



WATERSMART GRANTS
WATER & ENERGY EFFICIENCY GRANTS
FOR FISCAL YR 2022

FUNDING NUMBER: R22AS00023

FUNDING GROUP II
Highland City Pressurized Irrigation Meter
Installation



HIGHLAND CITY

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Abbreviations

Ac-ft	Acre-Foot
CUP	Central Utah Project
CUWCD	Central Utah Water Conservancy District
gpm	Gallons per Minute
kWh	kilowatt-hour
NUCAC	Northern Utah County Aquifer Council

1.0 Technical Proposal & Evaluation Criteria

1.1 Executive Summary

The executive summary should include:

- The date, applicant name, city, county, and state*
- Please indicate whether you are a Category A applicant or a Category B applicant.*
- A one-paragraph project summary that provides the location of the project, a brief description of the work that will be carried out, any partners involved, expected benefits, and how those benefits relate to the water management issues you plan to address.*
- State the length of time and estimated completion date for the proposed project. Note: proposed projects should not have an estimated construction start date that is prior to July 2022.*
- Whether or not the proposed project is located on a Federal facility.*

Date: Application due date is November 3, 2021

Applicant: Highland City
Highland City, Utah County, Utah

Category: Category A Applicant

Project Summary:

Highland City proposes to install meters on their unmetered pressurized irrigation system to assist in water conservation. The project will provide meters to all resident, commercial and institutional connections. The current system allows for each user to utilize water at an un-regulated quantity. Meters will allow the City to achieve conservation from better public education and usage-based billing. The project will also incorporate Automated Metering Infrastructure (AMI) as another means to save water. Water conservation is anticipated to be approximately 25-40% of existing outdoor use or 2,100-3,500 ac-ft on an annual basis. Similar projects in the region have shown a great deal of water savings when users better understand their water consumption. This will result in an average yearly savings of approximately 1,460,000 kWh of power utilized for pumping and allow for the conserved water to remain in the over allocated ground water aquifer or benefit Utah Lake water levels. An award of this grant to Highland City will greatly enhance the City's ability to implement their water metering program and achieve their water conservation goals. The project will sustain the City's water supply during drought conditions, remove the need for additional infrastructure and will conserve the pristine groundwater for drinking water needs.

Length of Time: 36 months

Estimated Completion Date: July 2025

Federal Facility: This project is not located on a Federal facility

1.2 Project Location

Provide detailed information on the proposed project location or project area including a map showing the specific geographic location. For example, {project name} is located in {state and county} approximately {distance} miles {direction, e.g., northeast} of {nearest town}. The project latitude is {##°##'N} and longitude is {###°##'W}.

Highland City is located in Northern Utah County, of the State of Utah. Appendix A shows a map of the City boundary. The proposed project is to install meters in the previously un-metered pressurized irrigation system throughout the entire city boundary. Adjacent communities to Highland City include Alpine City to the northeast, Cedar Hills to the southeast, American Fork City to the south, Lehi City to the west, and Draper City to the northwest. Highland City's latitude is 40.4249° N and longitude is 111.7979° W.



Highland City Vicinity Map

1.3 Technical Project Description

Provide a more comprehensive description of the technical aspects of your project, including the work to be accomplished and the approach to complete the work. This description should provide detailed information about the project including materials and equipment and the work to be conducted to complete the project. This section provides an opportunity for the applicant to provide a clear description of the technical nature of the project and to address any aspect of the project that reviewers may need additional information to understand.

Highland City's proposed project is to install municipal secondary water meters in its pressurized irrigation system that serves approximately 4,503 connections. The majority of the service connections were installed previous to 2018. The project will provide new meters where none existed previously and will individually meter each connection. In anticipation of metering, the City began to require connections with space for a meter in 2016. Beginning in 2018 the City began installing meters, per the State of Utah requirements, at new connections. However, connections before 2016 were originally not planned to have a meter. Approximately 250 meters have been installed since 2018, at new residents, the water use data is currently not reported to users. These existing meters will require retrofitting with a transmitter to work with the proposed AMI.

The City's pressurized irrigation system was begun in 1998 and included connections for individual residences and commercial properties (See Appendix B for System Map). Subsequently the system has expanded with development. The water source for the system is provided through high quality river systems (Provo and American Fork) and pristine groundwater that is shared with the local Drinking Water Systems.

Each residential, commercial, and institutional developed property has received a pressurized irrigation connection. Each connection provided an isolation valve and a sprinkler box. The proposed metering project will include placement of a meter within the existing sprinkler box where possible. In locations where the sprinkler box will not be compatible, a new meter box will need to be installed. For larger institutional conditions a vault will be required to house the meter for future maintenance. All meters are planned to be electromagnetic.

After due diligence and research by the City they have been impressed with the Sensus iPERL Smart Water Meter. The meters have been used in the system since 2018, provide a 20-year warranty and allow for unfiltered secondary water. The meters also provide alarms for leak detection, empty pipe, magnetic tamper and low battery. The iPERL will be utilized in the vast majority of the system up to 1.5-inch connections. For larger connections a magnetic flowmeter will be utilized that has similar traits and reliability.

The AMI coupled with meters have been found to provide a great amount of water conservation within systems where meters have been installed for the first time.

AMI is an integrated system of meters, communication networks and data management systems. The AMI allows for two-way communication between the user and the water supplier. The systems provide functions that have not been historically possible or performed manually. Such as the ability to remotely measure use, detect leaks, and share real time data with users. The AMI also saves monthly 'meter reading' by the utility and thousands of driving miles in perpetuity. The data is received directly to the City through cellular or radio networks.

[REDACTED]

[REDACTED] Engineered typical details will be utilized for the new meter installations along with technical specifications and bidding documents. Engineered drawings will be provided for each area with typical installation instructions. The City will have an onsite inspector to observe construction and assist when issues arise. The City will also provide a public outreach program that through town hall meetings, flyers and social media will provide information to residents. Highland will be utilizing both its own details and also details from other cities who have initiated system wide metering. By working with other cities, Highland will be able to reap the advantage of learned lessons and best practices.

Once construction of the AMI and the installation of meters within the City has taken place, the users will have access to view their water usage in real time. The benefit of real time allows users to visualize and understand their water use. This knowledge has been proven to decrease waste system wide. Another benefit of the real time data is leak detection and sprinkler head damage. The City is predominantly positioned on highly permeable soils that tend to hide large leaks as they travel into the soil without visible surface indication of a leak. Users will now have a tool to determine and alert them regarding leaks within their systems.

It is currently undetermined what the post installation rate structure will be, but it is anticipated to include a base rate for all users and an escalating tiered usage charge. The base rate and lower tier usage charges will be structured to fund the operation and maintenance of the system while the higher tier usage charges will be set to encourage conservation. The amount of water in the lower tier usage will be determined based upon the area irrigated, the time of year and the amount of water necessary to maintain healthy landscaping.

1.4 Evaluation Criteria

1.4.1 Criterion A - Quantifiable Water Savings

Up to 28 points may be awarded for this criterion. This criterion prioritizes projects that will conserve water and improve water use efficiency, supporting the goals of E.O. 14008. Points will be allocated based on the quantifiable water savings expected as a result of the project. Points will be allocated to give greater consideration to projects that are expected to result in

more significant water savings.

1.4.1.1 Estimated Water Savings

For projects that conserve water, please state the estimated amount of water expected to be conserved (in acre-feet per year) as a direct result of this project.

Please include a specific quantifiable water savings estimate; do not include a range of potential water savings.

The City has conservatively estimated that a 25% reduction could be attributed to metering **or 2,100 ac-ft** per year of estimated water savings.

In 2018, Highland City utilized around 8,355 ac-ft of water in their pressurized irrigation system for residential, commercial and institutional properties. Recently in 2020 the City utilized approximately 8,403 ac-ft of water for these properties. The water was utilized on approximately 1,236 irrigable acres in 2018 and 1256 irrigable acres in 2020. The irrigated acreage was estimated in 2018 by a method known as the Normalized Difference Vegetation Index (NDVI) and has been updated yearly with approximations through building permits. This amounts to approximately 6.66 ac-ft per acre. Utah State University estimates it requires 4.00 ac-ft of water for turf irrigation in this area. There is a potential of 2.66 ac-ft per acre in water conservation for a total of 3,340 ac-ft per year. This would equate to a 40% reduction in water use. This number is near the percentage of reduction that other pressurized irrigation systems found when implementing metering. The City in its Master Planning has conservatively estimated that a 25% reduction could be attributed to metering **or 2,100 ac-ft** per year of estimated water savings within the system. All residential, commercial and institutional connections have been used in the calculation as reporting/recording of the existing meters usage have not been provided to the residents. The calculations do not include City landscaping as installation of meters for City parcels are planned as a separate project.

Another benefit of meters will be the ability of the City to measure use of specific parcels and work with residents whose usage far exceeds the needs of their irrigated usage. The City currently receives reports of overuse, but has no way to quantify the amount of water that is being used. It is therefore, nearly impossible to educate the wasteful residents in a productive manner that leads to behavior changes. Meters will allow for education and behavior change.

1.4.1.2 Current Losses

Please explain where the water that will be conserved is currently going and how it is being used. Consider the following:

Explain where current losses are going (e.g., back to the stream, spilled at the end of the ditch, seeping into the ground)?

If known, please explain how current losses are being used. For example, are current losses returning to the system for use by others? Are current losses entering an impaired groundwater table becoming unsuitable for future use?

Are there any known benefits associated with where the current losses are going? For example, is seepage water providing additional habitat for fish or animal species?

The majority of Highland residents are applying more water than is necessary to their yards. The excess water either runs off into street runoff conveyance systems and storm drain networks or percolates back into the ground. The reduction in use because of meters would reduce water waste currently experienced by the City. As a result, the water conserved will be maintained in the reservoirs or remain in the groundwater aquifer.

It is unknown if there are benefits associated with the current losses. The lost water rapidly infiltrates into the highly porous soil found in most of Highland. The water does not make it into the high-quality drinking water aquifer as it is confined. It is possible that the water appears within shallow seeps near drainages.

1.4.1.3 Support/Documentation of Estimated Water Savings

Please provide sufficient detail supporting how the estimate was determined, including all supporting calculations. Note: projects that do not provide sufficient supporting detail/calculations may not receive credit under this section. Please be sure to consider the questions associated with your project type (listed below) when determining the estimated water savings, along with the necessary support needed for a full review of your proposal. In addition, please note that the use of visual observations alone to calculate water savings, without additional documentation/data, are not sufficient to receive credit under this section. Further, the water savings must be the result of reducing or eliminating a current, ongoing loss, not the result of an expected future loss.

Since the Highland secondary water system is unmetered, the true usage is unknown. The City has metered production data available that quantifies how much water is put into the system, but without meters it is impossible to know exactly how much each connection is using and how much water is being lost in the pipe network through leaks. However, since the system has been installed over the past 20 years, it is not believed that a great deal of water is lost to leaks.

Several neighboring communities have reported great success in reducing water usage by installing meters on their secondary water systems. These case studies serve as the basis for the estimated water use reductions anticipated for the City of Highland. Typical reductions found in neighboring communities, who have implemented meters on secondary water systems, have been about 30-40%. In the case of Highland, a more conservative assumption of **25% reduction** will be assumed. Some examples of the reductions experienced in neighboring communities are included below.

Weber Basin Water Conservancy District has been implementing a pressurized irrigation metering program in partnership with the Bureau of Reclamation, State of Utah, and Utah State University since 2011. Currently this metering program is not coupled with a usage-based rate schedule but instead is utilized to help educate the systems users on how much water they are using and how to utilize the resource

better. The District provided a secondary water metering report that details the program and water conservation achieved. They have documented a 23 percent reduction in use between 2012 and 2015.

Saratoga Springs in Utah County, Utah determined it was in the best interest of the City to install meters on their secondary water connections. Prior to the installation of the meters they were experiencing higher than anticipated demands such that the system was not designed to sustain. The meters were installed in conjunction with a billing rate structure that would encourage water conservation. Before implementing the new billing structure, residents were provided information concerning their water use and how it would impact their bill if they did not adjust their water consumption. The data collected after the meters were installed and new rate structure had been implemented showed a 40% reduction in secondary water use.

The State of Utah Water Use Collection Program conducted a detailed study on water use and water use collection in 2018. This study surmised adding meters to previously unmetered secondary water systems can reduce water use by more than 30% in some cases. Highland would fall into the studies reduction estimates.

The meters will not only inform the public of how much water they are using, but it will also allow the City to determine how much water is being lost in their transmission system. It is anticipated the water reduction will come through consumers using less water and also the City being able to address leaks in their system more easily since they will have a better understanding of how much water is being lost in transmission.

