2) real losses (i.e., leakage in mains and service lines); and (3) apparent losses (i.e., unauthorized consumption and metering inaccuracies). Approximately 10 percent of the potable demand is non-revenue water.

6.2 Energy Efficiency Elements

The District relies on electricity from Southern California Edison and San Diego Gas and Electric, and the District does not produce any renewable energy itself. The MNWD AMI Implementation Program, Phase III furthers efforts to modernize the District's water management facilities and equipment to increase energy efficiency. The District currently is collaborating with UC Davis with a grant project with the California Energy Commission for $3 million that integrates energy modeling with hydraulic modeling to find opportunities for demand response. This proposed project provides additional AMI data that will support the models developed by UC Davis for District demand response. Additionally, the proposed project would promote energy efficiency by reducing fuel consumption and frequency in maintenance of District vehicles previously used to collect monthly meter readings and quantifiably reduce energy consumption through water significant improvements in water use efficiency and conservation that would reduce pumping and importation of water from MWD, which receives its supply from the State Water Project and the Colorado River Aqueduct. The importation of water is extremely energy intensive, and much of the state's energy consumption is attributed to the conveyance of water. Any reduction in water loss and overall consumption would have an impact on increasing energy efficiency of the overall system operations.

6.3 Past Working Relationships with the Bureau of Reclamation

The District previously received a $300,000 grant award under the 2015 WaterSMART Water and Energy Efficiency Grant to implement Phase I of the AMI Implementation Program, agreement #R15AP00128. This project was successfully completed in June 2017 and closed out in September 2017. The District also received a $300,000 grant award under the 2018 WaterSMART Water and Energy Efficiency Grant to implement Phase II of the AMI Implementation Program, which is currently in progress. These projects are the predecessors to the proposed final Phase III project.

The District also collaborated with Reclamation in the past to reach out to South Orange County agencies, and the District hosted a workshop on October 28, 2013, where the various agencies and Reclamation worked together to understand the needs, challenges, and opportunities in South Orange County agencies and identify federal funding and technical assistance opportunities.

7 Technical Project Description

The MNWD AMI Implementation Program, Phase III will be the final phase to complete the conversion to AMI. The District distribution system is aging, requiring proactive repair and rehabilitation efforts. The frequency of service calls related to line leaks have increased substantially, causing the District to shift into a reactive repair and replacement situation as opposed to a proactive maintenance program. Completion of the final phase of the MNWD AMI Implementation Program will assist the District in identifying and addressing service leaks preemptively district wide for all customer classes instead of having to wait until the line breaks and leaks are visibly noticeable and reported by a customer or other passerby. The conversion of 45,408 meters to AMI will allow usage data to be automatically relayed to the District office utilizing the fixed area network implemented during Phase I. The meter can also be read by driving by them with special radio equipment in the event of the malfunction in the fixed area network in the event of a natural disaster. After completion of this final phase, all 55,030 meters will be automated. The proposed

project phase seeking grant funds will attach radio transmitters to 45,408 single-family residential meters. These customers use 80 percent of the annual potable water demand. Based on the results of Phase I, it is estimated that a 11% reduction in potable water use will be achieved due to quick identification of water and increased customer awareness.

Under Phase I, the District completed a propagation modeling study using projections for the end signal strength of every meter to determine the optimal locations for the seen FlexNet Base Transceiver Stations (BTS). The Sensus FlexNet Technology that the District installed include a fixed-base system using a fixed radio frequency (RF) network. SmartPoint endpoints were installed to provide two-way wireless communication with the AMI Communications Network to provide meter readings, on-demand information, remote disconnect and reconnect, diagnostic data, and to receive validate configuration changes, new protocols and modulation and firmware updates. The District also implemented customer data transfer and data validation process for integration of the AMI data onto a customer portal. The FlexNet Head End System is the AMI management system that sits atop the FlexNet AMI communications network, providing open, standards-based interfaces and Application Programming Interfaces (API) to the District's back office systems. Within the head-end system's Regional Network Interface (RNI) resides a number of servers and databases which support the interfaces to back office systems and provide the business logic and services that comprise the AMI management system. The SmartPoint modules collect meter reads on an hourly basis and transmit the reads to the base station at scheduled 4-hour intervals and on-demand. The base station retrieves the data from the endpoints and passes the data to the Regional Network Interface (RNI). The RNI receives the data from the base station. The RNI is the "nerve center" of the FlexNet communication network and consists of two or more servers, databases and software. The database stores the data and the servers communicate with the base station and route the data. The implementation of the Phase I project was to serve as a pilot to test and fine-tune the AMI system to maximize the benefits to both the District and its customers, as well as evaluate the benefits and capabilities of the AMI technology by establishing a set of key performance measures to quantify the project benefits. Phase II is focused on potable water meters for commercial, multi-family, and fire protection. Phase III is the final phase and will be focused on the District's single-family residential meters. Only the addition of a radio in each meter box is now required, to complete AMI District-wide, as all meters are now digital and AMI ready due to the District's proactive meter replacement program.

The AMI radio transmitter specifications are as follows:

MXU 520M SmartPoint Two-Way Wireless Radios on 45,408 residential meters.

Table 7-1: Customer and Meter Type

Customer Class	Meter Size (inches)	Quantity
Residential	3/4	35,034
Residential	5/8	140
Residential	1	10,109
Residential	1 ½	94
Residential	2	31

Features include:

- Sensus SmartPoints with two-way and one-way wireless communications options

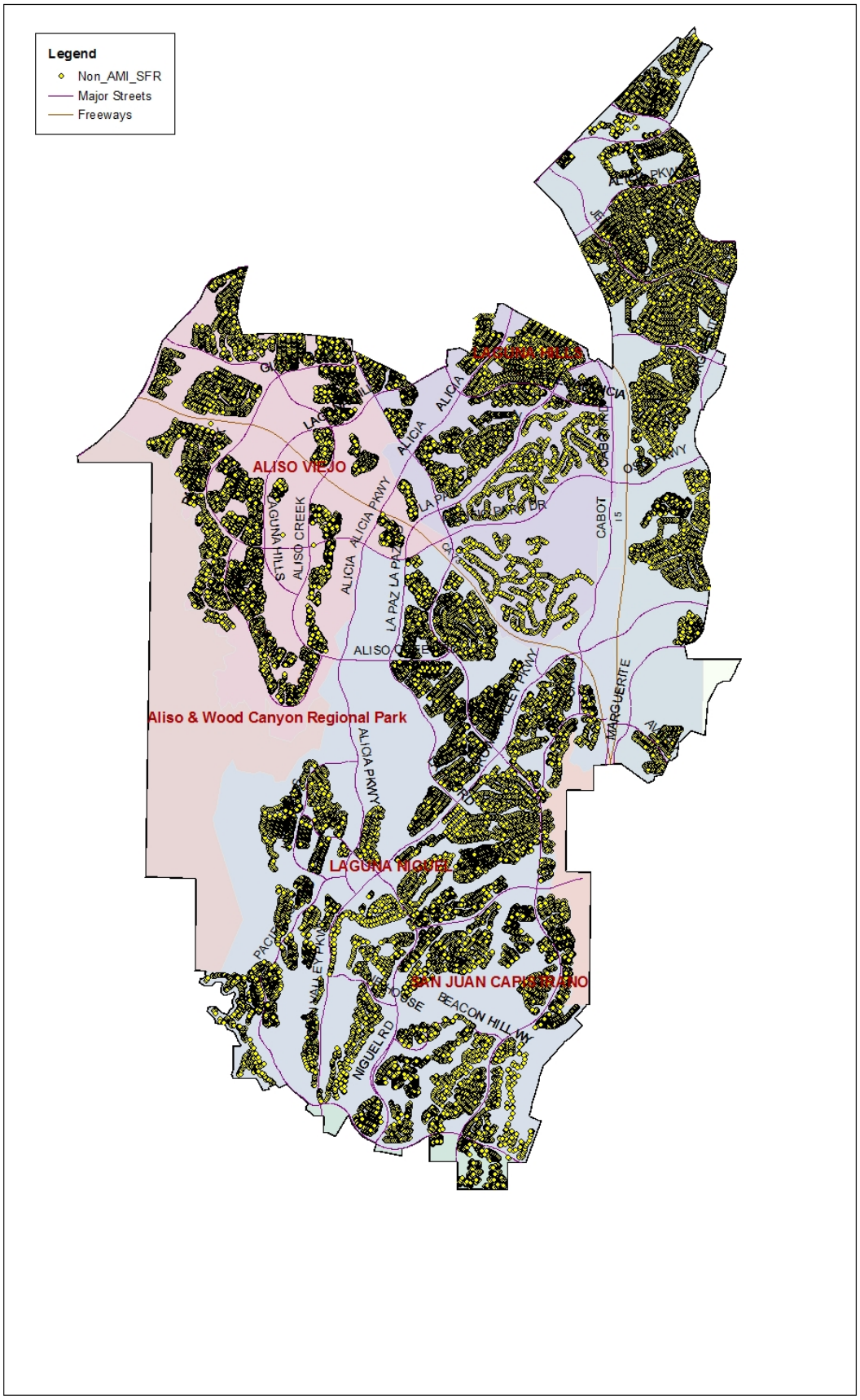
- SmartPoints transmit and receive data via the FlexNet AMI Communications Network to provide meter readings, on demand information, remote disconnect and reconnect, diagnostic data, and to receive and validate configuration changes, new protocols and modulation, and firmware updates.

