MOULTON NIGUEL WATER DISTRICT

ADVANCED METER INFRASTRUCTURE IMPLEMENTATION PROGRAM PHASE I

WaterSMART: Water and Energy Efficiency Grants for FY 2015

FOA: R15AS00002

January 23, 2015

Moulton Niguel Water
Leading the Way in Service

Proposal Submitted to: Bureau of Reclamation
Financial Assistance Management Branch
Attn: Mr. Shaun Wilken
Mail Code: 84-27852
P.O. Box 25007
Denver, CO 80225

Applicant Information: Moulton Niguel Water District
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3 TITLE PAGE

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4 TABLE OF CONTENTS, LIST OF TABLES, AND LIST OF FIGURES

List of Tables

List of Figures

Moulton Niguel Water District Advanced Meter Infrastructure Implementation Program Phase I: Technical Proposal

5 EXECUTIVE SUMMARY

Submittal Date: January 23, 2015

Applicant: Moulton Niguel Water District
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Moulton Niguel Water District (MNWD, the District), located in the County of Orange in the State of California, is submitting this application on January 23, 2015, to be considered for the Bureau of Reclamation (Reclamation) WaterSMART: Water and Energy Efficiency Grants for FY 2015 Funding Opportunity No. R15AS00002. The District is applying under Federal Funding Group I for the amount of $300,000.

5.1 PROJECT SUMMARY

The District strives to promote water sustainability by increasing water use efficiency and conservation efforts. The purpose of this request is to showcase and test advanced meter infrastructure (AMI) with supporting software, public outreach, and education for a subset of customers with some of the highest water consumption rates within the District service area. The ultimate goal is to reduce real system losses and increase water use efficiency and conservation through the availability of near real-time data on water usage and daily water needs. The current recycled water program has required the purchase of up to 250 acre feet per year (AFY) of make-up potable imported water in previous years, due to increased spikes in peak-hour demand that exceeded the available quantities of recycled water. The District is completely dependent on imported water for meeting potable water demands, and conservation and water use efficiency are key factors for improving water sustainability within the region. Phase I of this AMI Implementation Program will expand upon the District's efforts to promote water use efficiency by establishing a remote reading and communications network and implementing a meter data management system and comprehensive customer portal to complement the AMI. Implementing AMI would assist the District in 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. With the current drought in California and a potential supply allocation from the Metropolitan Water District of Southern California (MWD), the District's regional wholesaler of imported water, it is a critical time to showcase the cutting edge methods for demand side management to meet both near and long-term reliability needs statewide, regionally, and locally. The MNWD AMI Implementation Program Phase I would allow the District to be the first agency with a Water Budget Based Rate Structure to test a full distribution system with AMI to provide both fine grain usage with weather data and corresponding actual daily water

needs to the customers. With the availability of actual daily water data, the District would be in a unique position to monitor the effectiveness of AMI implementation through a before and after analysis of the data. This project would also serve as a pilot for Phase II of the AMI Implementation Program, which would expand the program to include all 54,899 potable and recycled water accounts. It is the goal of the District to fully test and fine-tune the AMI system to maximize the benefits to both the District and its customers prior to implementing the technology District-wide.

5.1.1 Project Timeline

The AMI Implementation Program Phase I is scheduled to be completed within two years from the award date.

Table 5-1: Proposed Project Timeline

Project Task	Start	Finish	Duration
Project Establishment	7/1/2015	8/1/2015	1 month
Request for Proposal & Procurement Process	8/1/2015	10/1/2015	2 months
AMI Installation	10/1/2015	4/1/2016	6 months
Information Technology Infrastructure Implementation	10/1/2015	4/1/2016	6 months
Software Training	4/1/2016	5/1/2015	1 months
Customer Outreach	5/1/2016	6/30/2017	14 months

5.1.2 Project Location

The project is located within the District service area and is not located on a federal facility.

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, and Dana Point. The primary focus of the District is ensuring its ratepayers have a reliable, sustainable, and economical water supply for the future. The following Figure 6-1 denotes the District service area, which serves as the boundaries for the proposed AMI project.

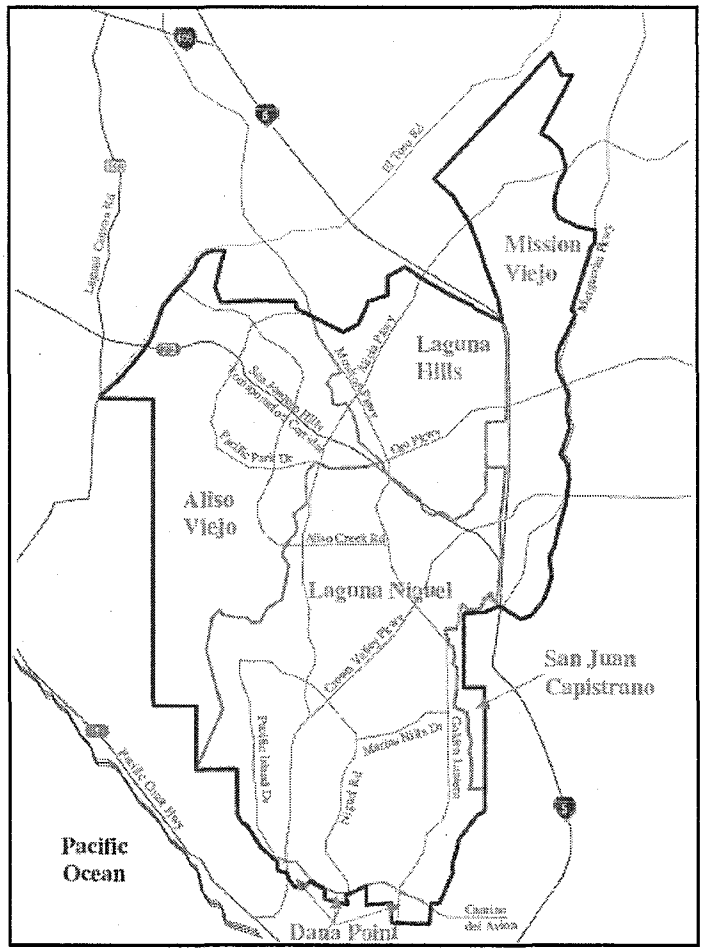

Figure 6-1: Geographic Location of Project Area

All of the potable water supply for District is imported from MWD via its wholesale supplier, the Municipal Water District of Orange County (MWDOC). The imported water is treated at the Diemer Filtration Plant and delivered to District through two dedicated pipelines. The District also recycles treated wastewater that would otherwise be sent to the ocean, and currently, 23 percent of the District's overall demand is met by its recycled water. The remaining potable water demand is met with imported water. Of the imported water, approximately 43 percent has been from the State Water Project and 57 percent has been from the Colorado River Aqueduct in the last few years. 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.