Once the meters are in place the total water production and total water use can be used to calculate water losses in the system. The water loss can then be applied to previous years to determine better estimate water use prior to the meters. Appendix C provides the last 10 years of water production data total for each source type. The water use after the installation of the meters can then be compared to previous water use totals to quantify water savings. The total water use should be normalized based on how many acres are being irrigated each year. The difference between the pre and post meter water use per irrigated acre multiplied by the current irrigated acreage would represent the total reduction as a result of installing the meters. This is the means the City will use to verify actual water savings.

1.4.1.4 Municipal Meter Questions

Municipal metering projects can provide water savings when individual user meters are installed where none exist to allow for unit or tiered pricing, when existing individual user meters are replaced with advanced metering infrastructure (AMI) meters, and when new meters are installed within a distribution system to assist with leakage reduction. To receive credit for water savings for a municipal metering project, an applicant must provide a detailed

description of the method used to estimate savings, including references to documented savings from similar previously implemented projects. Applicants proposing municipal metering projects should address the following:

- a. How has the estimated average annual water savings that will result from the project been determined? Please provide all relevant calculations, assumptions, and supporting data.*

Estimated savings were determined through actual production water used in recent years, measured irrigable acreage through highly accurate State of Utah Normalized Difference Vegetation Index (NDVI) information, reasonable turf irrigation estimates and previous studies of meter implementation in the region. Calculations are provided above in the Estimated Water Savings section.

- b. How have current distribution system losses and/or the potential for reductions in water use by individual users been determined?*

The City has mainline meters where sources enter the Pressurized Irrigation System. Without having end user meters, the distribution losses cannot be determined. Reductions for potential water users were determined through amount of water used versus water required for landscaping coupled with recent studies in the region.

- c. For installing end-user water service meters, e.g., for a residential or commercial building unit., refer to studies in the region or in the applicant's service area that are relevant to water use patterns and the potential for reducing such use. In the absence of such studies, please explain in detail how expected water use reductions have been estimated and the basis for the estimations.*

Paragraph 1.4.1.3 provided example studies in the region from Weber River Water Conservancy District, Saratoga Springs, and the State of Utah.

- d. Installation of distribution system meters will not receive points under this criterion. Accordingly, these projects must be paired with a complementary project component that will result in water savings in order for the proposal to receive credit for water savings, e.g., pipe installation using upgraded materials, or individual water service meters.*

Not Applicable

- e. What types (manufacturer and model) of devices will be installed and what quantity of each?*

A more detailed description of the metering types is provided in the Technical Project Description; however, the following Summary is provided:

- ¾" and 1" Meters will be Sensus iPERL Smart Water Meters (4,219 meters)
- 1-1/2" Meters will be Honeywell EVOQ4 Magnetic Meter (100 meters)
- 4" Meters will be Honeywell EVOQ4 Magnetic Meter (6 meters)
- Sensus 520M Single Port Smartpoint Radio to Integrate with AMI for all new

meters and the existing 250 meters requiring retrofit (4,325 New + 250 Existing)

f. How will actual water savings be verified upon completion of the project?

Each year Highland City meters the overall amount of water utilized in their pressurized irrigation system (see Appendix C). They also maintain a record of the number of connections and approximate acreage irrigated added to the system from the previous year. From this data the City can determine the approximate number of ac-ft of water utilized per acre.

It is proposed to measure the annual total water conservation achieved by subtracting the number of ac-ft utilized per acre from 6.66 which is the current usage per acre and then multiplying by the number of acres irrigated.

In addition, the City can use individual meter data to verify conservation data determined from total usage data and tailor public education programs to the specific user and encourage water conservation by means other than cost.

1.4.2 Criterion B – Renewable Energy

Up to 20 points may be awarded based on the extent to which the project increases the use of renewable energy or otherwise results in increased energy efficiency and reduced greenhouse gas emissions. For projects that include constructing or installing renewable energy components, please respond to Subcriterion No. B.1: Implementing Renewable Energy Projects Related to Water Management and Delivery. If the project does not implement a renewable energy project but will increase energy efficiency, please respond to Subcriterion No. B.2. Increasing Energy Efficiency in Water Management. If the project has separate components that will result in both implementing a renewable energy project and increasing energy efficiency, an applicant may respond to both.

1.4.2.1 Subcriterion No B.2: Increasing Energy Efficiency in Water Management

Up to 10 points may be awarded for projects that address energy demands and reduce greenhouse gas emissions by retrofitting equipment to increase energy efficiency and/or through water conservation improvements that result in reduced pumping or diversions. Describe any energy efficiencies that are expected to result from implementation of the water conservation or water efficiency project (e.g., reduced pumping).

- If quantifiable energy savings is expected to result from the project, please provide sufficient details and supporting calculations. If quantifying energy savings, please state the estimated amount in kilowatt hours per year.*

This project does include energy efficiency elements. It is anticipated that the installation of pressurized irrigation meters, updated billing structure, AMI, and public education efforts will reduce water use and hence reduce the amount of water pumped from the City's wells and upper pressure zone booster pumps. It is

anticipated that a 25% reduction in overall use will equate to a maximum energy reduction of 1,460,000 kWh per year and an approximate savings of \$90,000.

The energy savings was calculated assuming that 2,100 acre-feet of source would not be required to be pumped. These sources were estimated as 1,000 acre-feet from wells and 1,100 acre-feet from the Provo River System. The calculation included the total dynamic head, flow and an overall efficiency of 75%. The total source capacity pumped savings was calculated as 1,220,000 kWh.

Also included in the calculation was zone pumping. Knowing the irrigable acreage each pump station services a total pumped volume was estimated. From the volume estimate a power usage was calculated for each pump station, using the pump head, flowrate and 75% efficiency. The calculated power usage was then multiplied by 25% for the conserved water. A savings total of 240,000 kWh was estimated for zone pumping.

The estimated savings and assumed use were compared against actual power bills for the pump stations and found the approach to be acceptable. For a typical month the City will purchase 550,000 kWh, of which approximately 350,000 kWh is source pumping.

- *How will the energy efficiency improvement combat/offset the impacts of climate change, including an expected reduction in greenhouse gas emissions.*

Power for the City is provided by Rocky Mountain Power a subsidiary of Pacificorp. Power for pumping is required throughout the day which adds peaking to the Power Grid during the high use times. The majority of power generated in the area from Rocky Mountain Power to meet the peak times is through fossil fuel. By decreasing use and peaking, less greenhouse gas emissions will be required to provide for the City's pumping.

- *If the project will result in reduced pumping, please describe the current pumping requirements and the types of pumps (e.g., size) currently being used. How would the proposed project impact the current pumping requirements and energy usage?*

The City utilizes three groundwater wells and five booster stations to pump water to adequate pressures and three elevated pressure zones. The booster pumps are vertical turbines and split case types with motors ranging from 200 to 25 horsepower. The well pumps are submersible and vertical turbines with motors ranging from 400 to 200 horsepower. The well pumps have a significant total dynamic head of 750 feet and 500 feet. Reducing the use of these pump provide for major power savings as shown in the calculations above.

The project will decrease the pumping requirements from the deep groundwater and lessen the amount of water required to be boosted into the upper zones. This decrease in pumping will directly equate to less energy usage. The water conserved from the proposed projects will also decrease the need for costly future pump improvements.

Decreasing the amount of pumping will allow for less head loss through the piping. The decrease in head loss will directly impact the pumping head, allowing for more efficient pumping and less power required to overcome the energy lost resulting from friction within the pipe network.

- *Please indicate whether your energy savings estimate originates from the point of diversion, or whether the estimate is based upon an alternate site of origin.*

The energy savings will be seen at the source of the water from both the groundwater pump stations and the booster pumps that move water to elevated zones or from holding ponds to the system. The system utilizes numerous sources, however by conserving water, the river sources that are introduced into the upper reservoir via gravity can be used before the pumped sources.

- *Does the calculation include any energy required to treat the water, if applicable?*

There is not a treatment component to the City's secondary system.

- *Will the project result in reduced vehicle miles driven, in turn reducing greenhouse gas emissions? Please provide supporting details and calculations.*

The project will reduce vehicle miles driven, due to the AMI not requiring 'drive by meter readings. Multiplying the miles of streets by 12 months would provide a reduction of 960 miles in a year and 19,200 miles over 20 years.

- *Describe any renewable energy components that will result in minimal energy savings/production (e.g., installing small-scale solar as part of a SCADA system).*

Not Applicable

1.4.3 Criterion C – Sustainability Benefits

Up to 20 points may be awarded under this criterion. This criterion prioritizes projects that address a specific water and/or energy sustainability concern(s), including enhancing drought resilience, addressing the current and future impacts of climate change, and resolving water related conflicts in the region. In addition, this criterion is focused on the benefits associated with the project, including benefits to tribes, ecosystem benefits, and other benefits to water and/or energy supply sustainability.

The Highland City project provides major benefits to all of the important water sustainable concerns within the region. As an introduction, the following is a brief summary of the city's outdoor irrigation sources.

The primary water supply for the project is Highland City's water sources and water rights. Surface water sources include shares in Lehi Irrigation Company, American Fork Irrigation Company, Pleasant Grove Irrigation Company, Highland Conservation District, Provo Reservoir Water Users Association and the Winn Ditch Irrigation Company. The City also utilizes three wells to support the pressurized irrigation system through municipal and irrigation water rights. Highland City also has available to the project 415 ac-ft of Central Utah Project (CUP) water from the

Central Utah Water Conservancy District (CUWCD) and the Bureau of Reclamation. See appendix C for the 10-year source volumes.

Irrigation Companies provide water through the American Fork River System. There is minimal storage within the system. The water originates in the mountains of the Wasatch Front and is supplied through yearly snowpack. Source water is provided through shares in the Irrigation Companies with diversions directly from the river into the City system.

Stored or Reservoir water is supplied through shares owned in the Provo Reservoir Water Users Association and Highland Conservancy District. These shares originate through the Provo River Project that includes Deer Creek Reservoir, a Bureau of Reclamation Project vital to the surrounding areas. Water is provided at turnouts from the Provo River Aqueduct.

CUP water is provided through aqueducts maintained and operated by CUWCD. CUP is another important Bureau project that provides stored reservoir water during the late portions of the year. The benefit of this source is that it is pressurized to the same hydraulic grade as the City's pressure zone.

The current drought condition has stressed the system and the City's water sources as there has been a drastic decrease in surface water availability. The proposed project with conservation of water will benefit the system by greatly enhancing the resiliency to drought conditions in the future. The following sections provide details on the critical concerns and the project's benefits to improve water supply during droughts.

Enhancing drought resiliency. In addition to the separate WaterSMART Environmental Water Resources Projects NOFO, this NOFO places a priority on projects that enhance drought resiliency, through this section and other sections above, consistent with the SECURE Water Act. Please provide information regarding how the project will enhance drought resiliency by benefitting the water supply and ecosystem, including the following:

- *Does the project seek to improve ecological resiliency to climate change?*

This project will improve ecological resiliency to climate change by allowing more in-stream flows to remain in the American Fork River and Provo River throughout the year due to the reduction of water usage. The decrease of water usage and commensurate intake to the pressurized irrigation system will allow less diversion water from these river systems. The additional water in the riparian systems allows for greater biodiversity in the ecosystem due to higher survival rates of less drought tolerant species.

During the current 2021 drought it would have been beneficial to the river ecologies to have this additional water available to the flora and fauna. The drought stress on these populations was exacerbated by the limited water available in the streams

because of municipal use.

- *Will water remain in the system for longer periods of time? If so, provide details on current/future durations and any expected resulting benefits (e.g., maintaining water temperatures or water levels).*

The resulting reduction in water usage from the project will benefit the residents and system by allowing for more settling time in reservoirs thereby increasing water quality. The increased settling time will allow for grits and fines to settle into the reservoir. It will also allow the City to use the best water source available at a given season of the year, also increasing water quality. By allowing the storage reservoirs to be maintained at a full level, these facilities are also better equipped to serve in emergency situations such as forest fires. The City's reservoirs are located adjacent to BLM and Forest lands. They have in the past been used by fire fighters to supply aerial fire-fighting apparatus.

- *Will the project benefit species (e.g., federally threatened or endangered, a federally recognized candidate species, a state listed species, or a species of particular recreational, or economic importance)? Please describe the relationship of the species to the water supply, and whether the species is adversely affected by a Reclamation project or is subject to a recovery plan or conservation plan under the Endangered Species Act (ESA).*

Both American Fork and Provo rivers are tributary to Utah Lake. The additional water that is available in the river system will assist in the June Sucker habitat, a federally listed threatened species.

- *Please describe any other ecosystem benefits as a direct result of the project.*

Conservation of water will directly assist the ecosystem within the American Fork River system with additional water.

