Irrigation Flow Measurement Proposal

May 2018

Funding Opportunity Announcement No. BOR-DO-18-F006

To provide irrigation flow measurement devices to ground water diversion wells within Henry's Fork and Madison Ground Water Districts in an effort to account for and better manage the water supply

Managing Entity:
Henry's Fork Ground Water District
350 N. 6th W
St Anthony, ID 83445

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SPF WATER ENGINEERING

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1. Technical Proposal and Evaluation Criteria

1.1. Executive Summary

Application Date: May 10, 2018

Applicant: Henry's Fork Ground Water District
350 N 6th W, St Anthony, ID 83445

The Henry's Fork Ground Water District (HFGWD) and Madison Ground Water District (MGWD) respectfully submit this request for funding under Funding Group II of the WaterSMART: Water and Energy Efficiency Grants for FY 2018 Funding Opportunity Announcement No. BOR-DO-18-F006. HFGWD will be the managing entity for the grant, and MGWD will be a grant partner.

In 1995, the Idaho Legislature adopted the "Ground Water District Act", enabling water users to organize into Ground Water Districts. Both Henry's Fork Ground Water District and Madison Ground Water District were established pursuant to the statutes developed as part of this Act in 2017 and 1998. These statutes can be found in Idaho Code Title 42 "Irrigation and Drainage" Chapter 52 "Ground Water Districts". Title 42-5224 (which has been included in Appendix A) defines the authorities granted to groundwater districts, which includes water delivery authority. As such, HFGWD and MWD are eligible applicants for a WaterSMART Grant as described on page 5 of the funding opportunity announcement. Please note that both HFGWD and MGWD are in the process of obtaining a DUNS number, but have not yet received the number at the time of this application. DUNS numbers for each District will be conveyed to Reclamation upon receipt.

Grant proceeds would be used to purchase and install advanced water flow measurement devices for a total of 140 separate groundwater wells (HFGWD and the MGWD) owned or operated by individuals within the HFGWD and MGWDs. HFWD and MGWD would both contribute 55% of the non-Federal entity matching funds as part of this grant application. The total project cost is $669,000 of which Reclamation's share would be $300,000 or 45%. HFGWD and MGWD would bear the cost of the remaining 55%, or $369,000. HFGWD and MGWD would each contribute their share of the $369,000. The project will be completed in two years with 140 flow meter installations at a cost of $669,000 for the total costs funding (45%) and $369,000 non-federal entity funding (55%)).

The primary objective of this grant is to increase flow measurement accuracy of withdrawals from the Eastern Snake Plain Aquifer (ESPA) by groundwater wells. Goals and benefits include, but are not limited to, the following:

1. Provide protection to minimum stream flow rights established on the Snake River pursuant to the Swan Falls Agreement (SFA) between the State of Idaho (State) and the Idaho Power Company (IPC) (State of Idaho/Idaho Power Company, 1984). This Agreement was developed to

resolve the nature and extent of water rights for the use of water for hydropower production at IPC's hydropower projects on the Snake River;

2. Improved surface water supply from increased reach gains to the Snake River will increase the amount of water available to fill Reclamation reservoir storage accounts, in turn providing a more reliable water supply for irrigators, Indian Tribes, recreationalists, and cities among others. Increased reservoir storage will also provide additional opportunity for Reclamation flow augmentation rentals for the benefit of endangered species (e.g. Fall Chinook Salmon);
3. Increased opportunity for water users to implement irrigation efficiencies and techniques through better management of their water supply. Good irrigation management requires knowledge of the total amount of water delivered to the irrigation system. Regular monitoring of diversion rates over time, along with a better understanding of crop demands, provides an opportunity to monitor the performance of the irrigation system, resulting in better management of pump and motor maintenance, improvements to irrigation scheduling, and the minimizing of water usage and waste. All of which will help to improve system energy efficiency and provide overall energy and operator cost savings;
4. Increase reliability and enforcement of water use, measurement, and reporting across the ESPA;
5. Minimize economic impact to individual water users and the State's economy arising from water supply shortages and potential curtailment based on Prior Appropriation Doctrine and State law;
6. Reduction to overall power usage throughout the ESPA through reductions in pumping and decreases in pumping lift requirements as the aquifer rises; and
7. Help to counteract the effects of drought and climate change in the Upper Snake River basin and help create a sustainable resource.
8. To ensure the accuracy of the groundwater withdrawals match the mitigation requirements and plans as part of the SWC-IGWA Settlement Agreement.