With the severe drought conditions in California, and especially in Southern California, local and reliable sources of water are of paramount importance, and it is the goal of the District to implement as many water use efficiency tools and conservation practices as possible. The current drought, which began in 2011, is one of the worst on record. In response, MWD revised its Water Supply Allocation Plan (2014 WSAP) to better meet the needs of its member agencies in this historic drought. Each agency receives a percentage of its historical supplies with credits for growth, past conservation efforts, and rate structure. If an agency goes over their allocation, they are required to pay substantial penalties at approximately $1,500 per AF for going between 100 percent to 115 percent of the allocation and approximately $3,000 per AF for going over 115 percent of its allocation. Based on the allocation formula, the more efficient usage is within the District, the more reliable the District will be in times of drought. In addition, Reclamation conducted a supply gap study on the Colorado River, which foretells of an ever-increasing frequency in supply shortages without increased conservation and water use efficiency or alternative water supplies. Below is the referenced supply and demand projection.

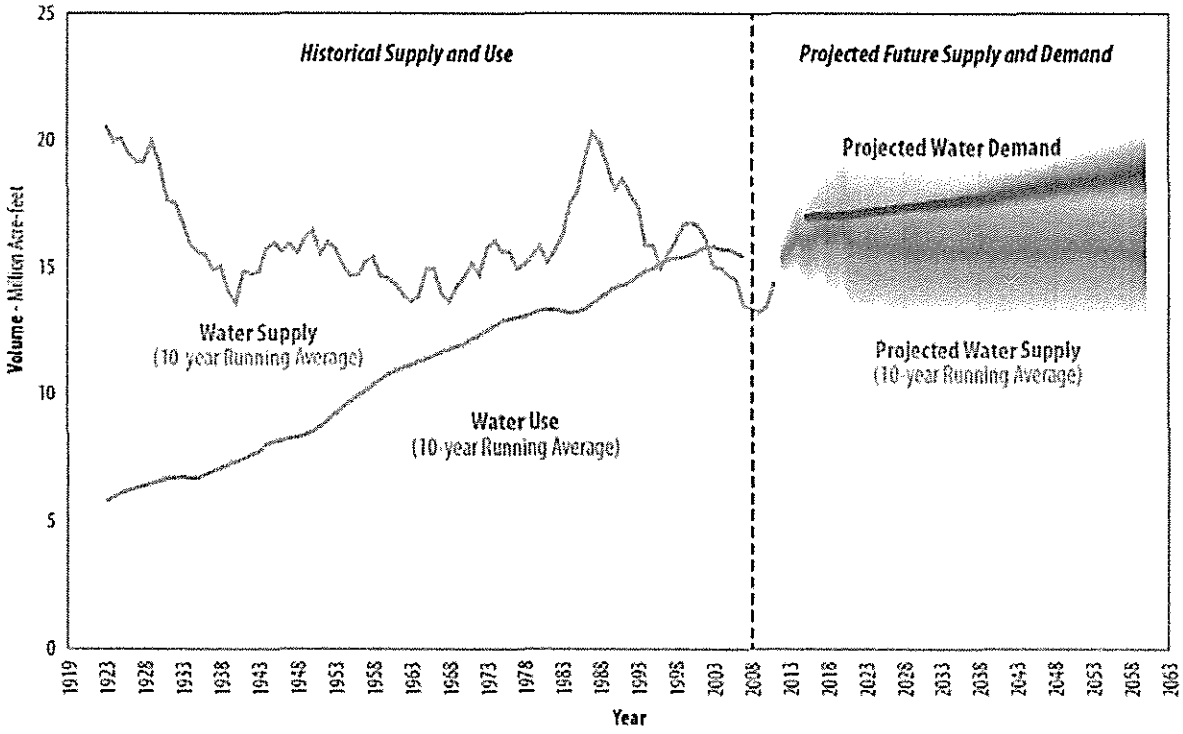

Figure 6-2: Colorado River Supply Gap Projection

In order to increase water supply reliability and employ greater water use efficiency practices, the District has proactively implemented water reliability strategies and has made significant investments in support of these initiatives over the years. The District has expanded its planning efforts to meet present and future water reliability challenges and has participated in successful local, regional, and statewide partnerships and projects such as the Upper Chiquita Reservoir and the Baker Water Treatment Plant to promote greater water reliability and increased water supply.

In an effort to go beyond water supply projects to increase water reliability, the District utilizes a water budget based rate structure (WBBRS) to effectively manage demand. A WBBRS is a form of an inclining block rate structure where a budget is allocated amongst the first blocks or tiers and is based on the estimated, efficient water needs of individual customers. The WBBRS creates a pricing incentive to stay within the individually determined efficient water budget with rates steadily increasing into the upper tiers. The District's WBBRS has five tiers. The first two tiers fall into the basic use allocation as defined by the California Water Code Section 372, while the remaining three tiers fall in the conservation charge category.

The WBBRS is applied to all accounts within the District. The District's potable accounts are divided into three main categories: residential, commercial, and irrigation. Residential customers have their basic use allocation divided into two tiers with the first tier width set at the indoor water budget and the second tier width set at the outdoor water budget. These two tiers comprise the basic use allocation for residential customers. Figure 6-3, below, shows how the price per unit consumed increases dramatically as water use increases.