- The SmartPoints communicate with BTS in multiple modes including the following:
    - Normal mode allowing for direct communication to the BTS
    - Poll/Response mode allowing a clear channel for responses from tower commands
    - Alarm mode
    - Boost Mode (water and gas only) for improved communications in very difficult RF environments
- Installation on the network is accomplished via a hand-held set up device or self-discovery, depending on the type of endpoint and the requirements of the utility installation. The SmartPoint uses Sensus FlexNet IP communications or native FlexNet communications to communicate with the network. These are configurable parameters. Future protocols can be supported via firmware download.
    - Additional information on the SmartPoint transmitter includes:
    - High-power, two-way radio transmission for expanded reading range and reliability which provides for more efficient and safer meter readings
    - Reliable operation from within buildings to flooded meter pits
    - 20-year published warranty on SmartPoint and battery
    - Migratable WalkBy/DriveBy RadioRead® and FlexNet AMI System Fixed Base system capability
    - MultiRead expansion capability
    - Programmable daily, hourly, 15 and 5-minute data intervals, or on-demand reads
    - Tamper theft detection
    - CRC-32 protected, redundant data messages
    - 128-bit data encryption

- The use of cycle codes, class codes and passwords to enhance system integrity and flexibility with the system
- Real-time Data for management and billing
- Automated re-reads
- 30-day data backup at receivers
- Primary use FCC license; potential interferers can be legally removed
- The FlexNet Meter Module provides data redundancy in the message and retransmits multiple copies of the message that include a lossless compression of the past 18 to 60 readings, therefore, if a catastrophic event destroyed a FlexNet outfitted tower and a new one could not be installed in 2 weeks, no metering data would be lost.

The map on the following page provides the locations for all the meters included in the scope of this project.

Non-AMI Single Family Residential Meters



Optimizing water use efficiency through the capabilities of AMI and associated software will serve to reduce water usage, minimize water losses, and improve customer education. Implementing AMI will equip the District with the means to proactively identifying leaks, assist operations through demand-side time-of-use management, and benefit the customers by providing tools for monitoring water usage and promoting behavioral changes to optimize their operations in terms of water use efficiency.

This project would not only improve water use efficiency and conservation, but also increase energy efficiency by reducing fuel consumption of District vehicles currently used for collecting monthly meter readings and energy consumption from importing and conveying unaccounted water throughout the system.

7.1 Design, Engineering, Budgeting, and Scheduling

The District has already completed the propagation study, installation of the FlexNet towers, and tested various types of meter radios and has selected the technology that works best with the District's existing meters and has the capabilities and reliability expected by the Citizen's Advisory Committee (CAC) and staff. The supplier has been selected through a competitive bidding process. The District is seeking funding to complete the purchase of all of the 45,408 meters for installation within 36 months, instead of a protracted schedule of greater than 5 years.

7.2 Design and Implementation of Public Outreach and Engagement Campaign

Public outreach and engagement is a critical component of the MNWD AMI Implementation Program. Without proper outreach and education, the benefits of the customer portal would not be maximized. In order to ensure that the customers are aware of and able to fully utilize the customer portal, a proactive public outreach and engagement campaign will be developed and incorporated into the overall AMI Implementation Program. The District will offer hands-on demonstration opportunities and thoroughly review the capabilities of the customer portal with customers during workshops and outreach events. The District commits to hosting focus groups with portal users and gathering customer feedback to make these portal tools more intuitive, and therefore more likely to be adopted by customers.

Public outreach and engagement endeavors utilizing the Citizen Advisory Committee (CAC) and receive feedback and input on the effectiveness of these efforts. The District will also create a phased schedule for outreach to the different customer classes and employ a customized approach to highlight key topics of interest and concern for the various customer classes and types. The District has worked proactively to build strong relationships with its customers, and the CAC is actively engaged in providing feedback and input to the District. The District also has a robust speakers bureau program regularly provides informational presentations to local organizations, chambers of commerce, homeowner associations, and more. In addition to in-person interactions, the District has a wide-reaching newsletter and interactive website with increasing traffic, and these tools will also be used to inform the customers about the program. All of these resources and avenues will be incorporated into the District's public outreach and engagement

campaign to ensure dissemination of information regarding the MNWD AMI Implementation Program and its customer portal.

The District worked with local stakeholders including the County of Orange, City of Laguna Niguel, City of Aliso Viejo, City of Mission Viejo, City of Laguna Hills, City of Dana Point, Laguna Bluebelt Coalition and Orange County Coastkeeper signed a historic Memorandum of Understanding to reduce urban runoff. As part of the District's rollout of AMI in Phase III, the District will work through its stakeholder group to encourage further engagement by the targeted customer groups and to collaborate on outreach efforts to cross market.

7.3 Implementation of Water Use Efficiency Management System

In order to maximize the capabilities and benefits of the AMI technology, a comprehensive leak detection and water loss management program was integrated into the program under Phase I. This water use efficiency management system includes systematic analyses of water production and consumption, water use patterns, and more. Any potential leaks and other potential water loss incidents will be evaluated and investigated accordingly.

7.4 Evaluation of Benefits and Lessons Learned

There will be periodic evaluation of the benefits and lessons learned from the AMI Implementation Program. Preliminary performance measures have been identified and are provided in further detail in Sections 8 of this document. A water loss audit will be conducted regularly using the AWWA methodology adopted in the District's current Water Loss Audit Report. This water loss audit exercise will help identify and quantify the benefits of the AMI program and provide valuable data for evaluating the magnitude of the effectiveness of AMI technology for improving water use efficiency and conservation. Steps will be taken to improve upon the overall system, as necessary, and these lessons learned will be incorporated into the decision-making process for overall updates and advancements to the District's systems and facilities.

8 Evaluation Criteria

8.1 Evaluation Criterion A: Quantifiable Water Savings

8.1.1 Infrastructure Project Type: Municipal Metering

The District is proposing implementation of Phase III of the AMI Implementation Program.
The average annual water demand for the last five years (January 2014 – December 2018) was 32,699 AF, which included an average of 25,481 AFY of imported surface water 7,218 AFY of recycled water. The average water use for just residential customers over the same 5-year period was 15,221 AFY.