1.2. Background Data

Sitting beneath southeast and south-central Idaho lies one of the largest and most productive groundwater aquifers in the United States, the Eastern Snake Plain Aquifer (ESPA). The ESPA covers more than 10,000 square miles, extending from Ashton, Idaho to King Hill, Idaho; approximately 13 percent of the State's total land area (see Figure 1 below (Idaho Water Resource Board, 2009)). Located entirely within the drainage of the Snake River Basin, the ESPA covers all or part of 21 of Idaho's 44 counties, a land area estimated to be similar in size to the state of Maryland. Approximately 2.1 million acres of land are irrigated on the Eastern Snake River Plain, 60% of Idaho's total irrigated area. Of those irrigated acres, 880,000 acres rely directly on groundwater withdrawals from the ESPA, while another 871,000 rely on surface water which is partially derived from spring flows back to the river from the ESPA, and another 348,000 acres from mixed sources (Idaho Water Resource Board, 2009).

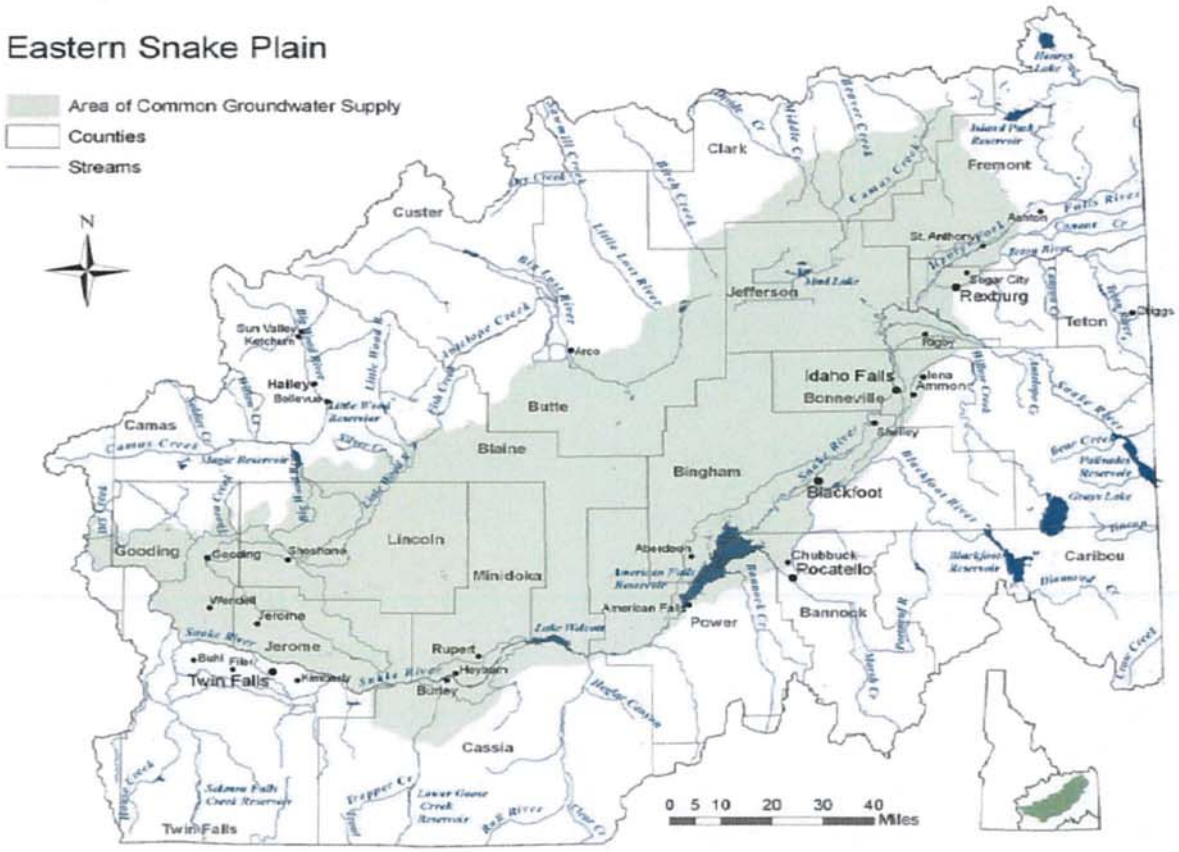

Figure 1. Map of Eastern Snake Plain Aquifer.

The ESPA is critically important to Idaho's economy, the livelihoods of Idaho citizens, and the many users of the Snake River. According to the University of Idaho 2017 financial analysis, 33% of all goods and services in Idaho ($16.2 billion annually) are produced on the ESPA . In addition, the ESPA provides drinking water to nearly 400,000 residents of eastern Idaho (Idaho Census Bureau, 2015). The ESPA is also the source of many springs that provide reach gains to the Snake River that are critical to surface

water supplies. These surface water supplies are important for a variety of reasons, including irrigation, endangered species, tribal uses, industry, and recreation, among others. The ESPA is critical for providing water for irrigation, domestic, commercial, municipal, and industrial uses vital to the future growth of the state and local economies.