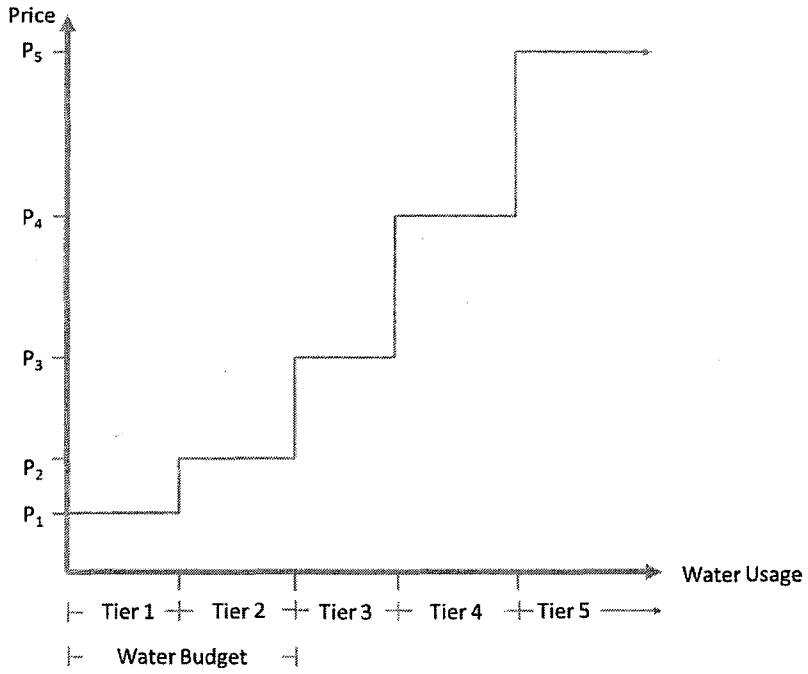

Figure 6-3: Example of Inclining Block Rates

Note: The price per unit of water increases as the customer moves to the right bumping up into higher tiers. Each customer would have Tier 1 and Tier 2 individually determined by their indoor and outdoor water budgets. Tier widths for tiers 3, 4 and 5 are then based on the total water budget.

The indoor water budget, or Tier 1, is determined by allotting 65 gallons per capita per day (gpcd) and multiplying this value by the number of days in the billing cycle and the number of people in the household. Customers are assumed to have four people in the household for single family residential and two to three people for multi-family housing. If a customer has a different household size, they can file a variance to adjust the number of people used to calculate their indoor water budget.

The outdoor water budget, or Tier 2, is determined from irrigation area, crop factor and local climate condition as measured by evapotranspiration by microclimate. The District used a combination of geospatial analysis and in-

person site visits to estimate the irrigable area for each meter. The crop coefficient used is based on turf grass, which is currently the most common landscape feature in the District service area.

Most commercial customers have two metered connections, an irrigation meter and a commercial meter. To determine the water budget for commercial meters, the District uses a three year average of each month to determine the total water budget. The first 20 hundred cubic feet (ccf) of allocation for a commercial meter is in Tier 1. The remainder of the commercial meter's water budget is in Tier 2. All irrigation accounts have their Tier 1 and Tier 2 water budgets based on the outdoor allocation equation with the first 20 units of the outdoor allocation allotted to Tier 1.

For all customers, usage above the basic use allocation 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.

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 2014 was 26,462 acre-feet (77 percent) and recycled water demand was 7,787 acre-feet (23 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.

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 2010 Urban Water Management Plan for the District are shown in the following table.

Table 6-1: Service Area Population Projections (2015 to 2035)

	2015	2020	2025	2030	2035
Service Area Population [1]	174,342	176,616	178,891	181,165	183,439

[1] Center for Demographic Research, California State University, Fullerton 2010

6.1.2.2 Land Use

The four major land uses in the District service are 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. The highest concentration of commercial use and schools are in Mission Viejo.

6.1.3 Water Use by Customer Type

There are currently 54,899 potable and recycled customer connections to the District water distribution system, which is comprised of 700 miles of potable water pipelines and 148 miles of recycled water pipelines. 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 and Table 6-3 provide the number of water service customers by water use sector and a summary of past, current, and projected water use by customer class in five-year increments from 2005 to 2035.

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

Fiscal Year Ending	Number of Accounts by Water Use Sector				
	Single Family	Multi-Family	CII	Landscape	Total Accounts
2005	46,535	2,048	2,586	2,533	53,702
2010	47,038	2,042	2,744	2,618	54,442
2015	47,175	2,048	2,752	2,626	54,601
2020	47,520	2,063	2,772	2,645	55,000
2025	47,866	2,078	2,792	2,664	55,400
2030	48,211	2,093	2,812	2,683	55,799
2035	48,384	2,100	2,823	2,693	56,000

Table 6-3: Past, Current and Projected Water Demand by Water Use Sector [1]

Fiscal Year Ending	Water Demand by Water Use Sectors (AFY)				
	Single Family	Multi-Family	CII	Landscape	Total Demand
2005	19,648	2,838	3,020	10,901	36,407
2010	17,589	2,600	2,678	10,980	33,846
2015	21,100	3,118	3,212	13,170	40,600
2020	19,748	2,919	3,006	12,327	38,000
2025	20,008	2,957	3,046	12,489	38,500
2030	20,268	2,995	3,085	12,652	39,000
2035	20,527	3,034	3,125	12,814	39,500

[1] Potable and recycled uses.

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 does not sell water to other agencies except in 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 ten (10) percent of the potable demand is non-revenue water. Approximately six (6) percent of the recycled demand is non-revenue water, and implementation of the AMI program would help reduce the apparent losses of both potable and recycled water. Table 6-4 depicts the water losses in acre-feet per year.

Table 6-4: Additional Water Uses and Losses (AFY)

Water Use	Fiscal Year Ending						
	2005	2010	2015	2020	2025	2030	2035
Recycled Water System Losses	441	444	533	499	505	511	518
Potable Water Unaccounted-for System Losses	2,548	2,369	2,842	2,660	2,695	2,730	2,765
Total	2,989	2,813	3,375	3,159	3,200	3,242	3,283

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 would serve to modernize the District's water management facilities and equipment to increase energy efficiency by installing AMI technology. 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 recently collaborated with Reclamation 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. The District is looking forward to this opportunity to continue to build upon this mutually beneficial relationship through this WaterSMART grant.

7 TECHNICAL PROJECT DESCRIPTION

The MNWD AMI Implementation Program will expand upon the District's efforts to promote water use efficiency by establishing a remote reading and communications network and implementing a meter data management system to complement the 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. The AMI Implementation Program would assist the District in identifying and addressing service leaks preemptively instead of having to wait until the line breaks and leaks are visibly noticeable and reported by a customer or other passerby.