- *Will the project directly result in more efficient management of the water supply? For example, will the project provide greater flexibility to water managers, resulting in a more efficient use of water supplies?*

The project and conservation will allow the Water Manager greater flexibility in programming and use of water sources and timing. This is especially critical during a drought. This year the City had to utilize high quality groundwater of near 1,000 Ac-Ft. The anticipated savings from meters would have negated the groundwater use. The ground water reserves could have been preserved for future drinking water usage. The water manager could also utilize less expensive water that requires minimal pressure boosting, thereby resulting in a more energy/cost efficient system.

The use of less City water would also assist other agency water managers who supply the City with canal and irrigation shares. The lessened demand on these outside systems would allow their managers to maximize their system performances. The pressures in the closed conduits would also decrease as less flow is required by Highland City. Three of the agencies who convey water to Highland

have provided letters of support, those being CUWCD, Lehi Irrigation and American Fork Irrigation.

Addressing a specific water and/or energy sustainability concern(s). Will the project address a specific sustainability concern? Please address the following:

- *Explain and provide detail of the specific issue(s) in the area that is impacting water sustainability, such as shortages due to drought and/or climate change, increased demand, or reduced deliveries.*

Drought and Climate Conditions

The conditions of the current drought and low snowpack from climate change has decreased water delivery. As less snowfall has fallen over the last decade the groundwater tables have been decreasing with the added demands of the population. During plentiful runoff there is an abundance of surface water, however during the latest drought the limited surface water requires utilizing additional groundwater. During the past year's drought conditions only 3,962 ac-ft of water was available from the American Fork system that typically generates 5,000 to 7,500 ac-ft of water. The reduction of delivery from this important source during drought and climate change impacts the water sustainability for the system.

The 'stored' water of which the the City has shares in the Provo River System of Jordanelle and Deer Creek Reservoirs was also under stress during the drought. Due to low runoff the water share amount were reduced by the managers of these reservoirs. The City relies on the reservoir water source during the late season when the American Fork stream flow decreases. The reduction of the stored reservoir sources has and will impact water sustainability.

Decreasing Groundwater Levels

The aquifer that supplies the City with high quality groundwater (does not require any treatment) has had its levels decreasing for the last decade from 40-60 feet. The aquifer also supplies water to City and other local municipal and agricultural secondary systems. This last year alone, during the drought, absorbent extraction decreased the water level 20 feet in some of the City wells. This decrease of water levels is a sustainable water threat. During the current year alone, three of the City's eight wells have required lowering the pump within the well in order to continue pumping groundwater. The groundwater levels have been lowering due to increased extraction and insufficient replenishment due to the limited snowpack over the decade. The decreasing groundwater has become such an increased concern that the majority of Municipalities in the area and CUWCD have begun an Aquifer Coalition (North Utah County Aquifer Coalition - NUCAC). NUCAC has provided a letter of support. The area understands that the sustainability is in peril due to the decreasing groundwater levels.

- *Explain and provide detail of the specific issue(s) in the area that is impacting energy*

sustainability, such as reliance on fossil fuels, pollution, or interruptions in service.

Rocky Mountain Power provides power to Highland City and utilizes fossil fuels in the generation of the system power. Highland City is part of a power grid network that is experiencing some of the highest growth in the United States. The increased water system demand and use of high horsepower pumps consumes substantial power that could otherwise be used to support the growth and home construction.

- *Please describe how the project will directly address the concern(s) stated above. For example, if experiencing shortages due to drought or climate change, how will the project directly address and confront the shortages?*

The Highland City project will assist by using substantially less surface and groundwater over an irrigation season. The use of less water will also save in electricity use from the large pump motors. The Highland City area has experienced extreme drought conditions in 2021. The use of 25% less water would directly impact the preservation of limited available water sources within the groundwater aquifer by extracting less water. The system would also be more sustainable by using less water for the same amount of irrigated coverage.

- *Please address where any conserved water as a result of the project will go and how it will be used, including whether the conserved water will be used to offset groundwater pumping, used to reduce diversions, used to address shortages that impact diversions or reduce deliveries, made available for transfer, left in the river system, or used to meet another intended use.*

The project will result in pumping of less groundwater so that the groundwater can be better used to meet the demands of drinking water. There will also be a significant reduction on the intake water from the river system which will reduce future deliveries. The water from the American Fork River will be allowed to be left in the river system to better maintain the ecology of the river.

- *Provide a description of the mechanism that will be used, if necessary, to put the conserved water to the intended use.*

No mechanism is required to put the conserved water to its preferred use. The reductions and preservation will happen automatically as a result of the project not having to pump wells or divert water at the same historic levels.

- *Indicate the quantity of conserved water that will be used for the intended purpose(s).*

During non-drought conditions, groundwater use reduction is anticipated as 1,000 acre-feet. River use will be reduced by 1,100 acre-feet.

(1) Combating the Climate Crisis: E.O. 14008: Tackling the Climate Crisis at Home and Abroad, focuses on increasing resilience to climate change and supporting climate resilient development. For additional information on the impacts of climate change throughout the western United States, see: <https://www.usbr.gov/climate/secure/docs/2021secure/2021SECUREREport.pdf>. Please describe how the project will

address climate change, including the following:

o Please provide specific details and examples on how the project will address the impacts of climate change and help combat the climate crisis.

Following the project, the City system will utilize less power that is produced via fossil fuels. Additionally, there will be less fossil fuels used by City staff in reading meters as all meter reading will be automated.

o Does this proposed project strengthen water supply sustainability to increase resilience to climate change?

Yes, the City will be better able to supply water to its citizens and will thereby be more resilient. A 25% reduction in water source requirements will provide a great buffer for the lessening snow fall resulting from climate change.

o Will the proposed project establish and utilize a renewable energy source?

Not Applicable

o Will the project result in lower greenhouse gas emissions?

Yes, through a reduction in use of fossil fuels through power and driving City vehicles.

(2) Disadvantaged or Underserved Communities: E.O. 14008 and E.O. 13985 support environmental and economic justice by investing in underserved and disadvantaged communities and addressing the climate-related impacts to these communities, including impacts to public health, safety, and economic opportunities. Please describe how the project supports these Executive Orders, including:

a. Does the proposed project directly serve and/or benefit a disadvantaged or historically underserved community? Benefits can include, but are not limited to, public health and safety through water quality improvements, new water supplies, new renewable energy sources, or economic growth opportunities.

The American Fork River and Springs system provides water to the Utah State Developmental Center, which serves a substantial population of the mentally disabled in Utah. The Highland City project preserves resources in this system and allows this population to be better served.

b. If the proposed project is providing benefits to a disadvantaged community, provide sufficient information to demonstrate that the community meets the disadvantaged community definition in Section 1015 of the Cooperative Watershed Act, which is defined as a community with an annual median household income that is less than 100 percent of the statewide annual median household income for the State, or the applicable state criteria for determining disadvantaged status.

c. If the proposed project is providing benefits to an underserved community, provide sufficient information to demonstrate that the community meets

the underserved definition in E.O. 13985, which includes populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life.

(3) *Tribal Benefits: The Department of the Interior is committed to strengthening tribal sovereignty and the fulfillment of Federal Tribal trust responsibilities. The President’s memorandum “Tribal Consultation and Strengthening Nation-to-Nation Relationships” asserts the importance of honoring the Federal government’s commitments to Tribal Nations. Please address the following, if applicable:*

a. Does the proposed project directly serve and/or benefit a Tribe? Will the project increase water supply sustainability for an Indian Tribe? Will the project provide renewable energy for an Indian Tribe?

Not Applicable for this project

b. Does the proposed project directly support tribal resilience to climate change and drought impacts or provide other tribal benefits such as improved public health and safety through water quality improvements, new water supplies, or economic growth opportunities?

(4) *Other Benefits: Will the project address water and/or energy sustainability in other ways not described above? For example:*

a. Will the project assist States and water users in complying with interstate compacts?

Not Applicable for this Project.

b. Will the project benefit multiple sectors and/or users (e.g., agriculture, municipal and industrial, environmental, recreation, or others)?

The project will benefit many sectors, including municipal, agriculture, environmental and recreation. The American Fork and Provo river systems are recreational corridors. Preservation of water in Jordanelle Reservoir, Deer Creek Reservoir, Tibble Fork Reservoir, and Silver Lake Flat Reservoir will benefit these valuable recreational resources. Additionally, with the enhanced capacity in the pressurized irrigation system, the City will be able to work with local farm properties to convert their irrigation systems to pressurized irrigation thereby providing a more reliable and efficient irrigation system.

The City/Municipality will benefit by saving power consumption costs, delivery costs, and increased costs for improvements. The 2019 Master Plan provided that minimal transmission projects would be required with the conservation of 25%. This also allows for less impact fees for new development assisting homebuilders and new residents.

c. Will the project benefit a larger initiative to address sustainability?

As seen in the NUCAC support letter the project will benefit all the communities in

the area that utilize the over allocated aquifer exclusively for drinking water. The initiative to assist in efficiently managing the groundwater basin is the primary objective of NUCAC. Groundwater levels have been decreasing which has relegated two of the City's drinking water wells out of service in 2021 and required three other City wells to have their pumps deepened. These water wells were reliable sources in their current conditions until water levels dropped.

Utah's initiative to conserve water for future growth benefits the sustainability of the water supply. Governor Cox released a press release on July 29 of 2021 as he joined water officials from around the state to outline measures needed for the State's water supply. Utah's water agencies are in the process of developing a comprehensive state water plan that builds on previous planning. One of the four focus areas is secondary meters. The City's project will benefit the larger state initiative to address water sustainability.

d. Will the project help to prevent a water-related crisis or conflict? Is there frequently tension or litigation over water in the basin?

We believe there is widespread support for the project, see Appendix F for the letters of support. We also believe the project will help prevent a water-related crisis or conflict because it will ultimately reduce the ground water withdrawals in an over-allocated aquifer. When and if there is a future crisis or conflict Highland City will be able to demonstrate they are doing their part to conserve and protect the aquifer. There is not currently frequent tension or litigation over water in the northern Utah County area, but there is an awareness and concern for the future viability of the resource. As mentioned previously, Highland City and other water users in the area have organized the North Utah County Aquifer Coalition to jointly manage the aquifer. The groundwater basin has been over appropriated and the collective usage must be curtailed to be under the current appropriation to be sustainable. We believe that implementation of the project will encourage neighboring communities to implement pressurized irrigation water-saving projects as they see the benefits to their water systems and the aquifer.

1.4.4 [REDACTED] On-Farm Irrigation Improvements

Up to 10 points may be awarded for projects that describe in detail how they will complement on-farm irrigation improvements eligible for NRCS financial or technical assistance.

Note: Scoring under this criterion is based on an overall assessment of the extent to which the WaterSMART Grant project will complement ongoing or future on-farm improvements.

Applicants should describe any proposal made to NRCS, or any plans to seek assistance from NRCS in the future, and how an NRCS-assisted activity would complement the WaterSMART Grant project. Financial assistance through EQIP is the most commonly used program by which NRCS helps producers implement improvements to irrigation systems, but NRCS does have additional technical or financial assistance programs that may be available. Applicants may receive maximum points under this criterion by providing the information described in the bullet points below. Applicants are not required to have assurances of NRCS assistance by the

application deadline to be awarded the maximum number of points under this subcriterion. Reclamation may contact applicants during the review process to gather additional information about pending applications for NRCS assistance if necessary.

Please note: On-farm improvements themselves are not eligible activities for funding under this NOFO. This criterion is intended to focus on how the WaterSMART Grant project will complement ongoing or future on-farm improvements. NRCS will have a separate application process for the on-farm components of selected projects that may be undertaken in the future, separate of the WaterSMART Grant project.

If the proposed project will complement an on-farm improvement eligible for NRCS assistance, please address the following:

- Describe any planned or ongoing projects by farmers/ranchers that receive water from the applicant to improve on-farm efficiencies.*

The farmers that are within the Highland City pressurized irrigation system service area receive their water through open ditches. The soils in the area of Highland City where these ditches flow is very porous. As such, there are substantial losses in the ditch system.

The two main Irrigation Companies (Lehi Irrigation and American Fork Irrigation) that own and operate the open ditches are in support of this project and have provided letters of support found within the appendices.

- o Provide a detailed description of the on-farm efficiency improvements.*

The delivery of water to a farm via pressurized irrigation system allows a farmer to then install pivots, wheel lines, and or other sprinkler-based piping systems to deliver water to crops in the exact location and amount desired.

- o Have the farmers requested technical or financial assistance from NRCS for the onfarm efficiency projects, or do they plan to in the future?*

Highland City is not planning to request further assistance for the farmers. It is unknown if any of the farming community has plans to request assistance.