Phase III is focused on the District's single-family customers, which use 80 percent of the District's water demand. Continued implementation of AMI will assist the District in proactively identifying any leaks and

benefit the customers by providing tools for monitoring water usage and promoting behavioral changes to optimize their operations and practice in terms of water use efficiency.

A recent water loss audit of the potable water system was conducted using the American Water Works Association (AWWA) methodology has shown that potable water losses account for approximately 10 percent of the annual potable water demand. Not only could implementing AMI help minimize the water loss and benefit District operations, but it could also help reduce excessive water usage and improve customer usage habits through expanding use of the customer portal. The District will be able to do water balance reads daily on the system instead of once a year to be more proactive in real water loss reductions.

Water budgets with tiered rates are used as a demand side management tool, and the AMI technology coupled with the customer portal will aid customers in improving water usage patterns while being able to track regular usage more regularly than a monthly bill. The customer portal is updated with daily evapotranspiration data and water needs, and the District currently receives evapotranspiration data by microzone. There are 110 microzones within the District for each square kilometer within the District. AMI will help to provide data to build an integrated portal to monitor demand and water needs, identify leaks daily and/or near real time as opposed to the current system that leaks are not identified until the end of the monthly billing cycle or upon citizen notification.

8.1.2 Subcriterion A.1: Estimated Water Savings

Based on the water savings achieved during the limited implementation of Phase I, it is estimated that 11 percent of the potable water use by the customers including within the Phase III scope will result in an estimated annual savings of 1,580.82 AF after implementation.

This savings is calculated using the annual water use for single family residents of 14,371.07 acre-feet in calendar year 2018 for just those meters included within this Phase III scope of work.

Estimated water Savings: 14,371.07 AF x 11%=1,580.82 AF

Actual water savings will be verified upon completion of the project through the use of utility data management software to conduct a water balance in the system. All usage data for all meters equipped with AMI will be compared to historical values to determine water savings due to increased water use efficiency.

8.1.3 Current Water Losses

Included in the 11 percent water savings, are water losses associated with these customer locations. The meters are all reported on a monthly basis, and it is not until a particular meter reports use above 30 percent from the previous monthly read that the current system alerts the District of a likely leak. This is a high amount of leakage. The delayed notification allows a significant amount of water loss and increased expense for the customer. Currently, residential water leaks are not detected and are merely suspected

when the customer experiences a higher than normal water bill. When the bill is significantly higher, the customer will be notified that they may have a leak, but that may result in multiple months of high water bills and also fails to recognize smaller leaks. This approach is very inefficient and causes increased costs for the customer and long-term water waste. The District's unaccounted water of 10% also does not factor water waste for residential customers, because there is no disparity between distributed water and revenues collected.

Currently, it is not possible to identify gradual leaks due to the low precision monthly data.

8.1.4 The Estimated Average Water Savings and How Calculated

Table 8-1: 2018 Water Usage

Customer Class	2018 Potable Water Usage AFY	Quantity of Meters
Single-Family Residential	14,371.07	45,408

To calculate the estimated water savings, the total water usage for the remaining single-family residential customers included in Table 8-1, multiplied by 11 percent. The 11% savings was the amount of water that was saved during the District's Phase 1 Pilot for AMI Implementation.

8.1.5 Studies Relevant to Water Use Patterns and Reducing Water Use

Evaluation of Optimal AMI Technology Platform

The District began evaluating AMI technologies, customer portal providers, and utility data management systems in 2015. The District completed a thorough evaluation of all available technologies and completed a competitive proposal and procurement process to select the most beneficial and cost-effective solution with the greatest promise for long-term success. The District evaluated several AMI technologies available including Badger, Neptune, and Sensus, and potential customer portal providers include WaterSmart and AquaHawk. Additionally, utility data management systems such as the OSIsoft PI Program and FlexNet were explored. These are non-exhaustive lists of potential vendors, and a complete and thorough evaluation of the most optimal AMI technologies and software systems was conducted. The District has experience with manual, automatic meter reading (AMR), and AMI meter reading technologies and practices and determined the best long-term solution for the District based on experiences and lessons learned to evaluate these options. The District's evaluation also included acoustic sensors technologies to aid in leak detection to round out the water use efficiency management program. Lastly, the District evaluated the complete package, including installation, training, and ongoing system maintenance, to ensure the best fit and value for the District

In Phase I, the District installed AMI for all 1,368 potable irrigation connections and 1,301 recycled water connections, which account for over 36 percent of the current water demand. Installation of AMI for the entire recycled water system allows the District to perform a system-wide analysis on the benefits and effects of AMI on optimizing water consumption and minimizing water losses. There were also approximately 1,800 existing residential connections with AMI installed. The customer portal that was launched under Phase I provides reliable, secure, and real time access to individual water usage data by

customers and also by the District. Phase I results showed a water savings of 11 percent, when comparing historic water use to water use 6-months post project.

8.1.6 What Types (manufacturer and model) of devices will be installed and in What Quantities?

MXU 520M SmartPoint Two-Way Wireless Radios will be installed on 45,408 single-family residential meters.

8.2 Evaluation Criterion B: Water Supply Reliability

8.2.1 Subcriterion B.1: Will the project make water available to address a specific Water Reliability Concern:

a) Explain specific issues in the area that is impacting water reliability, such as shortages due to drought.

California, water supply sustainability has been an increasing concern as the region water utility districts work to manage water demands versus environmental impacts.

On January 17, 2014, California Governor Edmund G. Brown Jr. declared a State of Emergency and directed state officials to take all necessary actions to prepare for the drought conditions and called upon every Californian to conserve water. As water supplies continued to diminish, the Governor's office called on all water agencies to implement drought measures to reduce water demands and the Department of Water Resources reduced SWP allocations for southern California contractors to zero on January 31, 2014, and then 5% for 2014. Water resources remained very low throughout the entire State with DWR restricting SWP suppliers to 15-20 percent of their requested allotments until the drought ended in April of 2017 due to the recent heavy precipitation across the state. This presented a new problem of landslides and flooding as severe storms swept through the area, resulting in a new declared emergency for severe storms. California has faced many droughts and strong precipitation cycles, and portions of the District are also plagued by severe, high temperature on-shore winds known as the Santa Ana Winds. During periods of drought, the water shortages and the restrictions on imported water have a very serious impact on the communities the District serves, since all of the potable water is from imported sources. The District's reliance on imported water also increases the impact of a drought on the region since the District has no alternate water supply source such as groundwater or local surface water to reduce the need for imported water. Therefore, any effort to reduce the District's water demand will also benefit other communities that rely on imported water sources. The District has 28 storage reservoirs to help mitigate the impact of water shortages, however, these resources can only sustain the water supply for approximately 24 days. The use of AMI technology to identify water losses and water waste is of great importance to the District due to its reliance on imported water.

b) Describe how the project addresses reliability concerns?

The California Urban Water Agencies (CUWA) defines Water Supply Reliability as, "The ability to meet water demands consistently." Being dependent on imported water to provide potable water services to

more than 170,000 people, plus business, schools, etc. requires that the District consider reliability in all project planning. There is no substitute for AMI technology. It provides near-real time usage data that can be compared to District supplies, allowing the staff to better manage water resources. AMI provides fast alerts concerning potential water losses and/or waste to both the District and the customer, providing two points of notification to facilitate a faster resolution to stop the water loss. When water resources are finite as they are by restricted water rights and dependence upon imported sources, implementation of all projects that improve reliability and help the District to consistently meet water demands is essential. Significant contributions to the sustainability of local water supplies will be made by targeting large commercial and multi-family customer with the greatest water use and impact on potable water supplies.

The conserved water will offset the amount of water required from imported water supplies.

8.2.2 Subcriterion B.2: Will the project make water available to achieve multiple benefits or to benefit multiple water users (e.g. agriculture, municipal, and industrial, environmental, recreation or others).