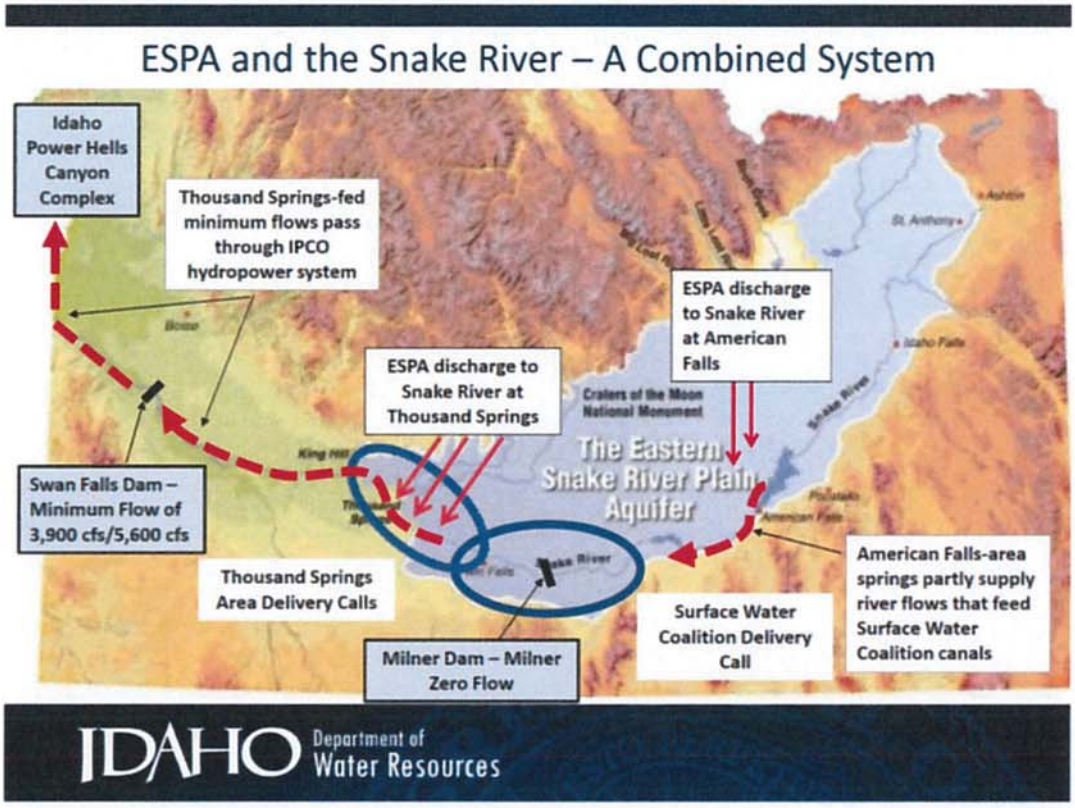

Figure 2. ESPA System.

Water levels in the aquifer increased from the late 1800s until the early 1950s due to increases in recharge, primarily due to irrigation diversions from the Snake River. Unfortunately, this critically important resource has been on the decline since the early 1950s, and has lost 3.5 trillion gallons of water, or 11 million acre-feet, of aquifer storage volume during that time period (see Figure 3 (IDWR, 2015)). To give this some perspective, this is enough water to cover the entire state of Rhode Island with more than 11 feet of water.