- o If available, provide documentation that the on-farm projects are eligible for NRCS*

assistance, that such assistance has or will be requested, and the number or percentage of farms that plan to participate in available NRCS programs.

Highland City is unaware of what assistance has been given or will be requested by individual farming properties.

o Applicants should provide letters of intent from farmers/ranchers in the affected project areas.

Highland City has not yet requested the letters. The City cannot provide the water through the pressurized irrigation system unless the funding is received and the project completed. The City is cautious in building an expectation of service if it cannot be provided. As such, agreements have not yet been signed, with the exception of the Peck farm described below.

• Describe how the proposed WaterSMART project would complement any ongoing or planned on-farm improvement.

In 2021, Highland City entered into its first on-farm water service agreement. This agreement serves as a template of what is possible moving forward with additional farming families. The Peck family and City signed an agreement for the City to provide irrigation water through the pressurized irrigation system to the farm. It was found that both parties were bettered by the agreement. The Peck's received more water than they otherwise would have done, especially in this drought year. The water was also pressurized via the gravity system vs flood irrigating. As a result of the pressurized irrigation delivery, the farm was more efficient and did not use their entire allocation, even though their use was not restricted by the City. The City benefited by receiving the use of the unused Peck farm water.

o Will the proposed WaterSMART project directly facilitate the on-farm improvement? If so, how? For example, installation of a pressurized pipe through WaterSMART can help support efficient on-farm irrigation practices, such as drip-irrigation.

By providing a water supply through pressurized irrigation versus flood irrigation, it allows farmers to then install pressure piping systems to their crops. The impacts to the farm are available on day one. The pressurize pipe delivery to the desired location reduces the on-farm waste of water and reduces the waste in eliminating tailwater discharge from the site. The availability of pressurized irrigation systems also allows farmers to select a broader range of crops and introduce crops that they would not have otherwise been able to provide.

o Will the proposed WaterSMART project complement the on-farm project by maximizing efficiency in the area? If so, how?

The pressurized system allows farmers to deliver water to all areas of their property. With gravity (ditch) irrigation systems, there are areas of the farm that cannot be served because of the topography of the land vs. the elevation of the ditches.

- Describe the on-farm water conservation or water use efficiency benefits that are expected to result from any on-farm work.

Using our first experience of on-farm service in 2021, we anticipate that there was a 40% savings of water in the total amount used either on the farm or used in delivery to the farm.

o Estimate the potential on-farm water savings that could result in acre-feet per year. Include support or backup documentation for any calculations or assumptions.

The Peck family farm contributed to the City just over 100-acre feet of water in 2021 for delivery through the pressurized irrigation system. The City measured the delivery to the Pecks as just over 60-acre feet. Therefore, the savings or net benefit to the citizens was the use of approximately 40-acre feet that would not have otherwise been available to either the farm (due to ditch losses) or the citizens.

- Please provide a map of your water service area boundaries. If your project is selected for funding under this NOFO, this information will help NRCS identify the irrigated lands that may be approved for NRCS funding and technical assistance to complement funded WaterSMART projects.

The City's water service is everything within the city boundary, see Appendix A for mapping.

1.4.5 Criterion E – Planning and Implementation

Up to 8 points may be awarded for these subcriteria.

The proposed Highland City project is the result of years of planning. The following sections outline the various efforts leading to implementation of the project.

1.4.5.1 SubCriterion E.1 – Project Planning

Points may be awarded for proposals with planning efforts that provide support for the proposed project.

Does the applicant have a Water Conservation Plan and/or System Optimization Review (SOR) in place? Does the project address an adaptation strategy identified in a completed WaterSMART Basin Study? Please self-certify or provide copies of these plans where appropriate to verify that such a plan is in place. Including a specific excerpt or a link to the planning document may also be considered where appropriate.

Provide the following information regarding project planning:

(1) Identify any district-wide, or system-wide, planning that provides support for the proposed project. This could include a Water Conservation Plan, SOR, Drought Contingency Plan or other planning efforts done to determine the priority of this project in relation to other potential projects.

Highland City has a water conservation plan which was adopted by ordinance for water conservation measures for Highland City and the Pressurized Irrigation Master Plan. The City's conservation ordinance can be seen in Appendix D.

Highland City Council has been presented the costs associated with meters, the potential water savings to be gained, potential long-term system savings associated with conservation and are supportive of the metering effort. The Master Plan assumed conservation and metering when implementing the level of service demands. The City has been planning for meters to assist in the conservation and drought resiliency efforts.

(2) 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).

In 2019 the City adopted the Pressurized Irrigation Meter Plan. Within the plan a level of service was determined that was 25% less than the existing water use. The meter project will assist in meeting the goal of the Master Plan by decreasing overall water use. The City's Water Conservation Plan also strategized that metering would assist in conserving water for the City. The project will implement meters and allow for a large conservation of water.

(3) If applicable, provide a detailed description of how a project is addressing an adaptation strategy specifically identified in a completed WaterSMART Basin Study or Water Management Options Pilot (e.g., a strategy to mitigate the impacts of water shortages resulting from climate change, drought, increased demands, or other causes)

Not Applicable for this Project

1.4.5.2 SubCriterion E.2 – Readiness to Proceed

Points may be awarded based upon the extent to which the proposed project is capable of proceeding upon entering into a financial assistance agreement. Please note, if your project is selected, responses provided in this section will be used to develop the scope of work that will be included in the financial assistance agreement.

Applications that include a detailed project implementation plan (e.g., estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates) will receive the most points under this criterion.

- Identify and provide a summary description of the major tasks necessary to complete the project. Note: please do not repeat the more detailed technical project description provided in Section D.2.2.4.; this section should focus on a summary of the major tasks to be accomplished as part of the project.*

[REDACTED]

[REDACTED] if they are selected for this grant. The following are estimated tasks with estimated project dates:

As mentioned, the City phasing will be split into three sections; Northwest, East and South Regions. The Northwest region will include Phase 1, as there are more

City sprinkler boxes in the area that can easily accept the meter retrofit and the area is within an elevated pump zone. Phase 2 will include the Eastern area that is within an elevated pump zone. Phase 3 will include the South area to complete the project. The pressurized irrigation meter phasing plan is demonstrated in Appendix E.

Environmental Clearances – April 2022 – July 2022

Phase 1 – Northwest Region (1,076 meters)

- Prepare design drawings, details and mapping along with bid documents – 3 Months, completed by May 2022
- Bid & Award Phase 1 Project – 1 Month, June 2022
- Contract Management, Submittal Review & Mobilization – 1 Months, July 2022
- Installation of Meters in Northwest – 10 Months, Oct 2022 – April 2023

Phase 2 – East Region (1,324 meters)

- Prepare design drawings, details and mapping along with bid documents – 1 Month, completed by Nov 2022
- Bid & Award Phase 1 Project – 1 Month, Dec 2022
- Contract Management, Submittal Review & Mobilization – 1.5 Months, Feb 2023
- Installation of Meters in East – 8 Months, March - Oct 2023

Phase 3 – South Region (2,103)

- Prepare design drawings, details and mapping along with bid documents – 1 Month, completed by Nov 2023
- Bid & Award Phase 1 Project – 1 Month, Dec 2023
- Contract Management, Submittal Review & Mobilization – 1.5 Months, Feb 2024
- Installation of Meters in South – 14 Months, April 2024 - June 2025

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

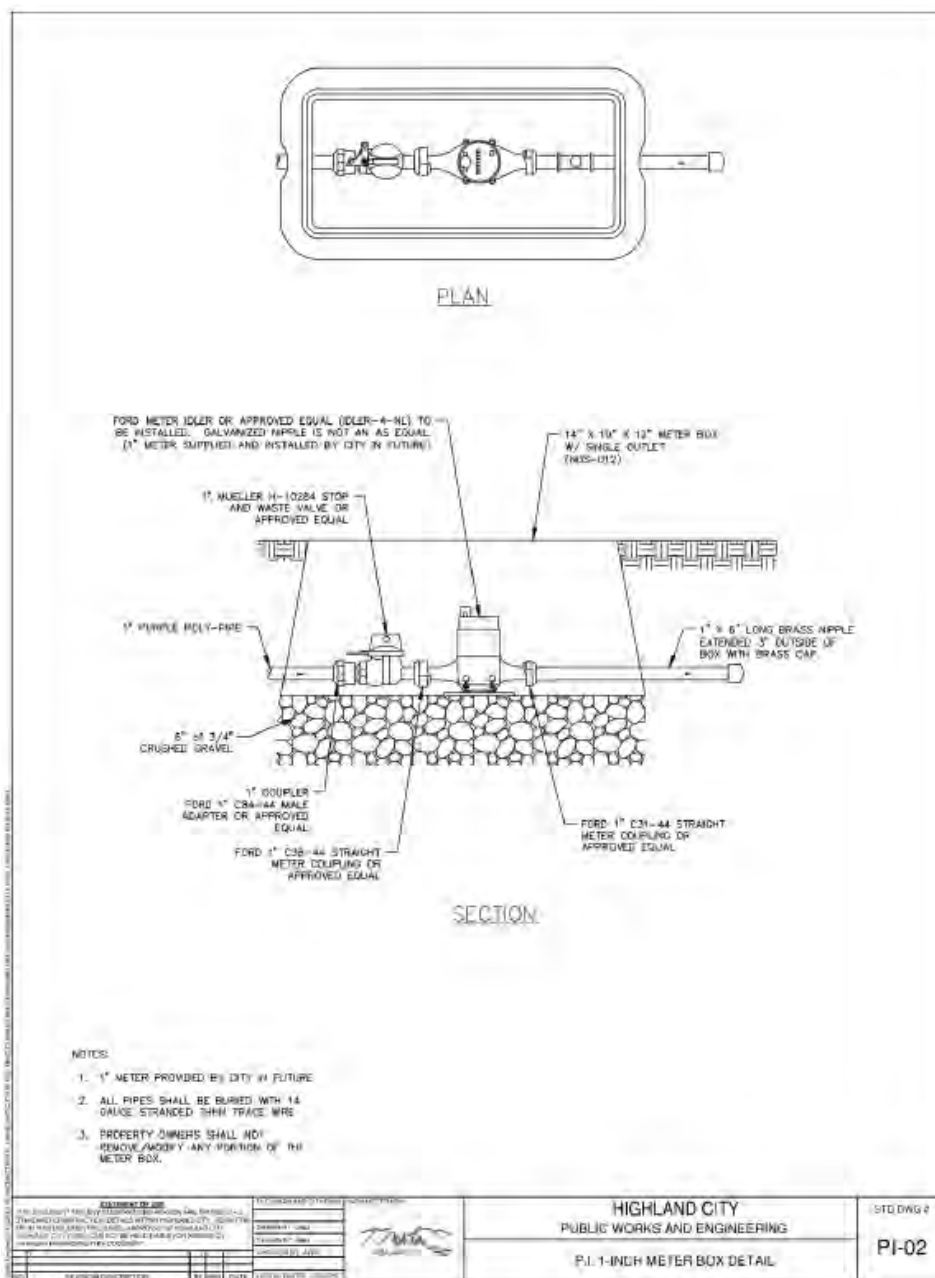
None Required

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

Over the past 5 years the City has been preparing for meters within their system. In 2016 the City revised their meter vault design to allow for meters. In 2018 the

City began placement of meters at new residents. The past City Water Conservation Plan has included meters for the Pressurized Irrigation System as the means to reduce water use by residents. In 2019 the City completed the their Pressurized Irrigation Master Plan. In the plan usage per irrigated acre was provided that has allowed the City to better understand the high water usage. The City during the planning process elected to select a level of service 25% below current usage. The City is committed to the metering project as the major means to meet their level of service reduction.

Over the past year the Public Works and Operations Staff have been meeting with adjacent City's who have recently placed meters. Staff has also been reviewing existing meter vaults to determine the extent of retrofit for placement of a meter.



Highland City Typical Meter Box Detail

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

There are no new policies or administrative actions that will be required to implement the project. The City Council and Mayor approved budgets in Spring of 2021 along with water rates that would fund the meter project in July of 2022 (FY 2023).

- Please also include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates. Milestones may include, but are not limited to, the following: complete environmental and cultural

compliance; mobilization; begin construction/installation; construction/installation (50% complete); and construction/installation (100% complete)

Schedule with major tasks and dates are provided above.

1.4.6 Criterion F – Collaboration

Up to 6 points may be awarded for projects that promote and encourage collaboration among parties in a way that helps increase the sustainability of the water supply.