100 percent of the potable water demand is met with imported water. On average, approximately 43 percent of the imported water has been from the State Water Project and 57 percent has been from the Colorado River Aqueduct. The San Juan Basin Authority has water rights for approximately 10,000 AFY, and the District is a member of the San Juan Basin Authority; however, due to the brackish water quality and the very limited supply, the District has not been able to utilize any of this water. These imported water supplies also serve water to other agencies for agricultural, municipal, industrial, environmental, and recreational purposes. Any water saved that reduces the District's demand for these imported water supplies provides more water for other state water project and Colorado River Aqueduct water users, benefiting multiple water users and the environment.

a) Will the project benefit species and whether or not the species is adversely affected by a Reclamation Project?

The entire water supply for the District is imported from the California State Water Project and the Colorado River Aqueduct. Therefore, any reduction in water consumption would ultimately benefit the endangered species affected by either the California State Water Project or the Colorado River Aqueduct. Projects that reduce demand on imported water supplies are key for enhancing the Delta, the most significant infrastructure problem in California. The installation of AMI will provide customers with the capability to view and obtain water consumption data regularly, allowing for optimization of operations and greater flexibility in the timing of water deliveries to aid in the restoration of Delta habitat. This would ultimately provide a means for identifying and adjusting water demands during environmentally sensitive periods to foster greater recovery of the endangered Delta species.

8.2.3 Subcriterion B.3: Does the project promote and encourage collaboration among parties in a way that helps increase the reliability of the water supply.

The State of California has co-equal goals that are defined in the Amended Memorandum of Agreement Regarding Collaboration on Planning, Design, and Environmental Compliance for the Delta Habitat Conservation and Conveyance Program in Connection with the California Bay Delta Conservation Plan (December 13, 2013). The establishment of co-equal goals is part of an effort to improve reliability of the water supply for California by protecting, restoring, and enhancing the Delta ecosystem and habitat (SB 1, Steinberg – Section 85054). The AMI Implementation Program would help meet the co-equal goals by providing water management strategies to help relieve some of the stress on California's water resources, and any reduction in water consumption by increasing water use efficiency and promoting conservation helps reduce the amount of water required for import from the California State Water Project and the Colorado River Aqueduct.

This project when combined with other efforts underway and/or planned for the future help to prevent a water-related crisis or conflict by improving the District's water reliability, water efficiency, and provides best management tools for monitoring for water losses and for managing water usage. Other water use efficiency practices exercised by the District include water budgets and rate tiers to use a fee per use approach to encourage customers to use less water to avoid an expensive water bill. For all customers, usage above the individually calculated water budget results in payment of higher rates. The revenue derived from the tiers above the Tier 2 rate is used to fund conservation and water use efficiency programs, education, outreach, and staffing to analyze agency water use efficiency and target funding to maximize effectiveness. In addition, the water use efficiency revenue can be used to construct new supply projects. The AMI will allow the District to better monitor water use and determine if there is water waste or a leak, and the customer will be able to access near real time data regarding water use and be better able to adjust water usage, versus waiting until when the month end bill arrives and shows total use has increased, but there is no way of knowing when it occurred or whether it is due to indoor use or outdoor use.

a) Is there Wide Support for the Project?

Yes. Multiple entities support the project and three have provided letters to show their support. These organizations include: Orange County Coastkeeper, Congressional Representative Porter, and Imagine H_2O.

b) What is the significance of the Collaboration/Support?

The District has already established a Citizens' Advisory Committee (CAC) comprised of key stakeholders and community members to provide feedback on District projects and objectives as well as another stakeholder group through the Urban Run-off Reduction MOU. The CAC will provide invaluable feedback on the customer portal and District outreach activities associated with the implementation of Phase III of the AMI Program and the expansion of the customer portal to include large commercial and multi-family customers.

c) Will the project benefit Indian tribes, rural or economically disadvantaged communities?

The District's service area does not directly provide water to Indian tribes, rural or economically disadvantaged communities; however, there are portions of the cities whose residents do meet the definition of economically disadvantaged. Furthermore, multiple small, private mutual water companies also rely on the water from State Water Project and the Colorado River, so any water conserved that lessens the demands for imported water from these sources in turn makes more water available to other communities, including rural and economically disadvantaged.

d) Will the project address water supply reliability in other ways not described above?

The customer portal has been very successful under Phase I and access to hourly water usage data will be extended to commercial and multi-family customers and serve as a dynamic tool to educate water users about the importance of water conservation and water use efficiency and emphasize the need to take a proactive role in their water use management. The District has a very strong customer service program that has led to great partnerships and relationships with the water users in the District service area, and this program will integrate a proactive outreach and education program to promote the capabilities and tools offered as part of this project.

Not only would the installation of AMI help reduce energy consumption due to decreased water loss and consumption, it would also benefit the overall energy consumption by eliminating energy costs associated with fuel costs. AMI would eliminate the need for field customer service representatives to drive throughout the service area collecting meter readings each month, resulting in an estimated fuel savings of approximately 450 gallons each year, in addition to savings on truck maintenance.

8.3 Evaluation Criterion C: Implementing Hydropower

Not applicable.

8.4 Evaluation Criterion D: On-farm irrigation improvements

Not applicable.

8.5 Evaluation Criterion E: Department of the Interior Priorities

8.5.1 Subcriterion E.1: Creating a conservation stewardship legacy second only to Teddy Roosevelt.

a) Utilize science to identify best practices to manage land and water resource and adapt to changes in the environment.

AMI is an example of best practices to manage water resources and adapt to changes in the environment.

The Colorado River Basin (Basin) Water Supply and Demand Study confirms that without future actions, the Basin faces a range of potential future imbalances between supply and demand. As the District is completely reliant on imported water sources, availability of water supply from the State Water Project and Colorado River Aqueduct are critical. One of the primary adaptation strategies identified in this study

included water use efficiency and reuse. This project would help increase water use efficiency of potable water used by single-family residential customers, who consume 80% potable water demand. Greater water use efficiency would reduce the stress on the Basin and its limited water supply. Being heavily dependent on the Colorado River, the District is very interested in working together with Reclamation to continue to implement best practices to manage water resources.

From January 2014 through April 2017, California experienced one of the most severe droughts in its history. California Governor Brown declared a drought State of Emergency in January 2014 and called for 20 percent conservation. California has experienced dry years and droughts from 2007 to 2011 and from 2013 to the present, and this has placed an immense strain on water supplies, resulting some of the lowest water storage levels in history. Implementation of AMI for our highest water consumers will provide significant increase in water use efficiency, reducing impacts on regional resources during times of normal and drought cycles. The AMI system will allow the District to issue real time alerts to customers concerning conservation, water use, water leaks, and permit the District to remotely read meters. Remote meter reading reduces greenhouse gases by eliminating the generation of CO_2 generated by vehicles driving through the District.

It will help reduce competition for limited water supplies through the Delta and the Colorado River Basin, promote increased water supply reliability, and ultimately allow more water to be available within the region and improve the overall water supply situation and health within the region. Recently, it was forecasted by Reclamation that projected demands would exceed available supply in the Colorado River, and in order to reduce the supply gap, increased conservation and water use efficiency measures would need to be taken.

The MNWD AMI Implementation Program will directly contribute to building drought resiliency by implementing a high caliber water management strategy that emphasizes water reliability, conservation, and increase water use efficiency.

8.5.2 Subcriterion E.2: Utilizing our Natural Resources

a) Ensure American Energy Is Available to Meet Our Security and Economic Needs

Water conservation saves energy by avoiding water treatment, deliver, and wastewater treatment.

The importation of water is extremely energy intensive. “Energy Down the Drain: The Hidden Costs of California’s Water Supply,” by the National Resources Defense Council indicates that the amount of energy used to deliver water from the State Water Project to Southern California over the Tehachapi Mountains is equivalent to one-third of the total average household electric use in the region. This does not include the energy required to import water to Southern California from the Colorado River Aqueduct, and any reduction in water loss and overall consumption would reduce the overall energy consumption from system operations.