The current recycled water program has required the purchase of up to 250 AFY of make-up potable imported water in previous years, due to increased spikes in peak-hour demand that exceeded the available quantities of recycled water. Additionally, irrigation customers (combined potable and recycled water) comprise over a third of the District's water demand, and 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 would 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. This project would also serve as a pilot for Phase II of the AMI Implementation Program, which would expand the program to include all 53,600 potable water connections. It is the goal of the District to fully test and fine-tune the AMI system to maximize the benefits to both the District and its customers prior to implementing the technology District-wide.

7.1 CITIZENS' ADVISORY COMMITTEE

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. A comprehensive customer outreach and education program will be developed, and the CAC will provide invaluable feedback on the customer portal and District outreach activities associated with the implementation of AMI and the launch of the customer portal. The CAC will also play a significant role in the evaluation of customer portal options by providing input on useful features and key information of interest to both residential and commercial customers.

7.2 DETERMINATION OF TARGET AREAS FOR AMI INSTALLATION AND CUSTOMER PORTAL INTEGRATION

The District has already identified the potable irrigation and recycled water connections for installation of AMI as part of Phase I of the MNWD AMI Implementation Program. AMI will be installed 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 would allow the District to perform a system-wide analysis on the benefits and effects of AMI on optimizing water consumption and minimizing water losses. There are also approximately 1,800 existing residential connections with AMI installed; however, there is no customer portal to complement the AMI system at present. The customer portal would provide reliable, secure, and real time access to individual water usage data and will be made available for all connections with AMI.

7.3 Evaluation of Optimal AMI Technology Platform

The District has begun evaluating AMI technologies, customer portal providers, and utility data management systems. Prior to installation and implementation of this program, the District will complete a thorough evaluation of all available technologies and undergo a proposal and procurement process to select the most beneficial and cost-effective solution with the greatest promise for long-term success. Currently, the District has evaluated several AMI technologies available through 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 have been explored. These are non-exhaustive lists of potential vendors, and a complete and thorough evaluation of the most optimal AMI technologies and software systems will be conducted. The District has experience with manual, automatic meter reading (AMR), and AMI meter reading technologies and practices and will utilize feedback from experiences and lessons learned to evaluate these options to determine the best long-term solution for the District. Additionally, the District will evaluate technologies for the purchase of acoustic sensors to aid in leak detection to round out the water use efficiency management program. Lastly, the District will evaluate the complete package, including installation, training, and ongoing system maintenance, to ensure the best fit and value for the District.

7.4 Design, Engineering, Budgeting, and Scheduling

Upon selection of an AMI technology platform, a detailed and phased plan and schedule for installation and implementation will be created. The District has prior experience with the installation of AMI for the approximately 1,800 residential connections, and lessons learned from this endeavor will be utilized and integrated into the plan for installing and implementing AMI for the potable irrigation and recycled water connections. A program for water use efficiency management using the AMI technology platform and acoustic leak detection devices will also be integrated into the District program of work.

7.5 Procurement and Implementation of Technologies

The District will utilize the established procurement protocols and processes, in addition to any procurement requirements of Reclamation, to purchase the hardware and software associated with the MNWD AMI Implementation Program Phase I. Following procurement, the associated AMI technologies will be implemented and installed according to the phased schedule.

7.6 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. Hands-on demonstration opportunities will be provided, and the capabilities of the customer portal will be thoroughly reviewed during these outreach events. Additionally, the District will pilot public outreach and engagement endeavors through the 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.

7.7 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 will be integrated into the program. This water use efficiency management system will include 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.

7.8 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 and 9 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. Should the benefits of AMI be realized within the parameters of Phase I, the program will eventually be expanded to include the entire distribution system for the District.

8 EVALUATION CRITERIA

8.1 EVALUATION CRITERION A: WATER CONSERVATION

The annual water demand for the District was 34,249 acre feet (AF) for FY 2014, and the average annual water demand for the last five years was 32,610 AF. Approximately six (6) percent of the water in the recycled water system is non-revenue water, and in addition to the non-revenue water, nearly 250 AF of potable makeup water had to be purchased from MWD due to demands that exceeded the available recycled water supply. Implementation of the AMI program could aid in the reduction of the percentage of non-revenue water and reduce the need to purchase potable makeup water. Optimization of customer use of recycled water could also potentially allow for the inclusion of additional recycled water customers without risking the need to purchase potable makeup water due to excessive system demands.

The District currently has 1,800 single family residential connections with AMI; however, there is no customer portal available that provides regular usage information to the individual customers on a more frequent basis than the monthly bill. The lack of an interactive customer portal and the inability to conduct a system-wide assessment of the benefits and capabilities of AMI has presented challenges to the District in terms of expanding the AMI program at the District. Phase I of this AMI Implementation program would allow the District to take the first step towards addressing these issues by installing AMI for all recycled water connections (currently 1,301 connections), all potable irrigation accounts (currently 1,368 connections) and creating a customer portal for all connections with AMI, including the 1,800 existing potable single family residential connections currently with AMI.

This would provide the District with the ability to conduct a system-wide assessment by analyzing the recycled water system and comparing the production versus consumption. Implementing AMI would 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. The current recycled water program has consistently required the purchase of up to 250 AF of water in previous years, due to greater demand that exceeded the available quantities of recycled water. The recycled water and potable irrigation accounts represent 13,800 AF of water demand (8,300 AFY of recycled water demand; 4,900 AFY of potable water), which is approximately 30 percent of the entire water demand.

This project would not only promote water use efficiency, it would serve as a pilot for Phase II of the AMI Implementation Program, which would expand the program to include all 53,600 potable water connections, in addition to the 1,301 recycled water connections. It is the goal of the District to fully test and fine-tune the AMI system to maximize the benefits to both the District and its customers prior to implementing the technology system-wide. 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 ten (10) percent of the annual potable water demand. Additionally, it is estimated that recycled water losses account for approximately six (6) percent of the recycled 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 the customer portal.