Please describe how the project promotes and encourages collaboration. Consider the following:

- *Is there widespread support for the project? Please provide specific details regarding any support and/or partners involved in the project. What is the extent of their involvement in the process?*

We believe there is widespread support for the project, see Appendix F for the letters of support. We also believe the project will ultimately help prevent a water-related crisis or conflict because it will reduce the ground water withdrawals in an over-allocated aquifer. If there is a future crisis or conflict Highland City will be able to demonstrate to the other agencies that it is doing all that can be done to conserve and protect the aquifer. There is not currently frequent tension or litigation over water in the northern Utah County area, but there is an awareness and concern for the future viability of the resource. The State of Utah has been very active in educating the agencies relative to the potential over-appropriation of the ground water basin in northern Utah County. There is a growing recognition of the need to cooperate. As mentioned previously Highland City and other water users in the area have organized the North Utah County Aquifer Council (NUCAC) to jointly manage the aquifer. We believe that implementation of the project will encourage neighboring communities to implement their own pressurized irrigation improvement projects. They will see the benefits to Highland City's water use and want to achieve similar benefits for their water systems. They will also want to continue the collective benefits to the aquifer usage and management.

- *What is the significance of the collaboration/support?*

Other adjoining municipalities share the same or similar sources of water as Highland. As these communities support one another, there will be more water available during drought conditions. The communities also share the same groundwater aquifer and understand that supporting one another through the NUCAC will provide sustainable water sources for the region.

The City also is receiving support from municipalities that have already implemented meters. These cities are providing best practices, lessons learned and suggestions to improve the construction process. Alpine City has provided invaluable information to date. Other cities in the county have provided their water saving information along with preferences of meters and design details.

- *Will this project increase the possibility/likelihood of future water conservation improvements by other water users?*

Yes, similar to other projects in the region to which Highland City has looked when evaluating benefits, the success of this project will influence surrounding cities. They will see the benefits that Highland experiences and look to begin metering. This has happened with Highland City after seeing the success and water savings of Alpine City, Saratoga Springs, and Spanish Fork, all communities in the County.

- *Please attach any relevant supporting documents*

Please see Appendix F for supporting letters from:

- Central Utah Water Conservancy District
- Lehi Irrigation Company
- American Fork Irrigation Company
- Alpine City
- North Utah County Aquifer Council
- Highland City Mayor
- Highland Water Advisory Board

1.4.7 Criterion G – Additional Non-Federal Funding

Up to 4 points may be awarded to proposals that provide non-Federal funding in excess of 50 percent of the project costs. State the percentage of non-Federal funding provided using the following calculation: Non-Federal Funding/Total Project Cost

It is estimated that the proposed project will cost \$6,600,000 to complete. This grant application is for \$2,000,000 which is approximately 30% of the project total. Highland City will cover the remaining 70% of the project costs.

1.4.8 Criterion H – Nexus to Reclamation

Up to 4 points may be awarded if the proposed project is connected to a Reclamation project or Reclamation activity. No points will be awarded for proposals without connection to a Reclamation project or Reclamation activity.

Describe the nexus between the proposed project and a Reclamation project or Reclamation activity. Please consider the following:

- *Does the applicant have a water service, repayment, or O&M contract with Reclamation?*

Water shares that are owned and included in the Highland City pressurized irrigation water sources inventory include water provided through Reclamation projects. However, the City does not contract directly with Reclamation.

- *If the applicant is not a Reclamation contractor, does the applicant receive Reclamation water through a Reclamation contractor or by any other contractual means?*

Highland City receives surface water through Reclamation Facilities. Water shares in the Highland Conservation District and the Provo Reservoir Water Users

Association are provided through the Provo Water System, Jordanelle Reservoir, Deer Creek Reservoir and the Provo River Aqueduct operated by the Provo Water Users Association. Central Utah Project (CUP) reclamation water is delivered by Central Utah Water Conservancy District (CUWCD) through Reclamation facilities.

- *Will the proposed work benefit a Reclamation project area or activity?*

As a portion of the City's source water is from existing Reclamation Projects the decrease in water use will provide benefits to these projects and facilities. The Reclamation water managers during a normal year will be able to deliver less or more timely water to Highland City allowing more operational flexibility, more water in the reservoirs, and less water in the delivery system. Collectively the additional options all contribute to the continued capacity and lifespan of the Reclamation Projects.

- *Is the applicant a Tribe?*

No

1.5 Performance Measures

Municipal Metering

For projects that install or replace existing municipal end-user water service meters, the applicant should consider the following:

- *Whether the project includes new meters where none existed previously or replaces existing meters*

The project is exclusive of new meters where none existed in the past.

- *Whether the project includes individual water user meters, main line meters, or both*

The project only includes individual water meters.

- *If the project replaces existing individual water user meters with new meters, whether new technologies (automatic meter reading or AMI meters) will be employed*

The majority of the project will install meters where there were not any in the past. The new meters will provide for the use of AMI. There are approximately 250 existing meters that will require new communication radios retrofits so that they can connect into the AMI system.

- *Include a description of both pre- and post-project rate structuring.*

The City's existing rate structure requires each service connection pay a flat rate of \$20.01 plus \$0.000664 per square foot of the lot. As an example a ½ acre lot would pay $\$20.01 + 21,780 \text{ square feet} \times \$0.000664 = \$34.47$ per month.

It is currently undetermined what the post installation rate structure will be, but it is anticipated to include a base rate for all users and an escalating tiered usage charge. The base rate and lower tier usage charges will be structured to fund the

operation and maintenance of the system while the higher tier usage charges will be set to encourage conservation. The amount of water in the lower tier usage will be determined based upon the area irrigated, the time of year and the amount of water necessary to maintain healthy landscaping.

- *Note: Distribution system meters will not receive points for quantifiable water savings under Evaluation Criterion A: Quantifiable Water Savings. Accordingly, these projects must be paired with a complementary project component that will result in water savings in order for the proposal to be receive credit for water savings, e.g., pipe installation using upgraded materials, or individual water service meters.*

The following information about municipal end-user water service meters and replacement may be helpful in estimating the water conservation that will be realized upon completion of the proposed project and to verify this amount post-project:

- *Municipal water delivery meters are typically installed for each water user as well as at strategic locations within the distribution system to measure production, supply, and/or storage. Accurate measurement allows for demand assessments, customer billing, diagnostic testing, locating and quantifying leakage, and other management needs.*

Significant water savings can be achieved when meters are installed where none existed previously. In the case of individual water user metering, most customers use significantly less water when billed at a usage rate; and especially so when a tiered rate is applied (i.e., higher rates for higher use). Replacing existing meters can also result in water savings when new technologies are employed.

- *Quantifying savings associated with meter installation and/or replacement requires analysis of pre- and post-installation measurements from existing meters at strategic locations within the system. If installing meters will result in conserved water, please provide support for this determination (e.g., studies, previous projects, etc.). A logical scheme should be developed that compares pre- and post-installation flow quantities and that accounts for leakage and other considerations. The site-specific water savings verification plan should be as detailed as possible and clearly state all assumptions and the relative level of accuracy expected. In addition, please provide details underlying any assumptions being made in support of water savings estimates (e.g., residential users will reduce use once a more advanced billing structure is imposed).*

Each year Highland City meters the amount of water produced for their pressurized irrigation system. Currently, the usage must be estimated by assuming a percent loss in delivering the water to their residents. Once meters are installed the usage can be obtained directly from the summation of all the individual meter reads. The City maintains a record of the approximate acreage irrigated. From this data the City can determine the approximate number of ac-ft applied per irrigated acre.

It is proposed to measure the annual total water conservation achieved by

subtracting the number of ac-ft utilized per acre from 6.66 which is the current usage per acre and then multiplying by the number of acres irrigated.

2 Project Budget

2.1 Funding Plan and Letters of Commitment

Describe how the non-Federal share of project costs will be obtained. Reclamation will use this information in making a determination of financial capability.

Please identify the sources of the non-Federal cost-share contribution for the project, including:

- Any monetary contributions by the applicant towards the cost-share requirement and source of funds (e.g., reserve account, tax revenue, and/or assessments)*
- Any costs that will be contributed by the applicant*
- Any third-party in-kind costs (i.e., goods and services provided by a third party)*
- Any cash requested or received from other non-Federal entities*
- Any pending funding requests (i.e., grants or loans) that have not yet been approved and explain how the project will be affected if such funding is denied*

In addition, please identify whether the budget proposal includes any project costs that have been or may be incurred prior to award. For each cost, describe:

- The project expenditure and amount*
- The date of cost incurrence*
- How the expenditure benefits the project*

Highland City will fund the non-Federal share of the project cost wholly through monetary contributions from the City's pressurized irrigation account and, if necessary, general fund. The City has been planning and budgeting for this project. During the last budget review and water rate analysis a total of \$5,000,000 was budgeted for PI Meters. The City has the ability to raise user rates to finance the project once the actual cost is determined through bidding. The City also has the ability to raise funds through tax revenue.

The only costs that the City may incur prior to award would be Engineering Design and preparing bid documents. The expenditure of these funds would sharply benefit the project by allowing a contractor to be ready to proceed by July 2022. The costs would be negligible relative to the overall cost of the project.

2.2 Budget Proposal

The total project cost (Total Project Cost), is the sum of all allowable items of costs, including all required cost sharing and voluntary committed cost sharing, including third-party contributions, that are necessary to complete the project.

It is estimated that the proposed project will cost \$6,600,000 to complete. This grant application is for \$2,000,000 which is approximately 30% of the project total.

Highland City will cover the remaining 70% of the project costs.

Highland City is funding the 70% match fee through the Pressurized Irrigation

Fund.

Table 1 Project Funding Sources

SOURCE	AMOUNT
Costs to be reimbursed with the requested Federal funding	\$2,000,000
Costs to be paid by the applicant	\$4,600,000
Value of third party contributions	\$0
Total Project Cost	\$6,600,000



Budget Item Description	Computation		Quantity Type	Total Cost
	\$/Unit	Quantity		
Salaries and wages				
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Travel				
Not Anticipated				
Equipment				
Not Anticipated				
Supplies and Materials				
None Anticipated				
Contractual/Construction				
Engineering Consultant – BT Engineering		1	LS	\$75,000
Construction Administration & Observation		1	LS	\$152,000
¾” Residential Meter Only	\$415	100	EA	\$41,500
¾” Residential Meters	\$1,265	3559	EA	\$4,502,135
1” Residential Meters	\$1,345	560	EA	\$753,200
1-1/2” Meters	\$3,536	100	EA	\$353,600
4” Meters	\$7,648	6	EA	\$45,885
Retrofit MXU to Existing Mtrs	\$150	250	EA	\$37,500
Construction Contingency	10%			\$577,600

<i>Other</i>				
Environmental & Regulatory				
<i>Total Direct Costs</i>				<i>\$6,596,500</i>
<i>Indirect Costs</i>				
Admin & Clerical		<i>1</i>	<i>LS</i>	<i>\$3,500</i>
<i>Total Estimated Project Cost</i>				<i>\$6,600,000</i>

2.3 Budget Narrative

Submission of a budget narrative is mandatory. An award will not be made to any applicant who fails to fully disclose this information. The budget narrative provides a discussion of, or explanation for, items included in the budget proposal. The types of information to describe in the narrative include, but are not limited to, those listed in the following subsections. Costs, including the valuation of third-party in-kind contributions, must comply with the applicable cost principles contained in 2 CFR Part §200, available at the Electronic Code of Federal Regulations

2.3.1 Salaries and Wages

Indicate the Project Manager and other key personnel by name and title. The Project Manager must be an employee or board member of the applicant. Other personnel should be indicated by title alone. For all positions, indicate salaries and wages, estimated hours or percent of time, and rate of compensation. The labor rates must identify the direct labor rate separate from the fringe rate or fringe cost for each category. All labor estimates must be allocated to specific tasks as outlined in the applicant’s technical project description. Labor rates and proposed hours shall be displayed for each task.

The budget proposal and narrative should include estimated hours for compliance with reporting requirements, including final project and evaluation. Please see Section F.3. Reporting Requirements and Distribution for information on types and frequency of reports required. Generally, salaries of administrative and/or clerical personnel will be included as a portion of the stated indirect costs. If these salaries can be adequately documented as direct costs, they should be included in this section; however, a justification should be included in the budget narrative.

Highland City anticipates salaries and wages of City employees to be charged to the project in the amounts listed in Table 2. Andy Spencer, P.E. is the City Engineer/Public Works Director and will be the Program Manager for the project. Jeff Murdock is the Assistant Public Works Direction and Tayson Arnoldson is the Pressure Irrigation Superintendent. They will be involved in implementing the project and anticipate spending approximately 10% of their time during design, construction and final reporting and evaluation. Salaries and wages are subject to increase by approximately 3% as part of normal pay increases.