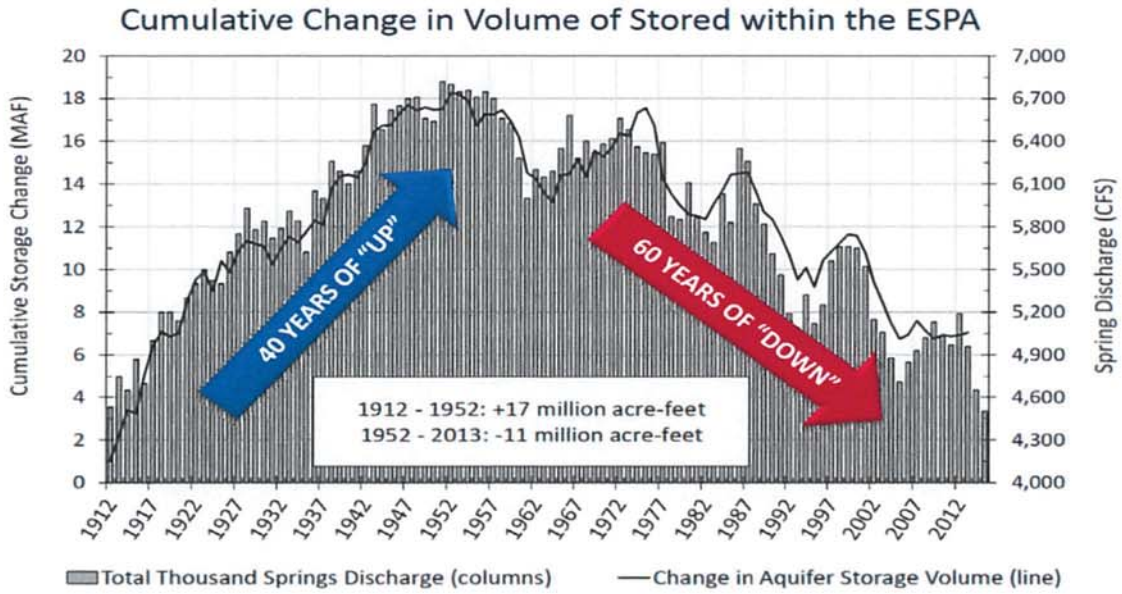

Figure 3. Cumulative Change in Volume.

Many factors have contributed to declines in the ESPA, including:

1. Increases in ground water diversions;
2. Changing climate conditions such as drought cycles and declining precipitation;
3. Increases in irrigation efficiencies, resulting in less incidental recharge (changing from flood irrigation to sprinkler irrigation, canal lining, etc.);
4. Flow augmentation releases (salmon recovery); and
5. Bureau of Reclamation Winter Water Savings initiatives to reduce off season diversions in order to increase water storage availability for the Palisades Reservoir.