An energy intensity study by the University of California, Santa Barbara, estimated that approximately 3,000 kilowatt-hours (kWh) per acre foot of water is required to convey water from the State Water Project to West Basin Municipal Water District, and approximately 2,000 kWh per acre foot is required to convey

water from the Colorado River Aqueduct. Historically, approximately 43 percent has been imported from the State Water Project and 57 percent from the Colorado River Aqueduct to meet the District's water demands. In addition, the distribution of potable water throughout the District's system requires approximately 149 kWh per acre foot of potable water.

Implementation of this project could eliminate the need to purchase up to 14,371.07 AF of potable water, which would result in an estimated savings of 34,921,700 kWh for importing water and 2,141,289.43 kWh distributing the potable throughout the District.

8.5.3 Subcriterion E.5: Modernizing our infrastructure

b. The project facilitates private sector efforts to construct infrastructure projects serving American needs. The WaterSMART grant funds will allow the District to fast track the implementation of the final phase to complete the installation of AMI radios on 45,408 meters. In order to complete the work within 36 months, the District will issue a request for proposals for contractor installation, supporting jobs in the private construction sector.

c. This project supports Reclamation's objective to prioritize construction of infrastructure.

8.6 Evaluation Criterion F: Implementation and Results

8.6.1 Evaluation Criterion F.1: Project Planning

a) Does the applicant have a Water Conservation Plan and/or System Optimization Review in Place?

The MNWD 2015 Urban Water Management Plan (UWMP) provides the framework for managing the water supplies and includes water conservation actions. This plan is updated every five years. The District was also a participant in the development of the 2016 Orange County Water Reliability Study, which is a comprehensive evaluation of current and future water supply and system reliability for all of Orange County which involved the Municipal Water Department of Orange County member agencies, the Orange County Water District, and the cities of Anaheim, Fullerton, and Santa Ana. The District strives to continue its efforts to support water sustainability initiatives such as these, and the MNWD AMI Implementation Program would promote urban conservation and increase water use efficiency.

In addition to the UWMP, the District has a Long-Range Water Reliability Plan that was developed in December 2014. This plan was created to address water supply and system challenges, quantify water supply and system reliability needs, identify potential projects to meet those needs, and develop an adaptive strategy for implementation.

b) Describe how the project conforms to and meets the goals of any applicable planning efforts and identify any aspect of the project that implements a feature of an existing water plan(s).

The California Water Conservation Act of 2009, also known as SBx7-7, requires all water suppliers to increase water use efficiency 20% by the year 2020. The District has met the water use efficiency requirements of SBx7-7 and use of AMI will further that effort towards reducing water losses and promoting water conservation.

The 2015 Colorado River Basin Phase I Study identifies water use efficiency as a priority and states, "municipal and industrial providers in the metropolitan areas that receive Colorado River water will continue to increase water use efficiency and reuse. These efforts play an important role in meeting future demands, reducing or delaying needs for additional water supplies and increasing the future reliability of water supplies." This study identified advanced metering infrastructure as a potential action, *Opportunity 8: Implement Measures to Reduce System Water Loss with Specific Metrics and Benchmarking*, with a goal of 100 percent implementation.

Development and incorporation of the MNWD AMI Implementation Program has been in progress for quite some time, as the District has progressed from manual meter reading technology to AMR and is moving towards greater adaptation and use of AMI within the District service area. Through the small pilot program involving the installation of AMI for approximately 1,800 residential connections, the District has realized the limitations of AMI technology that is not coupled with a customer portal. Therefore, with Reclamation grant funding assistance, the District completed AMI Implementation Program Phase I in 2017 that included the implementation of a customer portal, and conversion of 1,368 potable irrigation connections, 1,800 residential customers and 1,301 recycled water connections. The Phase II of the AMI Implementation Program is focused on the replacement of 4,851 commercial, multi-family, and fire protection meters.

This project proposal is for Phase III, the final phase to complete the conversion of the remaining single-family residential customers to AMI, installing 45,408 radio transmitters to single-family residential meters. This project supports the Long-Range Reliability Plan which identifies water efficiency has a highly reliable, low-cost option for improving reliability for existing water supplies.

8.6.2 Evaluation Criterion F.2: Performance Measures

The MNWD AMI Implementation Program is anticipated to allow for improved water management by the District and more conscientious use by the customers through the availability of the customer portal. The following is a non-exhaustive list of performance measures that will be used to track and monitor the effectiveness of the program. This information will be compared to historical data for evaluation purposes.

1. Conducting a water loss audit periodically using the AWWA methodology adopted in the District's current Water Loss Audit Report, which includes:
2. Identifying and quantifying the number of line breaks on a monthly basis;
3. Estimating and quantifying the average gallons of water loss due to each line break incident;
4. Identifying and quantifying the number of line breaks repaired each month;
5. Identifying and quantifying the number of leaks detected on a monthly basis;
6. Identifying and quantifying the number of leaks repaired each month;
7. Identifying and quantifying the unauthorized consumption of water each month;
8. Quantifying the water consumption by customer class each month; and

9. Quantifying the water imported each month for potable water customers.

The District provides monthly data reports on water production and consumption, and a Water Loss Control Program is currently in place. The District currently performs annual water loss audits each year. The most recent completed water loss audit performed as part of the Water Loss Control Program was completed in October 2018. The District has a clear baseline of historical water distribution and billing data to compare with current and future records once AMI has been installed and the customer portal has been put into place. The District will use these tools to analyze the performance for this project.

The District actively monitors and analyzes energy efficiency throughout District operations. Energy efficiencies achieved as a result of the implementation of this phase of the AMI program will determined through the results of an ongoing study by UC Davis and Helios to develop time of use demand response decision support software which will also identify the energy intensity of each pressure zone in the District's distribution system to calculate actual energy savings from water savings. This software is being developed as part of a grant received by UC Davis and no costs will be included within this scope of work for this data.

For example, the software program has the capability to integrate water consumption data with GIS data to quickly assess any areas with potential leaks and determine the magnitude of the issue at hand. It is the goal of the District to equip District employees with the adequate tools and capability to not only monitor water production and consumption but determine also to analyze and evaluate solutions and follow-up actions for all factors that may contribute to water loss and decreased water use efficiency. Similarly, it is the goal of the District to provide tools and resources to the customers so that they can comprehensively understand their water usage patterns and have access to regular feedback on the effectiveness of any activities and efforts to reduce water usage in their homes and businesses.

8.6.3 Evaluation Criterion F.3: Readiness to Proceed

a) Describe the implementation plan of the proposed project. Please include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones and dates.

Milestone / Task / Activity	Planned Start Date	Planned Completion Date
Environmental Compliance	10/1/2019	12/1/2019
Procurement	10/1/2019	12/1/2019
Purchase and Installation AMI meters – 25% complete	1/1/2020	6/1/2020
Purchase and Installation AMI meters – 50% complete	6/1/2020	12/1/2020
Purchase and Installation AMI meters – 75% complete	12/1/2020	6/1/2021
Purchase and Installation AMI meters – 100% complete	6/1/2021	12/1/2021
Water Conservation Analysis Period	1/1/2022	6/30/2022

b) Describe any permits that will be required, along with the process for obtaining such permits.

No permits or approvals are required for the proposed project.

c) Identify and describe any engineering or design work performed specifically in support of the proposed project.