MNWD is one of two agencies in the State of California to receive an Alternate Plan Approval from the State Water Resources Control Board for the emergency regulatory action effective July 28, 2014. The emergency regulatory action added three sections and a new article in Title 23 of the California Code of Regulations pertaining to drought emergency water conservation, and a copy of the letter approving the District's alternate conservation plan is attached. At a recent drought workshop hosted by the State Water Resources Control Board, the importance of data

and the capability of AMI to serve as a dynamic tool for tracking water losses and behavioral changes was widely emphasized. The MNWD AMI Implementation Program would serve to address these data needs and increase water use efficiency amongst the customer classes identified in the project.

Water budgets are used as a demand side management tool, and a customer portal would aid customers in improving water usage patterns while being able to track regular usage more regularly than a monthly or bimonthly bill. The customer portal could be updated with daily evapotranspiration data and water needs, and the District currently receives evapotranspiration data by microzone. There are a total of 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.

Additionally, the Water Conservation Act of 2009, also known as SBx7-7, requires all water suppliers to increase water use efficiency, and the California Governor Brown declared a drought State of Emergency in January 2014 and called for 20 percent conservation. The District is currently on track to meet the water use efficiency requirements of SBx7-7, and the Colorado Basin Plan also calls for urban conservation. 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.

8.1.1 Subcriterion A.1: Quantifiable Water Savings

Empirical data demonstrates that customer portals help improve water use efficiency and reduce consumption by five percent. Current water losses are approximately ten (10) percent of the potable water demand and six (6) percent of the recycled water demand. The total water demand for the 1,301 recycled water, 1,368 potable irrigation, and approximately 1,800 potable residential connections is nearly 14,000 AFY. Approximately 1,060 AFY of that total demand is unaccounted for. Other water agencies that have installed AMI have been able to reduce water losses down to nearly one percent. Following this trend, over 1,650 AF of water can be conserved by installing AMI, in addition to any water conserved by improving water use efficiency and water consumption habits of customers.

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. Because the entire recycled water system will be equipped with AMI, the production values will be compared to the consumption from the individual meters equipped with AMI at each recycled water connection. Additionally, all usage data for all meters equipped with AMI (including the residential, potable irrigation, and recycled water customers) will be compared to historical values to determine water savings due to increased water use efficiency.

8.1.2 Subcriterion A.2: Percentage of Total Supply

$$Percentage\ of\ Total\ Water\ Supply\ Conserved = \frac{Estimated\ Amount\ of\ Water\ Conserved\ (AF)}{Average\ Annual\ Water\ Supply\ (AF)}$$

$$5.1\ \% = \frac{955\ [Water\ Loss\ Reduction] + 697\ [Reduction\ in\ Consumption](AF)}{34{,}249\ [Average\ Annual\ Water\ Supply\ for\ Entire\ District]\ (AF)}$$

$$11.9\ \% = \frac{955\ [Water\ Loss\ Reduction] + 697\ [Reduction\ in\ Consumption](AF)}{13{,}200\ [Average\ Annual\ Water\ Supply\ for\ Given\ Customer\ Base](AF)}$$

AMI would assist the District with reducing non-revenue water losses and provide customers with an interactive portal for tracking real-time usage of water.

8.2 Evaluation Criterion B: Energy-Water Nexus

8.2.1 Subcriterion B.1: Implementing Renewable Energy Projects Related to Water Management and Delivery

This is not applicable to the project.

8.2.2 Subcriterion B.2: Energy-Water Nexus: Increasing Energy Efficiency in Water Management

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. In addition, the distribution of potable water throughout the District's system requires approximately 149 kWh per acre foot of potable water.

Approximately 4,900 AFY was imported for potable irrigation for FY 2014, and approximately 11,907,000 kWh were used to import the water. An additional 730,100 kWh was used to distribute the water within the service area. A reduction in consumption due to increased water use efficiency and decreased water losses could result in a savings of approximately 1,769,194 kWh on the potable water system.

Optimization of water use efficiency for the recycled water system would eliminate the need to purchase up to 250 AF of potable make-up water, which would result in a savings of 644,750 kWh for importing and distributing the potable make-up water alone. Additionally, reduction in recycled water losses would result in greater savings. Approximately 150 kWh are required for production of each acre foot of recycled water, and 750 kWh per acre foot are required for distributing the water throughout the service area. A reduction in consumption due to decreased water losses would result in a similar savings of approximately 776,880 kWh of energy for a total savings of 1,421,630 kWh in the recycled water system.

For the residential customers, 1,800 connections correlates to approximately 732 AF of water. Approximately 1,778,760 kWh were used to import the water, and approximately 109,068 kWh were used to distribute the water to the customers within the District. Increased water use efficiency and decreased water losses would lead to a reduction in consumption, which could translate to a potential savings of 249,026 kWh. Combining all of the estimated energy savings from the potable and recycled water irrigation connections and the approximately 1,800 residential connections, the total energy savings is approximately 3,455,120 kWh.

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: Benefits to Endangered Species

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 would 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.

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.

8.4 Evaluation Criterion D: Water Marketing

Increasing water use efficiency in the potable water system would result in less water imported from the State Water Project and the Colorado River Aqueduct. In regards to the recycled water system, however, increasing water use efficiency would first and foremost reduce and ultimately eliminate the need to purchase imported potable make-up water and ideally result in surplus recycled water that could be marketed to new recycled water customers. Approximately 220 AF of recycled water could be made available as a result of implementing AMI and increased water use efficiency. This water could be marketed to potable irrigation customers and other potential recycled water customers. There are currently 1,368 potable irrigation connections with an average demand of 4,900 AFY. This quantity could be reduced as recycled water is conserved and marketed to existing and new potable irrigation customers. Any quantity of potable water conserved could also be marketed to new potable water customers both within the District service area and other areas relying on supplies from the State Water Project or the Colorado River Aqueduct. This potable water conservation ultimately would increase the reliability and available supply of both sources of water for the entire region.

8.5 Evaluation Criterion E: Other Contributions to Water Supply Sustainability

8.5.1 Subcriterion E.1: Addressing Adaptation Strategies in a WaterSMART Basin Study

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 both potable and recycled water. Greater water use efficiency would reduce the stress on the system and its limited water supply. Being heavily dependent on the Colorado River, the District is very interested in working together with Reclamation to identify positive solutions such as this project and to implement them to meet the water supply challenges that lie ahead.

8.5.2 Subcriterion E.2: Expediting Future On-Farm Irrigation Improvements.

Not applicable.