The City anticipates hiring a consultant to provide the majority of project design, inspection, and construction management services. These costs are identified in section 3.3.6 contractual.

2.3.2 Fringe Benefits

Identify the rates/amounts, what costs are included in this category, and the basis of the rate computations. Federally approved rate agreements are acceptable for compliance with this item.

Highland City anticipates fringe benefits of City employees to be charged to the project in the amounts listed in Table 2. The rates listed are existing fixed rates for each employee listed. Rates are subject to increase by approximately 3% as part of normal pay increases.

2.3.3 Travel

Identify the purpose of each anticipated trip, destination, number of persons traveling, length of stay, and all travel costs including airfare (basis for rate used), per diem, lodging, and miscellaneous travel expenses. For local travel, include mileage and rate of compensation.

No travel costs are anticipated.

2.3.4 Equipment

If equipment will be purchased, itemize all equipment valued at or greater than \$5,000. For each item, identify why it is needed for the completion of the project and how the equipment was priced. Note: if the value is less than \$5,000, the item should be included under materials and supplies.

No equipment costs are anticipated.

2.3.5 Materials and Supplies

Itemize supplies by major category, unit price, quantity, and purpose, such as whether the items are needed for office use, research, or construction. Identify how these costs were estimated (i.e., quotes, engineering estimates, or other methodology). Note: If the materials/supplies will be furnished and installed under a contract, the equipment should be included in the construction contract cost estimate.

Materials and supplies for construction will be provided by the Contractor. It is anticipated that materials will include pipe fittings, meter boxes and piping. The City will supply the actual meter and appurtenances.

The meters that Highland City will install will be 4,219 of Sensus-I-pearl water meters and 106 of EvoQ4 water meters. The City is also installing MXU's for the Sensus-I-pearl water meters that will allow the AMI to read the meters. The project will also include placing 250 MXU's on the existing meters so that the AMI can communicate.

2.3.6 Contractual

Identify all work that will be accomplished by consultants or contractors, including a breakdown of all tasks to be completed, and a detailed budget estimate of time, rates, supplies, and materials that will be required for each task. For each proposed contract, identify the procurement method that will be used to select the consultant or contractor and the basis for selection.

Highland City anticipates contracting with a consulting engineer to design lateral metering details, develop bid documents, assist the City in obtaining bids, and perform inspection and construction management services. The consulting engineer will be B T Engineering who is the currently contracted utility engineer for Highland City. Preliminary cost estimates for design and construction management are based on a fixed percentage of construction costs for this application. These amounts will be refined if a grant is received.

The meter installation will be performed by a construction contractor (or multiple contractors). Construction costs will include all materials and supplies necessary to install new meters on each lateral connection in the City. The construction contractor will be selected through a competitive bid process once project design is complete. Construction costs are estimated with an appropriate contingency factor included. Costs estimates utilized recent bids for similar projects by neighboring municipalities.

2.3.7 Third-Party In-Kind Contributions

Identify all work that will be accomplished by third-party contributors, including a breakdown of all tasks to be completed, and a detailed budget estimate of time, rates, supplies, and materials that will be required for each task.

No third-party in-kind contribution is anticipated.

2.3.8 Environmental and Regulatory Compliance Costs

Prior to awarding financial assistance, Reclamation must first ensure compliance with Federal environmental and cultural resources laws and other regulations (“environmental compliance”). Every project funded under this program will have environmental compliance activities undertaken by Reclamation and the recipient.

No environmental and regulatory costs are anticipated.

2.3.9 Other Expenses

Any other expenses not included in the above categories shall be listed in this category, along with a description of the item and why it is necessary. No profit or fee will be allowed.

Other costs are not anticipated or included in this funding request.

2.3.10 Indirect Costs

Indirect costs are costs incurred by the applicant for a common or joint purpose that benefit more than one activity of the organization and are not readily assignable to the activities specifically benefitted without undue effort. Costs that are normally treated as indirect costs include, but are not limited to, administrative salaries and fringe benefits associated with

overall financial and organizational administration, operation and maintenance costs for facilities and equipment, and payroll and procurement services. If indirect costs will be incurred, identify the proposed rate, cost base, and proposed amount for allowable indirect costs based on the applicable cost principles for the applicant's organization. It is not acceptable to simply incorporate indirect rates within other direct cost line items.

Indirect costs included in the project estimate are limited to administrative and clerical personnel. It is estimated that total cost will be approximately half the amount necessary for the water superintendent's wages and fringe benefits. It is unknown which administrative and clerical personnel will assist with the project therefore these costs are included in indirect costs.

3 Environmental and Cultural Resources Considerations

To allow Reclamation to assess the probable environmental and cultural resources impacts and costs associated with each application, all applicants should consider the following list of questions focusing on the NEPA, ESA, and NHPA requirements. Please answer the following questions to the best of your knowledge. If any question is not applicable to the project, please explain why. The application should include the answers to:

3.1.1 Impact on Surrounding Environment

Will the proposed 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.

The project will consist of installing water meters on existing pressurized irrigation service laterals. Primarily this will consist of removing an existing irrigation access/valve box and replacing it with a slightly larger box. Radio transmitters/receivers will also be installed on city buildings or in existing city-owned roadway rights-of-way. Work will not affect air, water, or animal habitat as it will only temporarily disturb only residential landscaping.

3.1.2 Federal Endangered Species or Critical Habitat

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?

USFWS's Information Planning and Conservation System (IPaC) website provides information regarding the occurrence of Endangered Species Act (ESA) species in an area based on a specific area of interest (AOI). The below table identifies the federally-listed species from an IPaC Official Species List which are known to occur in Highland City. The location of project features (proposed work) is within residential neighborhoods that are highly disturbed. No suitable habitat for these species exists within the proposed work areas. No threatened or endangered species will be impacted by the proposed project.

Table 3 Federal Endangered Species and Critical Habitat

Species Type	Common Name	Scientific Name	State Status
Mammal	Canada Lynx	Lynx Canadensis	Threatened
Bird	Yellow-billed Cuckoo	Coccyzus Americanus	Threatened
Fish	June Sucker	Chasmistes Liorus	Threatened
Flowering Plants	Jones Cycladenia	Clycladenia Humilis Var. Jonesii	Threatened
Flowering Plants	Ute Ladies-tresses	Spiranthes Diluvialis	Threatened
Critical Habitat			
<i>There are no critical habitats in this area</i>			

3.1.3 Wetlands

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

The project will only disturb existing residential landscaping; thus, no wetlands or waters of the U.S. will be affected by the project.

Table 4 National Wetlands Inventory

Wetland Type	Wetland Code
Freshwater Emergent Wetland	PEM1C, PEM1Ch, PEM1Ah
Freshwater Forested/Shrub Wetland	PFOA, PSSCx, PSSC, PFOAx
Freshwater Pond	PUSAh, PUBFx, PABFh, PUSCx
Riverine	R4SBC, R5UBFx, R4SBCx, R2UBF, R5UBH

3.1.4 Construction of Water Delivery System

When was the water delivery system constructed?

The majority of the non-distribution pressurized irrigation system was installed in 1999-2002.

3.1.5 Modification of Individual Meters

Will the proposed project result in any modification 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.

The project will install meters on existing pressurized irrigation service laterals. These laterals were constructed from 2000-2017.

3.1.6 National Register of Historic Places

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.

There are no properties in Highland listed on the National Register of Historic Places.

3.1.7 Archaeological Sites

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

A file search for archaeological sites showed seven within the city limits. None of these archaeological sites would be affected by the proposed project.

3.1.8 Low Income or Minority Populations

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

The project will affect all residences in the city equally and will not have disproportionately high or adverse effects to any population.

3.1.9 Indian Sacred Sites

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

No, there are no known sacred sites or tribal land within the City limits. The project will not limit access to or use of any property.

3.1.10 Noxious Weeds

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

The project will disturb areas of existing residential landscaping. Introduction, existence, or spread of noxious weeds or invasive species is not expected.

4 Required Permits or Approvals

Applicants must state in the application whether any permits or approvals are required and explain the plan for obtaining such permits or approvals.

All appropriate approvals and permits for the project are under the jurisdiction of Highland City. All Highland City ordinances and procedures will be followed and obtained. In addition, any applicable Utah State or Federal laws and regulations will be followed.

All work will be contained to City utility easements. Any other additional work necessary in City street rights-of-way will also fall under jurisdiction of the City. The contractor that is awarded the project will also be under and constrained to follow all necessary laws and regulations.

5 Letters of Project Support

Please include letters from interested stakeholders supporting the proposed project. To ensure

your proposal is accurately reviewed, please attach all letters of support/partnership letters as an appendix. Letters of support received after the application deadline for this NOFO will not be considered in the evaluation of the proposed project.

Attached to this grant application in Appendix F are letters of project support from Central Utah Water Conservancy District, Highland City Mayor, Highland City Water Advisory Board, North Utah County Aquifer Council, American Fork Irrigation Company, Lehi Irrigation Company and Alpine City.

6 Official Resolution

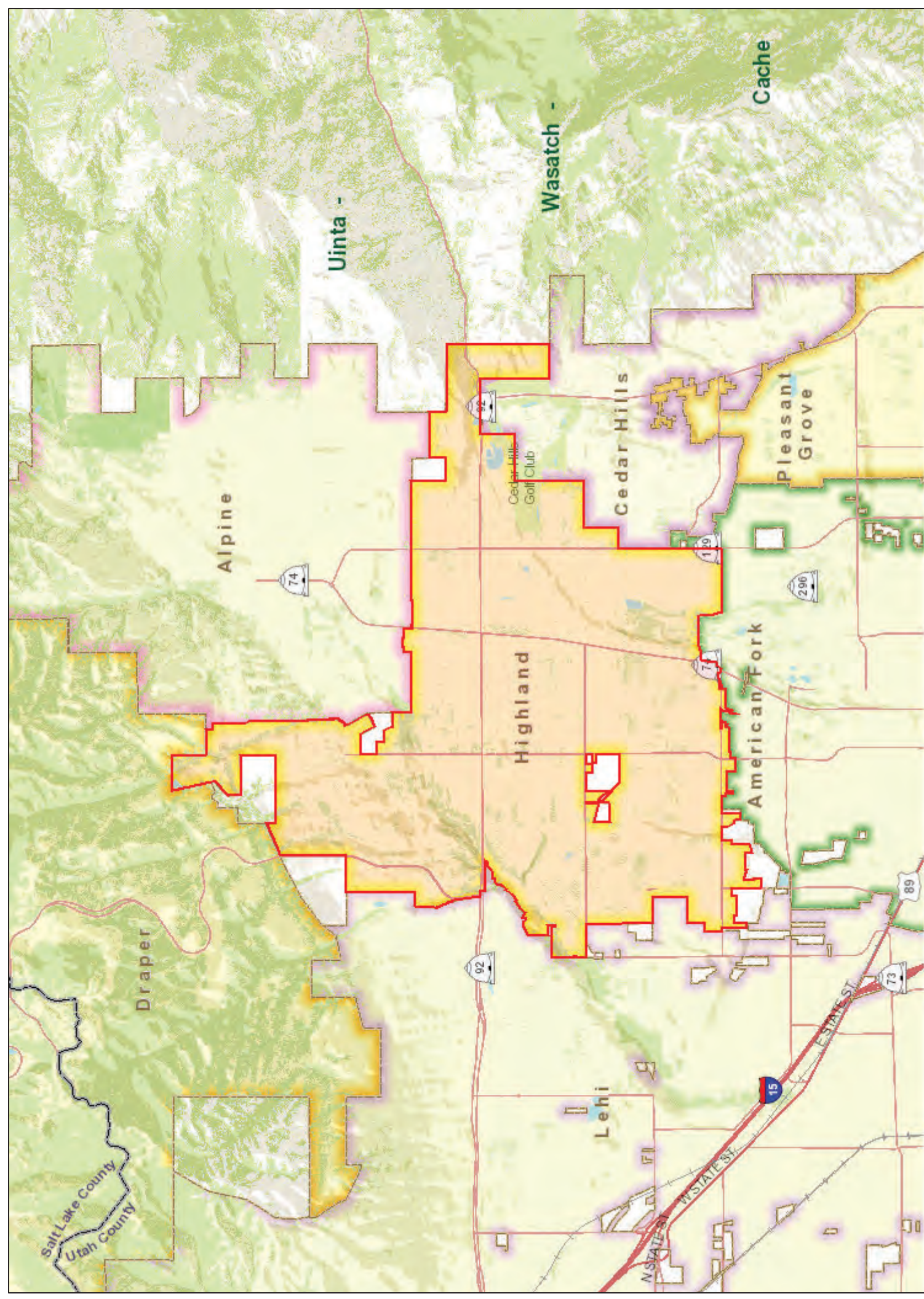
Include an official resolution adopted by the applicant's board of directors or governing body, or, for State government entities, an official authorized to commit the applicant to the financial and legal obligations associated with receipt of a financial assistance award under this NOFO, verifying:

- The identity of the official with legal authority to enter into an agreement*
- The board of directors, governing body, or appropriate official who has reviewed and supports the application submitted*
- The capability of the applicant to provide the amount of funding and/or in-kind contributions specified in the funding plan*
- That the applicant will work with Reclamation to meet established deadlines for entering into a grant or cooperative agreement*

An official resolution meeting the requirements set forth above is mandatory.