Project Specific Planning Work:

The District began evaluating AMI technologies, customer portal providers, and utility data management systems in 2015. The District completed a thorough evaluation of all available technologies and completed a competitive proposal and procurement process to select the most beneficial and cost-effective solution with the greatest promise for long-term success. In Phase I, the District installed AMI for all 1,368 potable irrigation connections and 1,301 recycled water connections, which account for over 36 percent of the current water demand. Installation of AMI for the entire recycled water system allows the District to perform a system-wide analysis on the benefits and effects of AMI on optimizing water consumption and minimizing water losses. There were also approximately 1,800 existing residential connections with AMI installed. The customer portal that was launched under Phase I provides reliable, secure, and real time access to individual water usage data by customers and also by the District.

Under Phase I, the District completed a propagation modeling study using projections for the end signal strength of every meter to determine the optimal locations for the seen FlexNet Base Transceiver Stations (BTS). The Sensus FlexNet Technology that the District installed include a fixed-base system using a fixed radio frequency (RF) network. SmartPoint endpoints were installed to provide two-way wireless communication with the AMI Communications Network to provide meter readings, on-demand information, remote disconnect and reconnect, diagnostic data, and to receive validate configuration changes, new protocols and modulation and firmware updates. The District also implemented customer data transfer and data validation process for integration of the AMI data onto a customer portal. The FlexNet Head End System is the AMI management system that sits atop the FlexNet AMI communications network, providing open, standards-based interfaces and Application Programming Interfaces (API) to the District's back office systems. Within the head-end system's Regional Network Interface (RNI) resides a number of servers and databases which support the interfaces to back office systems and provide the business logic and services that comprise the AMI management system. The implementation of the Phase I project was to serve as a pilot to test and fine-tune the AMI system to maximize the benefits to both the District and its customers, as well as evaluate the benefits and capabilities of the AMI technology by establishing a set of key performance measures to quantify the project benefits. Based on analysis of the water savings generated at the conclusion of Phase 1, results showed a water savings of 11 percent when comparing historic water use to water use 6-months post project.

Upon award of this project, the District is prepared to begin work on the project. The District has made preliminary preparations for this project by selecting the technology and supplier ahead of submitting

this project application. Procurement of a contractor is needed to implement this project. This procurement period will be completed within two months.

d) Describe any new policies or administrative actions required to implement the project.

As the final phase of the project, no additional administrative actions or new policies are required for the proposed scope of work.

8.7 Evaluation Criterion G: Connection to Reclamation Activities

The proposed project is associated with the Colorado River Basin, and the District receives water from the Metropolitan Water District, which currently relies on the Colorado River Aqueduct and the State Water Project as its primary sources of water. The project itself does not directly involve Reclamation project lands or Reclamation facilities, but the proposed project would increase the availability of the overall water supply through improvements in water use efficiency and conservation and ultimately benefit the Colorado River Basin. Any increase in water reliability and greater availability in overall water supply resulting from water use efficiency and conservation efforts would also help Reclamation in meeting the federal Indian trust responsibility, a legally enforceable fiduciary obligation on the part of the United States to protect tribal treaty rights, lands, assets, and resources, to the tribes.

8.8 Evaluation Criterion H: Additional Non-Federal Funding

$$Non-Federal\ Funding\ (\%) = \frac{Non-Federal\ Funding}{Total\ Project\ Cost}$$

$$\frac{\$1{,}500{,}000}{\$8{,}201{,}777} = 18.3\%$$

The following table depicts the percentages of the total project cost attributed to the various funding sources.

Table 8-1: Funding Sources and Percentages of Total Project Cost

Funding Sources	Percent of Total Project Cost	Total Cost by Source
Recipient Funding	81.7%	$6,701,777
Reclamation Funding	18.3%	$1,500,000
Other Federal Funding	0%	$0.00
Totals	**100%**	**$8,201,777**

9 PROJECT BUDGET

9.1 FUNDING PLAN AND LETTERS OF COMMITMENT

The District will finance project costs not funded by Reclamation. The District has a AAA Fitch rating and AAA S&P rating and has maintained a strong financial standing over the years. A copy of the Comprehensive Annual Financial Report for the most recently completed fiscal year and monthly financial statements that are available to the Board of Directors and the public are available on the District website at www.mnwd.com/finance/.

The funding plan anticipates that WaterSMART grant funds will be used in conjunction with District funds to purchase the AMI radios to attach to existing commercial, multi-family, and fire protection water service meters. The District is committed to the project as proposed herein, and the District plans on budgeting funds for the MNWD AMI Implementation Program Phase II as part of the Capital Improvement Program budget for the next fiscal year.

The District may opt to purchase some of the radios in June 2019 to secure the best cost pricing, which may occur prior to a grant award. In the event that the District does make such a purchase the anticipated project, the District would like to include these expenditures as an eligible pre-award expenditure.

There are no other funding partners associated with this project, and there are no other funds requested from other Federal partners. Aside from this WaterSMART FY 2019 funding request, there are no other pending funding requests. The following table outlines the proposed project funding sources.

Table 9-1: Summary of Non-Federal and Federal Funding Sources

Funding Sources	Funding Amount
Non-Federal Entities: Moulton Niguel Water District	$6,701,777
Non-Federal Subtotal	$6,701,777
Other Federal Entities	$0.00
Other Federal Subtotal	$0.00
Requested Reclamation Funding	$1,500,000
Total Project Funding	**$8,201,777**

9.2 BUDGET PROPOSAL

A budget proposal is provided in the following tables. **Error! Reference source not found.** above identifies both District and WaterSMART grant funds required to implement the project, and **Error! Reference source not found.**shows the percentage of cost shares per funding source, and Table 9-3 outlines the proposed budget by item.

Table 9-2: Project Funding Sources

Funding Sources	Percent of Total Project Cost	Total Cost by Source
Recipient Funding	81.7%	$6,701,777
Reclamation Funding	18.3%	$1,500,000
Other Federal Funding	0%	$0.00
Totals	100%	**$8,201,777**

Table 9-3: Proposed Project Budget

	Computation		Total Cost
	Units	Unit Cost	
Salaries and Wages			
None			
Salaries and Wages Subtotal			**0**
Fringe Benefits			
None			
Fringe Benefits Subtotal			**0**
Equipment			
None		$	0
Materials and Supplies			
Meter Radios	45,408	$108.83	$4,941,752.64
Contractual			
Contractor Labor-installation	45,408	71.75	$3,258,024.00
Environmental			
Reclamation Environmental Review	1	2,000.00	2,000.00
Total Direct Costs			**$8,201,776.64**
Indirect Costs			0
Total Project Costs			**$8,201,776.64**

9.3 BUDGET NARRATIVE

Salaries and Wages
No salaries and wages are included in this scope of work.

Fringe Benefits
No Fringe benefit payments are included in this scope of work.

Travel
The District is not including travel in the budget proposal.

Equipment
Equipment is defined as assets with a unit cost of $5,000 or greater. There will be no equipment purchased or leased for implementation of this project.

Materials and Supplies
Purchase of the MXU 520M SmartPoint Two-Way Wireless Radios for 45,408 meters.

MXU 520M SP	$101.00ea
MXU 520M SP Wired	$101.00ea
Subtotal	$4,586,208.00
Tax 7.75%	355,431.12
Total Cost:	**$**$4,941,752.64

Per unit Cost including Tax: $108.83

Contractual
The installation of the meters will be performed by a contractor. It is estimated that the installation cost will be $71.75 per meter.

This rate assumes the contractor will be required to pay prevailing wages in accordance with California Labor Laws. Assuming the project begins construction sometime between October 2019 and May 2020, the prevailing wage rate for laborers will be $57.78/hour, and there are two wage increases that will occur on July 1st for 2020 and 2021 in the amounts of $2.10 and $2.15 respectively. Assuming a contractor crew can install 3 meters per hour, per two-worker crew. Plus, wages for project superintendent and project manager, and overhead and profit.

The District will send out a request for proposals to obtain the true costs and inform Reclamation of any variation from this project estimate.

Environmental and Regulatory Compliance Costs
The District does not anticipate any environmental and regulatory compliance costs.