8.5.3 Subcriterion E.3: Building Drought Resiliency

California is experiencing 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. Improvements in water use efficiency will free up additional supply to help address shortages elsewhere. 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. All of these factors are critical for ensuring water supply sustainability in the future. The proposed project would cost $26.80 per acre foot for a twenty year lifetime. This is a very small price to pay, given the increasing costs of imported water and the severe water supply challenges that Southern California constantly faces.

The proposed project will most certainly prevent the loss of permanent crops and minimize economic losses from drought conditions. The project will improve the reliability of water supplies from both the State Water Project and the Colorado River Aqueduct, which would ultimately benefit people, agriculture, and the environment associated with both of these water supply sources. The District is committed to the collaboration and maintenance of regional and local partnerships to enhance water supply reliability by promoting a regional common goal and adding flexibility to water portfolios and distribution systems. The MNWD AMI Implementation Program would provide a giant step forward in contributing towards this goal. This project, if funded, could result in an additional availability of approximately 1,550 AF of water that would otherwise be lost and unavailable to the District and the region.

Significant contributions to the sustainability of local water supplies will be made by targeting some of the customer classes with the greatest water use and impact on water supplies, such as the potable irrigation accounts. Many water agencies within the Southern California area have escalated to Stage II Water Shortage Conditions, which include mandatory and voluntary restrictions on water use, and the implementation of AMI technology and the customer portal would allow both the District and the users to identify areas and times of both increases and peaks in water consumption on a real-time basis. The MNWD AMI Implementation Program will help the District respond to the needs of the State and the requirements outlined in SBx7-7 by reducing water consumption despite increasing populations and economic growth.

8.5.4 Subcriterion E.4: Other Water Supply Sustainability Benefits

The customer portal will serve as a dynamic tool to educate water users within the District service area about the importance of water conservation and water use efficiency and emphasize the need to take a proactive role in their water use management by taking advantage of the capabilities of the system and technologies provided by the proposed MNWD AMI Implementation Program. Currently, a very small pilot program of 1,800 residential connections with AMI is in operation; however, this pilot program did not include a customer portal to convey the real-time usage information directly to the water users associated with these accounts. The MNWD AMI Implementation Program includes provisions for providing a customer portal for these accounts, in addition to the potable irrigation and recycled water customers. This would provide the District with extremely useful data on the direct improvements

to water conservation and water user efficiency once the customer portal has been launched. 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.

8.6 Evaluation Criterion F: Implementation and Results

8.6.1 Evaluation Criterion F.1: Project Planning

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, the District is proposing to add the MNWD AMI Implementation Program Phase I to the 2015-16 Capital Improvement Program and funding of this opportunity by Reclamation would increase the feasibility of completing this project.

8.6.2 Evaluation Criterion F.2: Readiness to Proceed

Upon award of this project, the District is prepared to begin work on the project. Below is the proposed schedule for the project. The District has made preliminary preparations for this project by meeting with vendors to identify the capabilities and needs associated with various AMI technologies and currently available customer portals. The District will also build upon its experience with the AMI technology currently in use with the pilot program of approximately 1,800 residential connections to ensure long-term success of the AMI technology selected for this proposed project.

Table 8-1: Proposed Project Timeline

Project Task	Start	Finish	Duration
Project Establishment	7/1/2015	8/1/2015	1 month
Request for Proposal & Procurement Process	8/1/2015	10/1/2015	2 months
AMI Installation	10/1/2015	4/1/2016	6 months
Information Technology Infrastructure Implementation	10/1/2015	4/1/2016	6 months
Software Training	4/1/2016	5/1/2015	1 months
Customer Outreach	5/1/2016	6/30/2017	14 months

8.6.3 Evaluation Criterion F.3: 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 and quantify the recycled water produced each month.

8.6.4 Evaluation Criterion F.4: Reasonableness of Costs

The industry accepted life-expectancy of the project components is 20 years. This life-expectancy is determined by both AMI industry standards and is also supported by "Go with the Flow of Advanced Meter Technology" in the October 2010 issue of the Water Technology Journal. The estimated total project cost is $830,122.39 for a savings of approximately 1,550 AFY.

$$Total\ Project\ Cost\ = \frac{\$830{,}122.39}{1{,}550\ (AF) \times 20\ years}$$

$$= \$26.80\ Per\ AFY\ of\ Water\ Conserved\ or\ Better\ Managed\ Over\ an\ Improvement\ Life\ of\ 20\ Years$$

There is a great return on investment opportunity in this project, given the increasing cost of imported water, and there are many invaluable and unquantifiable benefits associated with increasing water supply sustainability and water use efficiency.

8.7 Evaluation Criterion G: Additional Non-Federal Funding

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

$$\frac{\$530{,}122.39}{\$830{,}122.39} = 63.9\%$$

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

Table 8-2: Funding Sources and Percentages of Total Project Cost

Funding Sources	Percent of Total Project Cost	Total Cost by Source
Recipient Funding	64%	$530,122.39
Reclamation Funding	36%	$300,000.00
Other Federal Funding	0%	$0.00
Totals	100%	$830,122.39

8.8 Evaluation Criterion H: Connection to Reclamation Activities

The proposed project is associated with the Colorado River Basin, and the District receives water from MWD, 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.

9 PERFORMANCE MEASURES FOR QUANTIFYING POST-PROJECT BENEFITS

The District is committed to excellence and improving the water use efficiency within the District service area. It is the goal of the District to fully evaluate the benefits and capabilities of the AMI technology by establishing a set of key performance measures to quantify the project benefits. These performance measures are preliminary and will be further evaluated and refined throughout the planning and implementation stages of the project. Some of these performance measures include:

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 and quantify the recycled water produced each month.

The District provides monthly data reports on water production and consumption, and a Water Loss Control Program is currently in place. The most recent water loss audit performed as part of the Water Loss Control Program was completed in December 2014. 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 is very interested in monitoring and analyzing the performance measures for this project as it will help identify what changes and improvements need to be made and validate the feasibility of expanding the AMI program throughout the entire service area to all customer classes.

The District has also begun to actively monitor and analyze energy efficiency throughout District operations, and further analyses will be performed after implementation of this project to determine any realized savings and benefits from the use of AMI technology.