As a result of the declining aquifer, spring flows to the Snake River have also been reduced, including reduced reach gains in the near Blackfoot to Minidoka (Lake Walcott) reach of the Snake River of approximately 500,000 acre-feet annually (See Figure 4 and Figure 5 (IDWR, 2015)).

Figure 4. Near Blackfoot to Minidoka (Lake Walcott) Reach.

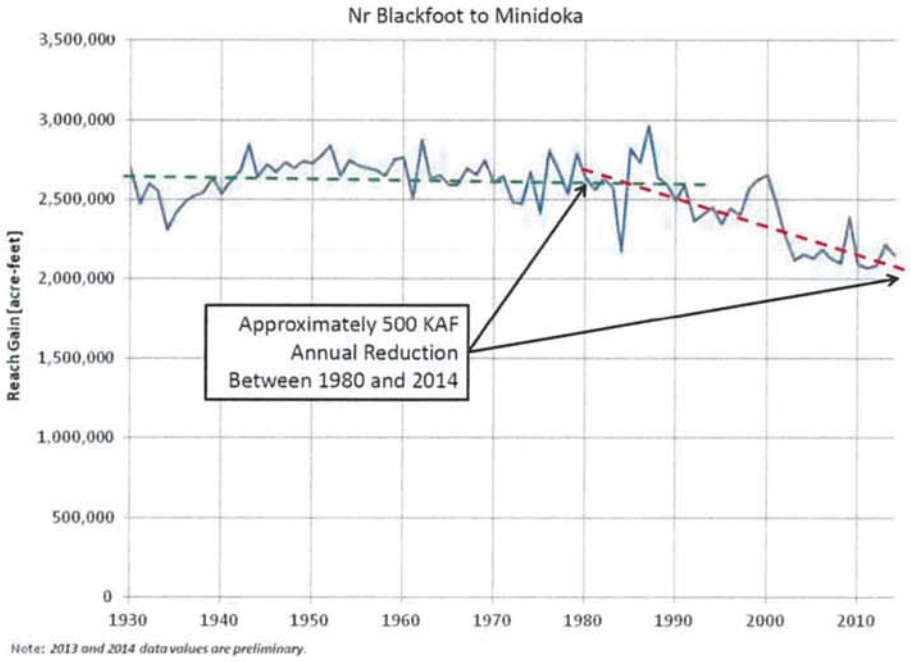

Figure 5. Reduction to Reach Gains in the Snake River: Near Blackfoot to Minidoka Reach, 1980 to 2014.

This reduction has in turn created conflict with the many users of the Snake River, ultimately culminating in costly litigation and water calls. In 2005, a water delivery call from surface water users was made on junior ground water users of the ESPA. To address the call, and after much litigation (even culminating at the Supreme Court of Idaho), the Idaho Department of Water Resources (IDWR) developed a methodology to determine the injury to senior water rights based on the water supply for the current year. Because water supply changes from year to year, so did the injury obligation, resulting in great uncertainty and frustration to both the junior and senior water right holders. With a poor water supply at the start of the 2015 irrigation season, the IDWR methodology determined a shortage of 89,000 acre-feet of water that the junior ground water users would need to supply to the senior surface water users, or be faced with curtailment of 86,000 acres of ground water irrigated lands. The methodology also estimated that if poor water supply conditions continued, the shortage could increase to as much as 571,000 acre-feet, or 594,000 acres of ground water irrigated lands which would be curtailed.

Faced with the prospect of more than 50 percent of the ground water irrigated lands on the ESPA potentially being curtailed, and the economic catastrophe that would ensue, the surface water and ground water parties began settlement discussions. After 10 years of contentious litigation between ground water and surface water users, a historic Settlement Agreement (Agreement) was reached and entered into October 2015 by the members of the Surface Water Coalition (SWC) (representing seven surface water entities, see Figure 6 (IDWR, 2015)) and the Idaho Ground Water Appropriators (IGWA). IGWA is an organization that represents agricultural, industrial, and municipal ground water users in the State of Idaho. In this case, IGWA represented 8 ground water districts, 2 irrigation districts, and numerous cities and industries as a party to the Agreement. The Agreement can be found in Appendix B.