The Moulton Niguel Water District staff will file a Notice of Exemption with the County prior to the implementation of the project. The cost to complete this filing is minimal and the staff time associated with this task is included in the estimated staff hours. This task will be performed by a Water Efficiency Analyst and/or Water Efficiency Manager.

$2,000 has been allocated to cover costs incurred by Reclamation associated with Environmental review.

Other Expenses: None

Indirect Costs: None

Total Costs

The total estimated project cost is **$8,201,776.64**. The requested Federal share is $1,500,000; the total non-Federal share is $6,701,776.64.

9.4 BUDGET FORM SF-424A

Budget form SF-424A for Non-Construction Projects was submitted via Grants.gov.

10 ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

To allow Reclamation to assess the probable environmental and cultural resources impacts and costs associated with each application, all applicants must respond to the following list of questions focusing on the NEPA, ESA, and NHPA requirements.

The MNWD AMI Implementation Program, Phase II involves the installation of radios on existing water meters. There are no anticipated environmental or cultural resources impacts with the proposed project.

1) ***Will the project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.***

   There are no anticipated impacts to the surrounding environment.

2) ***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, it is not anticipated that any species would be affected by any activities associated with the proposed project.

3) ***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 project may have.***

   No, there are no wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "waters of the United States."

4) ***When was the water delivery system constructed?***

   Much of the water delivery system was originally constructed in the 1960s. Major construction and expansion of the delivery system continued in the 1980s and 2000s. Subsequent system expansions, repair, and rehabilitation projects have been ongoing since the time of original construction.

5) ***Will the project result in any modifications of or effects to individual features of an irrigation system (e.g., headgates, 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, the project will not result in any modifications or effects to individual features of an irrigation system.

6) ***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 in the irrigation district listed or eligible for listing on the National Register of Historic Places.

7) ***Are there any known archaeological sites in the proposed project area?***

No, there are no known archaeological sites in the proposed project area.

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

No, the project will not have a disproportionately high and adverse effect on low income or minority populations.

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

No, the project will not limit access to and ceremonial use of Indian sacred sites or result in other negative impacts on tribal lands. The project itself could, however, potentially benefit anyone receiving water from the State Water Project or the Colorado River Aqueduct by the increased water supply freed up from water use efficiency activities that are a major component of this proposed project.

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

The project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native species known to occur in the area.

11 REQUIRED PERMITS OR APPROVALS

There are no required permits anticipated for this project. All of the project work will be conducted at current meter locations. All project-related approvals will be handled by the District and will be executed in a timely and efficient manner. Final approval from the District Board of Directors would be required prior to proceeding with the project.

All work will be completed in accordance with local, state, and federal regulations.

12 LETTERS OF SUPPORT

- Orange County Coastkeeper Letter
- U.S. Congressional Representative Porter
- Imagine H20

March 11, 2019

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Costa Mesa, CA 92626
Phone 714-850-1965
Fax 714-850-1592
www.Coastkeeper.org

U.S. Bureau of Reclamation
Attn: Mr. Darren Olson
Denver Federal Center
Bldg. 56, Rm. 1000
6th Avenue and Kipling Street
Denver, CO 80225

RE: Support for Moulton Niguel Water District's U.S. Bureau of Reclamation WaterSMART Water and Energy Efficiency Grant Application

Dear Mr. Olson,

On behalf of Orange County Coastkeeper, we would like to express our enthusiastic support for Moulton Niguel Water District's U.S. Bureau of Reclamation Water Smart Water and Energy Efficiency Grant application for Advanced Metering Infrastructure (AMI) Implementation.

Orange County Coastkeeper is a nonprofit clean water organization that serves as a steward of our fresh- and saltwater ecosystems in Orange County. We work with groups in the public and private sectors to achieve healthy, accessible, and sustainable water resources for the region. We support innovative, effective programs in education, advocacy, restoration, research, enforcement, and conservation.

Moulton Niguel Water District is dedicated to serving its customers with reliable, economical, high quality water, wastewater, and recycled water services. The District previously succeeded in seeking two grants from the Bureau. Phase 1 funding included the installation of the communications network, a customer portal, and 1,368 potable irrigation connections, 1,800 residential water connections and 1,301 recycled water connections. Phase II is currently in progress and focuses on converting 4,851 commercial, multi-family residential, and fire protection meters from AMR to AMI. The proposed final phase will complete all of the District's remaining conversions – approximately 45,500 AMI meters.

AMI will increase water use efficiency and conservation through the availability of near real-time data on water usage and daily water needs. Implementing full rollout of the AMI conversion project will assist the District in proactively identifying leaks, assist operations through demand-side time-of-use management, reduce real system losses, and reduce greenhouse gas emissions by allowing meter data to be acquired in the office as opposed to driving around the service area to read meters.

The District is requesting $1.5 million in funding and is providing a significant match of $6.7 million.

As stewards for our local environmental resources, Orange County Coastkeeper is proud to support the District's U.S. Bureau of Reclamation Water Smart Water and Energy Efficiency Grant application.

If you have any questions, please feel free to contact me at (714) 850-1965 or garry@coastkeeper.org.

Sincerely,

Garry Brown
President & CEO
Orange County Coastkeeper

KATIE PORTER
45TH DISTRICT, CALIFORNIA

FINANCIAL SERVICES COMMITTEE
SUBCOMMITTEE ON
INVESTOR PROTECTION, ENTREPRENEURSHIP, AND
CAPITAL MARKETS
SUBCOMMITTEE ON
CONSUMER PROTECTION AND FINANCIAL SERVICES

Congress of the United States
House of Representatives
Washington, DC 20515–0545

WASHINGTON OFFICE:
1117 LONGWORTH HOUSE OFFICE BUILDING
WASHINGTON, DC 20515
(202) 225-5611

DISTRICT OFFICE:
2151 MICHELSON DRIVE
SUITE #195
IRVINE, CA 92612
(949) 668-6600

porter.house.gov

March 11, 2019

Darren Olson
U.S. Bureau of Reclamation
6th Avenue and Kipling Street
Denver, CO 80225

RE: Support for Moulton Niguel Water District's U.S. Bureau of Reclamation WaterSMART Water and Energy Efficiency Grant Application

Dear Mr. Olson:

It is a privilege to offer my full support for Moulton Niguel Water District's U.S. Bureau of Reclamation WaterSMART Water and Energy Efficiency Grant application for full Advanced Metering Infrastructure ("AMI") Implementation.

Located in the 45th Congressional District, the Moulton Niguel Water District ("District") serves 64,538 customers and the environment with reliable, economical, high quality water, wastewater, and recycled water services. The District previously secured two grants from the Bureau, where Phase 1 funding included the installation of the communications network, a customer portal, and 1,368 potable irrigation connections, 1,800 residential water connections and 1,301 recycled water connections. Phase II is currently in progress and focuses on converting 4,851 commercial, multi-family residential, and fire protection meters from AMR to AMI. This proposed project will be the final phase and will complete all remaining AMI conversions – approximately 45,500 AMI meters.

AMI will increase water use efficiency and conservation through the availability of near real-time data on water usage and daily water needs. Implementing full rollout of the AMI conversion project will assist the District in proactively identifying leaks, assist operations through demand-side time-of-use management, reduce real system losses, and reduce greenhouse gas emissions by allowing meter data to be acquired in the office as opposed to driving around the service area to read meters.

The District is requesting $1.5 million in funding and is providing a match of $6.7 million. The additional grant funding from the U.S. Bureau of Reclamation will allow the Moulton Niguel Water District to continue improving water and energy efficiency in South Orange County.

Thank you for considering this important grant request. If you have any questions, please contact Kelly Jones on my staff at 949-668-6600 or Kelly.Jones@mail.house.gov.