Attached to this grant application in Appendix H is an official resolution from the Highland City Council giving support to the project and committing to pay the balance of the project costs if the City is awarded this WaterSMART grant.

APPENDIX A – Highland City Project Location



Date: 3/11/2020

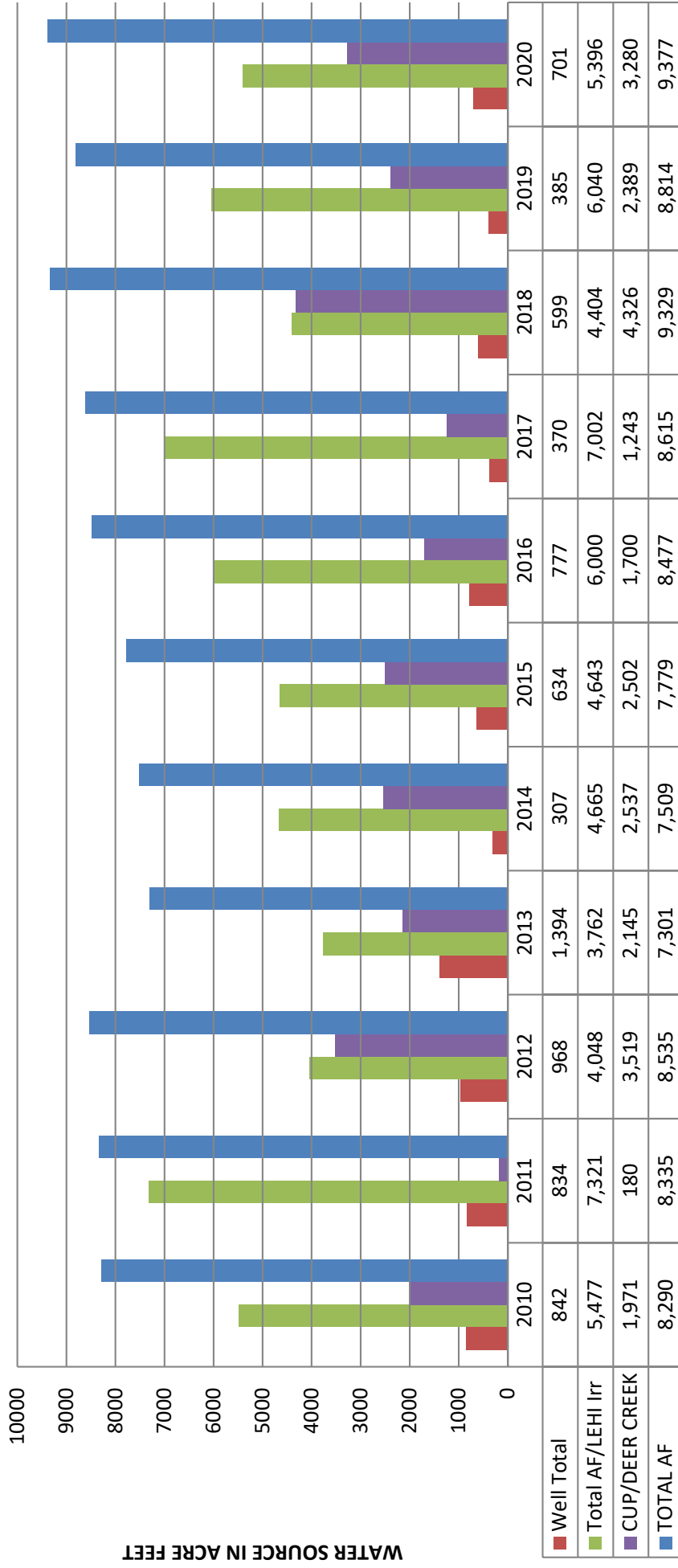
This cadastral map is generated from Utah County Recorder data. It is for reference only and no liability is assumed for any inaccuracies, incorrect data or variations with an actual survey

Utah County Parcel Map

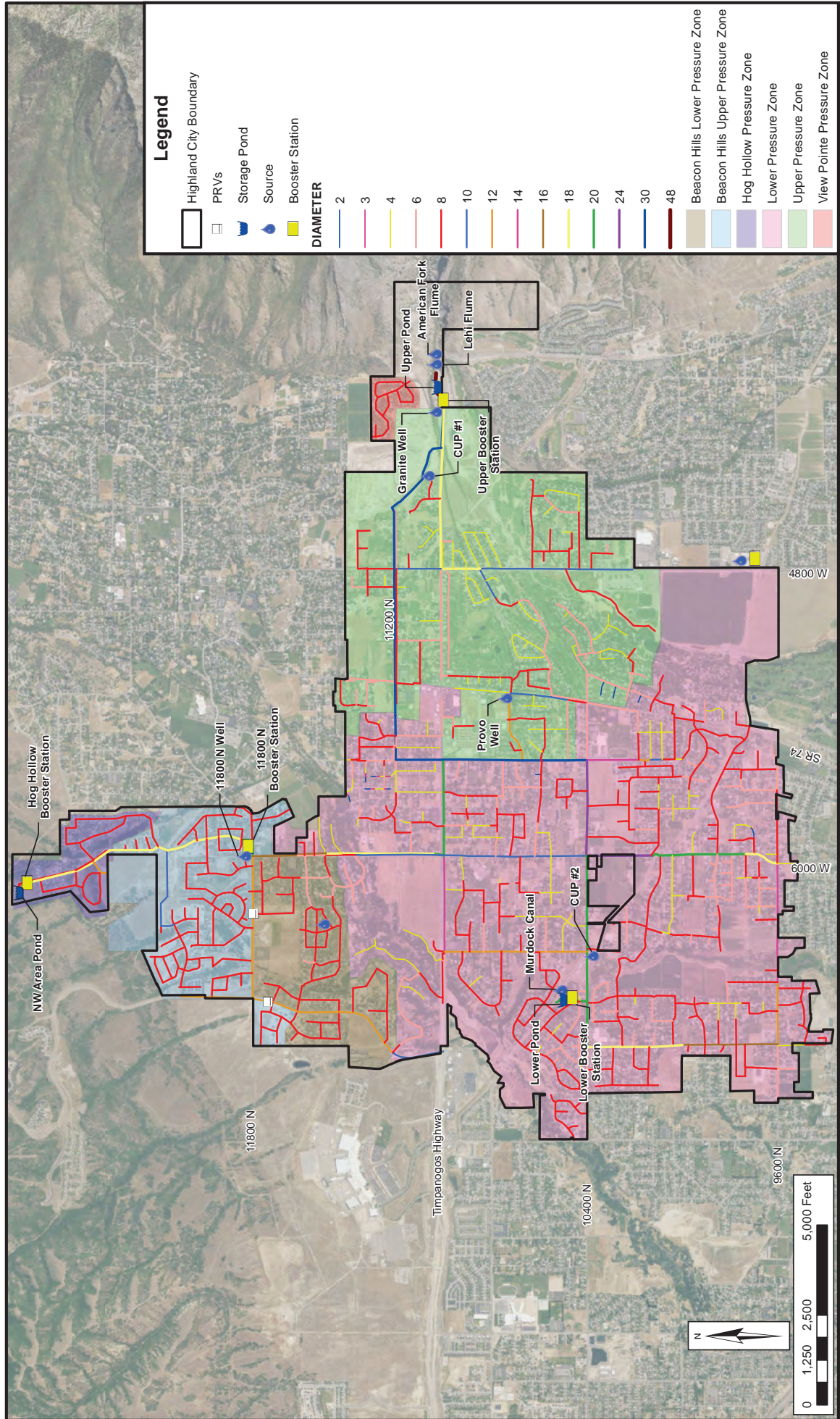
Highland City, State of Utah

APPENDIX B – Figure 01 Highland City Pressurized Irrigation Use

Highland City Annual PI Sources



APPENDIX C –Existing Pressurized Irrigation System



**Highland City
Pressurized Irrigation System Master Plan**

Existing Pressurized Irrigation System

**FIGURE
2-1**



APPENDIX D – Highland City Water Conservation Ordinance

ORDINANCE NO. O-2019-05

AN ORDINANCE OF THE HIGHLAND CITY COUNCIL CREATING CHAPTER 13.70 WATER CONSERVATION OF THE HIGHLAND CITY MUNICIPAL CODE.

WHEREAS, a reliable supply of potable and irrigation water is essential to the public health, safety and economy of the City of Highland; and,

WHEREAS, Highland City's water supply is a limited resource that needs to be protected and managed for the present and future uses; and,

WHEREAS, residential use has continued to rise in a manner that has the potential to exhaust and over tax our existing water resources; and

WHEREAS, careful water management should include active water conservation measures not only in times of drought, but at all times and,

WHEREAS, the adoption and enforcement of a water conservation program is prudent to manage Highland City's water resources and thereby ensure a reliable and sustainable supply of water for the residents and to minimize the effects of drought and shortage;

NOW THEREFORE, be it ordained by the City Council of Highland, Utah as follows:

13.70 WATER CONSERVATION

Section 13.70.010 Findings and Purpose

The City Council finds that it is in the best interest of Highland City and its water resources to encourage wise use of this important asset. As the state is subject to periodic droughts and water shortages, these trends have created water deficits in numerous watersheds which effect the City. The ongoing water deficits demonstrate that water conservation is a prudent step for Highland City and its residents. Highland City desires to be proactive in the implementation and enforcement of water conservation efforts.

Section 13.70.020 Definitions

The following words and phrases whenever used in this chapter have the meaning defined in this section:

1. "Resident" means any person using water provided by the city.

2. "Landscape area" means a lawn, landscape, garden, pasture, or other area of irrigable land.

Section 13.70.030 Limited Watering Days and Watering Hours:

1. Watering of residential lawns, landscape area or other vegetated areas shall only occur between the hours of 6:00 pm and 10:00 am. MST.
2. Watering or irrigating of lawn, landscape area or other vegetated area shall be limited to three days per week on the following schedule:
 - a. Even numbered street addresses: Monday, Wednesday, and Friday
 - b. Odd numbered street addresses: Tuesday, Thursday, and Saturday
 - c. No watering on Sunday except for Churches, Schools and Parks.
 - d. This provision also does not apply to watering or irrigating by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting or repairing an irrigation system.
 - e. Leaks, breaks or malfunctions in the user's plumbing or distribution system must be repaired within seventy-two hours of notification by the city unless arrangements are made with the city.
3. New lawns and landscaping are exempt from the day of the week restrictions for the first thirty (30) days of installation. However, such watering shall be limited to the minimum necessary. Watering should be conducted between the hours of 6 p.m. and 10 a.m. Documentation to verify the date of planting shall be made available upon request.
4. Watering for the purpose of applying insecticides, fungicides, and herbicides where such watering is required by the manufacturer or by federal or state law shall not be restricted by days of the week. However, such watering shall be limited to the minimum necessary. Documentation to verify the date of application shall be made available upon request.

Section 13.70.040 Hardship Waiver

The waiver may be granted or conditionally granted only upon written finding of the existence of facts demonstrating an undue hardship to a resident using water or to property upon which water is used, that is disproportionate to the impacts to water users generally or to similar property due to specific and unique circumstances of the property.

1. An application for a waiver must be on a form prescribed by the city.

2. Supporting Documentation. The application must be accompanied by photographs, maps, drawings, and other information, including a written narrative detailing the reason a waiver should be granted.
3. An application for a waiver will be granted only if the information provided in the application and supporting documentation for the property meet all of the following:
 - a. That the waiver does not constitute a grant of special privilege inconsistent with the limitations upon other residents;
 - b. That because of special circumstances applicable to the property or its use, the strict application of this chapter would have a disproportionate impact on the property or use that exceeds the impacts to residents generally;
 - c. That the authorizing of such waiver will not be of substantial detriment to adjacent properties, and will not materially affect the ability of the city to effectuate the purpose of this chapter and will not be detrimental to the public interest; and
 - d. That the condition or situation of the subject property or the intended use of the property for which the waiver is sought is not common, recurrent or general in nature.
3. The Approval Authority shall be deemed to be the City Administrator. The City Administrator must act upon any completed application no later than fifteen (15) days after submittal and may approve, conditionally approve, or deny the waiver. The applicant requesting the waiver must be promptly notified in writing of any action taken. Unless specified otherwise at the time a waiver is approved, the waiver will apply to the subject property and only during the watering season in which it is issued. The decision of the City Administrator will be final.