Analytical software is included as part of this project proposal, and this software will assist the District in analyzing the data collected as part of this project. For example, some of the software programs currently under evaluation have 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.

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 involves the installation of radios on existing meters and the installation of base stations for data collection on District property. 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 and District property. 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.

12 Official Resolution

A copy of the official resolution adopted by the District Board of Directors is enclosed. The proposed project has been submitted for inclusion into 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.

RESOLUTION NO. 15-01

RESOLUTION OF THE BOARD OF DIRECTORS OF MOULTON NIGUEL WATER DISTRICT AUTHORIZING 2015 WATERSMART WATER AND ENERGY EFFICIENCY GRANT APPLICATION TO UNITED STATES BUREAU OF RECLAMATION AND AUTHORIZING THE GENERAL MANAGER TO DEVELOP A GRANT AGREEMENT FOR THE MOULTON NIGUEL WATER DISTRICT ADVANCED METER INFRASTRUCTURE IMPLEMENTATION PROGRAM PHASE I

WHEREAS, the Board of Directors of the Moulton Niguel Water District (MNWD), intends to authorize an application to the United States Bureau of Reclamation (USBR) to obtain a 2015 WaterSMART Water and Energy Efficiency Grant ("Grant"), and further to authorize MNWD to enter into an agreement to receive the Grant for the MNWD Advanced Meter Infrastructure Implementation Program Phase I ("Project"); and

WHEREAS, the Project is for the benefit of MNWD and its customers, and the Grant and the Project shall be carried out consistent with the obligations of MNWD and its policies and bylaws.

WHEREAS, the Project would accomplish the following:

- Water use efficiency goals programs, including customer education;
- Expansion of water loss control programs;
- Recycled water program benefits potable water usage.

NOW, THEREFORE, BE IT RESOLVED, the Board of Directors of Moulton Niguel Water District does hereby **RESOLVE, DETERMINE** and **ORDER** as follows:

Section 1. The foregoing recitals are incorporated in this Resolution.

Section 2. The General Manager of MNWD, or her designee, is hereby authorized and directed to prepare required data and to conduct any review and necessary investigation in connection with the Grant application, and to file the Grant application and execute a Grant agreement and any amendments thereto with the United States Bureau of Reclamation in connection with the Project.

Section 3. The General Manager of MNWD, or her designee, is hereby authorized and directed to establish related revenue and expenditure budgets for the AMI Program and for the grant funds contingent on receipt of Grant award.

Section 4. The General Manager of MNWD, or her designee, is hereby authorized and directed to abide by any other provisions required under the applicable USBR guidelines.

ADOPTED, SIGNED and **APPROVED** this 15th day of January, 2015.

President

MOULTON NIGUEL WATER DISTRICT
and of the Board of Directors thereof

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 resolution was duly adopted by the Board of Directors of said District at a regular meeting of said Board held on the 15th day of January, 2015 that it was so adopted by the following vote:

AYES: CAVE, COLTON, FIORE, FROELICH, KURTZ, LIZOTTE, 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. 15-01 of said Board and that the same has not been amended or repealed.

Dated this 20th day of January, 2015.

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

(Seal)

13 PROJECT BUDGET

13.1 FUNDING PLAN AND LETTERS OF COMMITMENT

The District will finance project costs not funded by Reclamation. The District has an AAA Fitch rating and AA+ 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 technologies, leak detection devices, hardware, software, and other associated components of the project. The District is committed to the project as proposed herein, and the District plans on budgeting funds for the MNWD AMI Implementation Program Phase I as part of the Capital Improvement Program budget for the next fiscal year.

There are no in-kind costs incurred before the anticipated project start that that the District seeks to include as project costs. 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 2015 funding request, there are no other pending funding requests. The following table outlines the proposed project funding sources.

Table 13-1: Summary of Non-Federal and Federal Funding Sources

Funding Sources	Funding Amount
Non-Federal Entities: Moulton Niguel Water District	$530,122.39
Non-Federal Subtotal	530,122.39
Other Federal Entities	$0.00
Other Federal Subtotal	$0.00
Requested Reclamation Funding	$300,000.00
Total Project Funding	$830,122.39

13.2 BUDGET PROPOSAL

A budget proposal is provided in the following tables. Table 5-1 identifies both District and WaterSMART grant funds required to implement the project, and Table 13-3 outlines the proposed budget by item.

Table 13-2: Project Funding Sources

Funding Sources	Percent of Total Project Cost	Total Cost by Source
Recipient Funding	64%	$530,122.39
Reclamation Funding	36%	$300,000.00
Other Federal Funding	0%	$0.00
Totals	100%	$830,122.39

Table 13-3: Proposed Project Budget

	Computation		Total Cost
	Units	Unit Cost	
Salaries and Wages			
Radio Install Labor	222	$24	$5,338.00
Fringe Benefits			
Overhead	222	$11	$2,348.72
Equipment			
Meter Radios	2,669	$130	$346,970.00
Fixedbase Towers	5	$33,000	$165,000.00
Materials and Supplies			
Sonic Leak Detection Equipment	2	$4,000	$8,000.00
Contractual			
AMI Software	1	$22,500	$22,500.00
AMI Software Configuration	1	$15,000	$15,000.00
Customer Portal	1	$60,000	$60,000.00
AMI Software Training	1	$7,000	$7,000.00
Operational Analytics	1	$50,000	$50,000.00
Operational Analytics Training	1	$7,500	$7,500.00
Fixedbase Tower Installation	5	$10,000	$50,000.00
Other			
Customer Outreach Program	1	$15,000	$15,000.00
Total Direct Costs			$754,656.72
Indirect Costs - 10% Contingency			$75,465.67
Total Project Costs			$830,122.39

13.3 Budget Narrative

Salaries and Wages
Salaries and wages are included for the installation of radios. The District is intending to purchase the radios for each Automatic Meter Reader on the potable and recycled water irrigation meters and install them with District labor.

Fringe Benefits
The District calculated its fringe rate on labor at 1.44, which corresponds to the benefits portion.