Sincerely,

Katie Porter
Member of Congress

IMAGINE H$_2$O

March 11, 2019

U.S. Bureau of Reclamation
Attn: Mr. Darren Olson
Denver Federal Center
Bldg. 56, Rm. 1000
6th Avenue and Kipling Street
Denver, CO 80225

RE: Support for Moulton Niguel Water District's U.S. Bureau of Reclamation WaterSMART Water and Energy Efficiency Grant Application

Dear Mr. Olson,

On behalf of Imagine H2O, we would like to express our enthusiastic support for Moulton Niguel Water District's U.S. Bureau of Reclamation Water Smart Water and Energy Efficiency Grant application for Advanced Metering Infrastructure (AMI) Implementation.

We know from years of working with them that Moulton Niguel Water District is dedicated to serving its customers with reliable, economical, high quality water, wastewater, and recycled water services. The District previously succeeded in seeking two grants from the Bureau. Phase 1 funding included the installation of the communications network, a customer portal, and 1,368 potable irrigation connections, 1,800 residential water connections and 1,301 recycled water connections. Phase II is currently in progress and focuses on converting 4,851 commercial, multi-family residential, and fire protection meters from AMR to AMI. The proposed final phase will complete all of the District's remaining conversions – approximately 45,500 AMI meters.

Using AMI, the District will be able to increase water use efficiency and conservation through the availability of near real-time data on water usage and daily water needs. Implementing full rollout of the AMI conversion project will assist the District in proactively identifying leaks, assist operations through demand-side time-of-use management, reduce real system losses, and reduce greenhouse gas emissions by allowing meter data to be acquired in the office as opposed to driving around the service area to read meters.

The District is requesting $1.5 million in funding and is providing a significant match of $6.7 million.

For these reasons, we strongly support the District's U.S. Bureau of Reclamation Water Smart Water and Energy Efficiency Grant application.

If you have any further questions, please feel free to contact me at 617-233-8996 or tom@imagineh2o.org.

Sincerely,

Tom Ferguson

Tom Ferguson
VP Programming
Imagine H2O

13 OFFICIAL RESOLUTION

A copy of the official resolution to be adopted by the District Board of Directors on March 21, 2019 is enclosed. The executed resolution will be submitted to Reclamation under separate cover no later than April 19, 2019. The proposed project is included in the Capital Improvement Program for the District, and the District will work with Reclamation to meet established deadlines for entering into a cooperative agreement. Final approval from the District Board of Directors would be required prior to proceeding with the project.

****DRAFT****

RESOLUTION NO. 2019-

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE MOULTON NIGUEL WATER DISTRICT AUTHORIZING THE GENERAL MANAGER, OR DESIGNEE, TO APPLY FOR, RECEIVE, AND ENTER INTO A COOPERATIVE AGREEMENT, AND ADMINISTER A GRANT FOR THE 2019 BUREAU OF RECLAMATION WATER AND ENERGY EFFICIENCY GRANT.

BE IT RESOLVED, by the Moulton Niguel Water District Board of Directors ("Board") that the District General Manager or his/her designee is hereby authorized and directed to sign and file, for and on behalf of the Moulton Niguel Water District ("District"), a Water Smart Water and Energy Efficiency Grant Application for a grant from the U.S. Bureau of Reclamation in the amount not to exceed $1,500,000; and

BE IT RESOLVED, the District General Manager, or his/her designee, is hereby authorized to acknowledge and approve of the application and the information submitted for consideration, and is further authorized to certify that the District has and will provide the amount of funding and/or in-kind contributions specified in the funding plan; and

BE IT RESOLVED, that the Board hereby agrees and further does authorize the aforementioned representative or his/her designee to certify that the District has and will comply with all statutory and regulatory requirements related to any grant funds, and

BE IT FURTHER RESOLVED, that the General Manager or his/her designee is hereby authorized to negotiate and execute a grant and any amendments or change order thereto on behalf of the District received and will work with Reclamation to meet established deadlines for entering into a cooperative agreement.

ADOPTED, SIGNED and **APPROVED** this 21st day of March, 2019.

MOULTON NIGUEL WATER DISTRICT

_____
President/Vice President
MOULTON NIGUEL WATER DISTRICT
and the Board of Directors thereof

_____
Secretary/Assistant Secretary
MOULTON NIGUEL WATER DISTRICT
and the Board of Directors thereof

I, PAIGE GULCK, Secretary of the Board of Directors of the MOULTON NIGUEL WATER DISTRICT, do hereby certify that the foregoing Resolution was duly adopted by the Board of Directors of said District at a regular meeting of said Board held on the 21st day of March, 2019 that it was so adopted by the following vote:

AYES:

NOES:

ABSTAIN:

ABSENT:

_____
Paige Gulck, Secretary
MOULTON NIGUEL WATER DISTRICT
and of the Board of Directors thereof

RESOLUTION NO. 19-09

A RESOLUTION OF THE BOARD OF DIRECTORS OF MOULTON NIGUEL WATER DISTRICT AUTHORIZING THE GENERAL MANAGER, OR DESIGNEE, TO APPLY FOR, RECEIVE, AND ENTER INTO A COOPERATIVE AGREEMENT, AND ADMINISTER A GRANT FOR THE 2019 BUREAU OF RECLAMATION WATER AND ENERGY EFFICIENCY GRANT

BE IT RESOLVED, by the Moulton Niguel Water District ("District) Board of Directors ("Board") that the District General Manager or his/her designee is hereby authorized and directed to sign and file, for and on behalf of the District , a Water Smart Water and Energy Efficiency Grant Application ("Application") for a grant from the U.S. Bureau of Reclamation ("Reclamation") in the amount not to exceed $1,500,000; and

BE IT RESOLVED, the District General Manager, or his/her designee, is hereby authorized to acknowledge and approve of the Application and the information submitted for consideration, and is further authorized to certify that the District has and will provide the amount of funding and/or in-kind contributions specified in the funding plan; and

BE IT RESOLVED, that the Board hereby agrees and further does authorize the General Manager, or his/her designee, to certify that the District has and will comply with all statutory and regulatory requirements related to any grant funds, and

BE IT FURTHER RESOLVED, that the General Manager, or his/her designee, is hereby authorized to negotiate and execute a grant and any amendments or change orders thereto on behalf of the District and will work with Reclamation to meet established deadlines for entering into a cooperative agreement and to comply with any and all other Reclamation requirements .

ADOPTED, SIGNED and **APPROVED** this 21st day of March, 2019.

MOULTON NIGUEL WATER DISTRICT

President/Vice President
MOULTON NIGUEL WATER DISTRICT
and the Board of Directors thereof

Secretary/Assistant Secretary
MOULTON NIGUEL WATER DISTRICT
and the Board of Directors thereof

STATE OF CALIFORNIA)
) ss.
COUNTY OF ORANGE)

I, PAIGE GULCK, Secretary of the Board of Directors of the MOULTON NIGUEL WATER DISTRICT, do hereby certify that the foregoing Resolution was duly adopted by the Board of Directors of said District at a regular meeting of said Board held on the 21st day of March, 2019 that it was so adopted by the following vote:

AYES: CAVE, FIORE, FROELICH, JENNINGS, KURTZ, MOORHEAD, PROBOLSKY

NOES:

ABSTAIN:

ABSENT:

Paige Gulck, Secretary
MOULTON NIGUEL WATER DISTRICT
and of the Board of Directors thereof

STATE OF CALIFORNIA)
) ss.
COUNTY OF ORANGE)

I, PAIGE GULCK, Secretary of the Board of Directors of the MOULTON NIGUEL WATER DISTRICT, do hereby certify that the foregoing is a full, true, and correct copy of Resolution No. 19-09 of said Board and that the same has not been amended or repealed.

Dated this 22nd day of March, 2019.

Paige Gulck
Secretary
MOULTON NIGUEL WATER DISTRICT
and of the Board of Directors thereof

(Seal)