Section 13.70.050 Penalties and Violations

The City and its duly assigned representative(s) shall seek compliance with or enforcement of this chapter for failure to comply with any provision of the ordinance by assigning the following penalties and violations.

- a. First Violation: Highland City will issue a written warning via a door hanger and deliver a copy of this ordinance by mail.
- b. Second Violation: A one-hundred (\$100.00) dollar fine will be included on the next month utility bill.

- c. Third Violation: The water service will be locked and a two-hundred (\$200.00) dollar fee will be required for removal of the lock and reinstatement of service.
- d. Subsequent Violations: Subsequent violations will be subject to Section 13.30.380 of the Highland City Municipal Code.

This ordinance shall become effective on the date passed by the City Council of Highland.

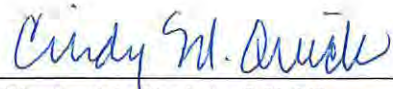
PASSED AND ADOPTED by the Highland City Council this 16th day of April, 2019.

HIGHLAND CITY, UTAH



 Rodney W. Mann
 Mayor

ATTEST:



 Cindy M. Quick, MMC
 City Recorder



COUNCILMEMBER	YES	NO
Brian Braithwaite	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ed Dennis	absent	
Tim Irwin	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Kurt Ostler	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Scott L. Smith	<input checked="" type="checkbox"/>	<input type="checkbox"/>

APPENDIX E – Water Meter Phasing Plan

APPENDIX F – Letters of Project Support



November 1, 2021

Smart Meters and Controllers Grant

To whom it may concern,

In Highland we have made an extended effort over the last few years to encourage residents to conserve water. This includes:

- Distributing flyers
- Newsletter articles
- Email and text messages
- Social media campaigns using our own and multi-city produced videos

In August of 2014 we revised our design and construction standards to include a requirement that fittings be installed in all new pressurized irrigation connections which would allow the city to place a meter in the future. In December of 2016 the city council adopted a fee schedule for PI meters for all new homes effective January 1, 2017.

There are over 300 homes with PI meters in Highland and over 4,400 without them. The city currently waters nearly 150 acres of landscaped ground and using well over 200 manual controllers.

The grant money we are seeking will subsidize the cost of adding PI meters on unmetered homes and will also be used to subsidize the transition of the city's manual sprinkler control boxes to smart controllers that can be controlled remotely and use weather information to optimize watering times.

We believe these projects will help the city significantly reduce its current consumption of pressurized irrigation water.

Respectfully,

Rod Mann

Highland City Office of Community Development
5400 W Civic Center Dr., Ste 1 Highland, UT 84003
801.772.4515 joann@highlandcity.org



**CENTRAL UTAH WATER
CONSERVANCY DISTRICT**

Al Mansell *Chair of the Board*
Shelley Brennan *Vice Chair of the Board*
Gene Shawcroft *General Manager / CEO*

G. Wayne Andersen
JR Bird
E James (Jim) Bradley
Shelley Brennan
Max Burdick
Kirk L Christensen

Board of Trustees

Steve Farrell
Steve Hanberg
Max Haslem
Nathan Ivie
Bill Lee
Al Mansell

Greg McPhie
Jim Riding
Jennifer Scott
Edwin Boyd Sunderland
Byron Woodland
Boyd Workman

September 8, 2020

Bureau of Reclamation
Financial Assistance Support Section
P.O. Box 25007, MS 84-27814
Denver, CO 80225

To Whom It May Concern:

The Central Utah Water Conservancy District (CUWCD) is committed to water conservation and preparing for the future. We recognize the value of city-initiated conservation programs as they are highly effective in their communities. Highland City is striving to implement a city wide pressurized secondary meter network, which will result in per capita water use reduction. It is our understanding that the city is seeking WaterSMART funding to assist in this effort. As a recipient of Central Utah Project water, the city's efforts to improve the monitoring and conservation of this water supply are highly supported by CUWCD.

Through similar programs, we have seen significant water savings and are confident in the impact metering secondary systems will have in the City. By installing new meters it will provide individual users greater access their water use and help control outdoor water waste. In addition to water conservation this will help with the ability to better manage peak demand. Thus the City will be able to reduce long-term infrastructure needs and improve their water supply management.

CUWCD is committed to secondary metering projects and are pleased to see the City moving forward with a valuable water conservation project.

Thank you for your consideration.

Sincerely,

Rick Maloy
Water Conservation Manager
Central Utah Water Conservancy District

North Utah County Aquifer Council

1426 East 750 North #400

Orem, UT 84097

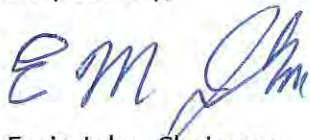
September 9, 2020

To Whom it May Concern:

The North Utah County Aquifer Council (NUCAC) supports measures taken by Highland City to obtain grant funding for the metering of secondary water within their city. Metering of secondary water usage in residential areas is essential to protect our natural and vital resources. Data collected can aid in the management of water resources and provide vital information when planning for the future.

For these reasons North Utah County Aquifer Council fully supports Highland City's efforts to place meters on all connections to their secondary water system. Funding provided through the Secondary Water Meter Funding Program will greatly enhance Highland City's ability to complete metering in a timely manner and provide us with relevant information.

Respectfully,

A handwritten signature in blue ink, appearing to read "Ernie John".

Ernie John, Chairman

North Utah County Aquifer Council

801-471-6576

American Fork Irrigation Company

PO Box 412

American Fork, UT 84003

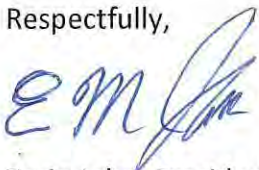
September 8, 2020

To Whom it May Concern:

The American Fork Irrigation Company strives to be wise stewards of the water resources within its jurisdiction and makes conservation and good management practices a high priority. Metering of secondary water usage in residential areas is essential to provide factual data that can substantiate conservation policies. Additionally, data collected can aid in the management of water resources through methodical adjustments in delivery volume resulting in less waste.

As we live in a desert, water is in short supply, and as Utah continues to grow it is paramount we conserve the resources we have. For these reasons as well as others, American Fork Irrigation Company supports Highland City's efforts to place meters on all connections to their secondary water system. Funding provided through the Secondary Water Meter Funding Program will greatly enhance Highland City's ability to complete metering in a timely manner and provide us with relevant information.

Respectfully,

A handwritten signature in blue ink, appearing to read 'Ernie John', written over a faint circular stamp.

Ernie John, President

American Fork Irrigation Co.

801-471-6576

Mayor: Troy Stout
City Council Members:
Jessica Smuin • Lon Lott
Carla Merrill • Jason Thelin
Greg Gordon

20 N. Main
Alpine, Utah 84004
Phone: 801-756-6347
Alpinecity.org

To whom it may concern:

Alpine City understands that Highland City is seeking federal funds for a proposed Pressure Irrigation (PI) Metering Project through the Bureau of Reclamation's (BOR) WaterSMART grant program.

Highland and Alpine City both have wells pulling water from the same aquifer. It is important for both cities providing service to residents to exercise best management practices. One of these practices is to meter the secondary water to help with conservation.

We understand that Highland has completed a significant amount of research on various meters to determine the best meter for its PI system. We also recognize that metering secondary water connections will help reduce water usage and sustain existing water resources. We therefore recommend BOR's joint funding of this project to help ensure its success.

Please feel free to call me at 801-756-6347x1 if you have any questions.

A handwritten signature in black ink, appearing to read "Jed Muhlestein", with a long horizontal flourish extending to the right.

Jed Muhlestein, P.E.
Alpine City, Engineer

Cc: File



LEHI IRRIGATION COMPANY

PO Box 316
Lehi, UT 84043

Gary Thomas, *President*
John K. Bushman, *Secretary*
tel. no.: 801-768-8730

October 20, 2021

Bureau of Reclamation
Financial Assistance Support Section
P.O. Box 25007, MS 84-27814
Denver, CO 80225

To Whom It May Concern:

Lehi Irrigation Company serves approximately 1200 stockholders and the cities of Lehi and Highland. The main water sources for the two areas are received from winter snows in the American Fork, Alpine and Fort Canyon drainages. We also have some Provo Reservoir storage water to supplement those sources as the water season progresses. As this area was settled by the pioneers, it was first thought that the water and land would support about thirty families. Today there is over 100,000 residents plus business that call the area of Lehi Irrigation Company home.

It has come to our attention that Highland City is seeking WaterSMART funding to help implement a city wide pressurized secondary metered network to monitor secondary water use within the City and assist in water conservation. Highland City receives Lehi Irrigation water and our Company fully supports the need for water conservation of the limited water supply.

The Irrigation Company believes that this project will result in substantial water savings and conservation of our natural resources. It will allow users to monitor their water use and become partners in conserving our water resources. Lehi Irrigation Company fully supports Highland City in seeking this important funding to conserve and fully utilize our natural resources effectively.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Gary Thomas', is written over a light blue horizontal line.

Gary Thomas, President
Lehi Irrigation Company

Email: lehiirrigationco@gmail.com

HIGHLAND WATER ADVISORY BOARD

Bureau of Reclamation
Financial Assistance Operations
Attn: Mr. Ned Weakland
P.O. Box 25007, MS 84-27815
Denver, CO 80225

September 1, 2020

RE: Highland City – Water Smart Grant Application – Letter of Support

To Whom It May Concern:

On behalf of the Highland Water Advisory Board, we respectfully submit this letter of support for Highland City's grant application to install citywide pressurized irrigation water metering. We strongly support this grant application to advance the focus of water conservation and water use reduction by measuring individual property owner's usage through a centralized metering system.

The Water Advisory Board was created to advise the Mayor and City Council on water related issues. Conservation of the city's water sources has been an important focus of the Board. On a number of occasions, the Board has conveyed to the Mayor and City Council, the necessity to conserve water through increased public awareness and metering.

As has been demonstrated in neighboring communities, pressurized irrigation meters are a key factor that will assist in increased water conservation within the City. Continued growth rates in the community will require the city to further reduce water consumption and preserve water resources. Grant assistance will aide the city in its desire to complete an irrigation metering system. We appreciate the opportunity to underscore our support of Highland City's grant application.

Respectfully,

Highland City Water Advisory Board

APPENDIX G – Official Resolution

RESOLUTION NO. R-2020-25

**A RESOLUTION OF HIGHLAND CITY, UTAH
AUTHORIZING THE CITY TO SUBMIT A GRANT APPLICATION FOR
POTENTIAL FUNDING OF CERTAIN IMPROVEMENTS TO THE CITY'S SECONDARY
IRRIGATION SYSTEM THROUGH THE U.S. DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION'S WATERSMART PROGRAM**

WHEREAS, the City operates a secondary irrigation system that is not metered system; and

WHEREAS, the City Engineer has recommended to the City Council that metering the system would help in encouraging water conservation by identifying excessive users and rewarding those that conserve water with lower water rates; and

WHEREAS, the Bureau of Reclamation has a program called WaterSMART that has water and energy efficiency grants available to qualifying entities to assist them in projects such as placing meters on unmetered water systems.

NOW, THEREFORE BE RESOLVED, by the Governing Body of Highland City as follows:

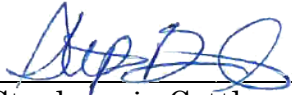
1. The City Staff is hereby authorized and instructed to submit a qualifying grant application to the Bureau of Reclamation for funding for metering the secondary water system in the City.
2. That the City is hereby committed to the legal and financial obligations associated with receipt of any financial assistance to be awarded pursuant to the grant application.
3. That Nathan Crane, City Administrator, is hereby identified as the official with the City with legal authority to enter into an agreement resulting from a successful application for this grant and is specifically authorized to do so.
4. That Highland City is hereby committed to work with the Bureau of Reclamation to meet established deadlines for entering into a grant or cooperative agreement.
5. That Highland City is hereby committed to work with the Bureau of Reclamation to meet established deadlines for entering into a grant or cooperative agreement.

PASSED AND ADOPTED by the Highland City Council, August 18, 2020.

HIGHLAND CITY, UTAH

Rodney W. Mann
Mayor

ATTEST:



Stephannie Cottle
City Recorder



COUNCILMEMBER	YES	NO
Timothy A. Ball	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Brittney P. Bills	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Kurt Ostler	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Kim Rodela	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Scott L. Smith	<input checked="" type="checkbox"/>	<input type="checkbox"/>