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

Equipment
Equipment comprises the largest portion of costs and includes the hardware necessary to update the current meter infrastructure to AMI technology. The District currently utilizes AMR with drive-by technology to read meters from trucks that drive by each potable and recycled water irrigation meter. The hardware necessary to upgrade to AMI includes the radios to install on each AMR meter and the collector towers to collect the readings from each radio. The District has performed a propagation study with two reputable AMI vendors. The cost figures were provided by estimates from vendors; however, the District will utilize a proposal and procurement process to identify the specific

AMI technologies to be utilized for this project. The District needs approximately 2,669 radios to install on the current AMR meters and a minimum of five (5) fixedbase towers to cover the entire service area.

Materials and Supplies
Leak detection is an important component of the District's efforts to install AMI. In support of these efforts, the District is budgeting for two sonic leak detection sensors to monitor specific target regions of interest as suggested by the data analytic software for leak detection in the recycled water system. The total cost budgeted for Materials and Supplies is $8,000.00 for two portable sonic leak detectors.

Contractual
The second largest component of the project costs is for contractual services which includes all of the software requirements for implementation and full realization of benefits of AMI. The District requires software from the meter manufacturer to compile the meter reading information into a usable format which is the AMI Software line item as well as a line item to set up the initial configuration. Also, in order to put the data to maximum benefit, the District is budgeting for a customer portal to provide water usage information at the most fine grain detail as possible. Also, the District will provide the daily weather data and customer landscape area to provide daily water needs so customers have a daily water usage target. In support of distribution system leak detection efforts and system optimization, the District is budgeting for a data analytics package to monitor all recycled water meter inputs and all outputs to on a high resolution monitor spatially where a potential leak is occurring on a near live basis. The complete flow profile of inputs and outputs will also provide a basis to monitor the diurnal curve and monitor any potential operational inefficiencies for further improvement. The District is intending to contract out the installation of the fixedbase tower collectors at a unit cost of $10,000 for each of the five towers. Training is an integral portion of both the data analytics software and the customer portal and is included in the budget to make sure District staff can put the software to maximum benefit. The total contractual costs budgeted for the project are $212,000.00.

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

Reporting
The District will submit the following reports, as specified in the FOA requirements:

- SF-425, Federal Financial Report, on a semiannual basis
- Program Performance Reports
- Final Report

Other Expenses
The District is budgeting $15,000.00 for customer outreach and education in conjunction with the customer portal. In anticipation of the wealth of information available to our customers in Phase I of the AMI program, the District is budgeting for workshops to educate customers on how to use the portal, new website changes to increase customer interactivity with the customer portal and integration of the customer portal with other conservation efforts such as with the District's extensive rebate programs in activities such as turf removal. Customer outreach and education includes costs for training, printed materials, and other resources.

Indirect Costs
The District is budgeting a 10% risk contingency of the overall budget in the proposal. Should the contingency funds not be required, those funds will be reallocated to further leak detection and customer outreach efforts.

Total Costs

The total estimated project cost is $830,122.39. The requested Federal share is $300,000.00; the total non-Federal share is $530,122.39.

13.4 Budget Form SF-424A

Budget form SF-424A for Non-Construction Projects is enclosed.

14 LETTER OF SUPPORT

A letter of support from Frances Spivy-Weber, Vice-Chair of the California State Water Resources Control Board, is enclosed.

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

State Water Resources Control Board

Joone Lopez
Moulton Niguel Water District
27500 La Paz Road
Laguna Niguel, CA 92677
JLopez@mnwd.com

Dear Joone,

I am very pleased to hear about your proposal to the U.S. Bureau of Reclamation for a Phase I Water Smart water and energy grant. I fully endorse your approach of starting with recycled water, then moving in Phase II to imported, potable water.

The proposed Advanced Meter Infrastructure (AMI) will be a boon for the District and its customers by giving you the ability to read and communicate with customers remotely, while also allowing customers to track and monitor their individual water usage. Importantly, I am very glad you are emphasizing leak detection and pressure sensors with demand side management.

Please keep me in the loop as you pursue AMI Phase I, and if I can be of assistance, let me know.

Sincerely,

Frances Spivy-Weber

Frances Spivy-Weber
Vice Chair, State Water Resources Control Board

15 ATTACHMENTS

A copy of the letter from Thomas Howard, Executive Director of the California State Water Resources Control Board, approving the District's alternate conservation plan for compliance with the Water Board's emergency regulation on drought emergency water conservation is attached.

California Water Boards

Edmund G. Brown Jr.
Governor

Matthew Rodriquez
Secretary for
Environmental Protection

State Water Resources Control Board

August 29, 2014

Ms. Joone Lopez
General Manager
Moulton Niguel Water District
27500 La Paz Road
Laguna Niguel, CA 92677

Dear Ms. Lopez:

This letter is to inform you of the State Water Resources Control Board's (Water Board) determination on the Moulton Niguel Water District's (District) request for approval of an alternate conservation plan for compliance with the Water Board's emergency regulation on drought emergency water conservation (Emergency Regulation). [Cal. Code Regs., tit. 23, § 865, subd. (b)(2)]. After review of the District's request, the Water Board has determined that the District's proposal meets the requirements for an alternate conservation plan set forth in the Emergency Regulation. Therefore, the District's request is approved and the District may implement the alternate conservation plan set forth in its August 15, 2014 submittal to the Water Board in lieu of complying with section 865(b)(1) of the Emergency Regulation.

Allocation based rate structures are defined in sections 370-374 of the Water Code. Section 371(a) of the Water Code defines an allocation based rate structure as one that meets all of the criteria set forth in Section 372. The District's rate structure meets those criteria because it provides "a basic use allocation ... for each customer account that provides a reasonable amount of water for the customer's needs and property characteristics." [Wat. Code, § 372, subd. (a)(2)]. Moreover, the District has demonstrated that its rate structure, in conjunction with additional conservation measures, provides a level of conservation superior to that achieved by implementing limitations on outdoor irrigation of ornamental landscapes or turf with potable water by the persons it serves to no more than two days per week.

The Water Board commends the District's commitment to achieving additional conservation through its allocation based rate structure and other measures, as described in Section 5 of its request. In particular, the Water Board finds that the District's actions to fine tune its rate structure, maximize recycled water use, and institute a comprehensive water loss control program are critical to achieving further water use reductions should the State face prolonged drought conditions.

Should you have any questions regarding compliance with the Emergency Regulation, please contact Max Gomberg at max.gomberg@waterboards.ca.gov, or (916) 322-3052.

Sincerely,

Thomas Howard
Executive Director