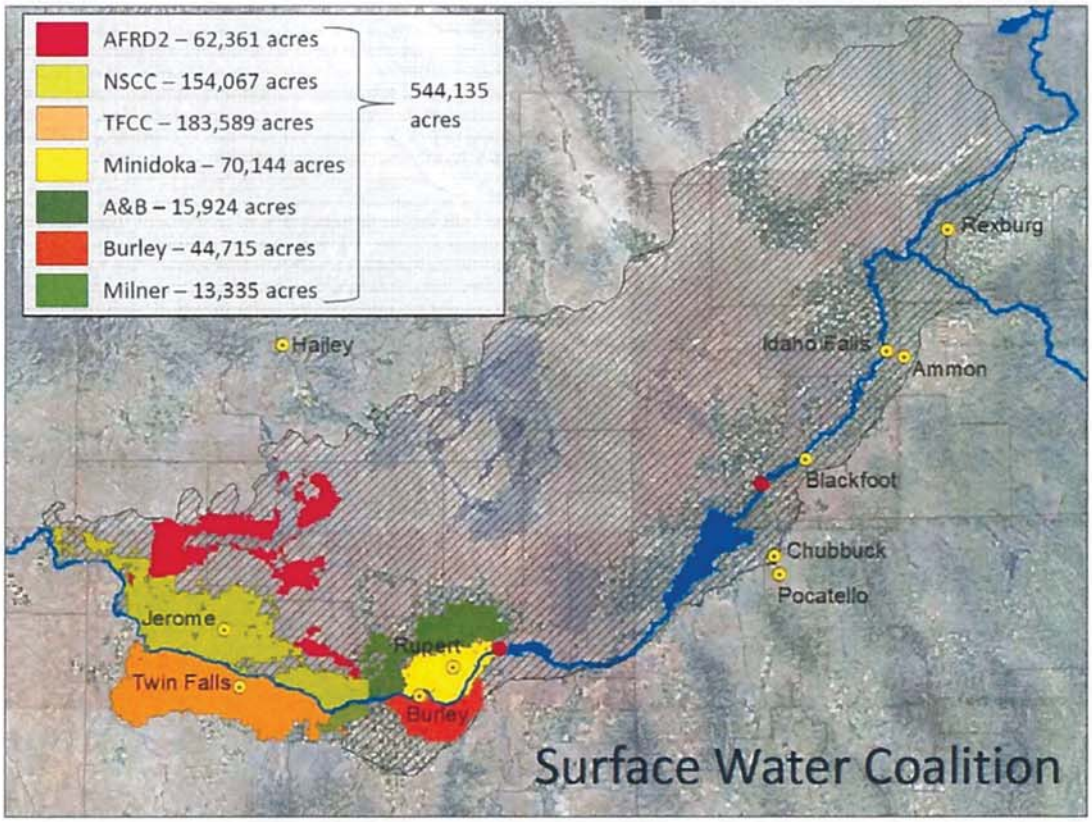

Figure 6. Surface Water Coalition Members.

The goal of the Agreement is to stabilize and ultimately reverse the trend of declining ground water levels. Additional objectives of the agreement include:

1. Mitigate for material injury to senior water users.
2. Provide safe harbor to participating ground water users.
3. Minimize economic impact to water users and the State's economy.
4. Increase reliability and enforcement of use, measurement and reporting across the ESPA.

The Agreement contemplates near term and long-term practices to be implemented as follows:

Near-Term Practices (implemented during the 2015 irrigation season).

1. IGWA to provide 110,000 acre-feet of storage water to the SWC.
2. $1.1 Million dedicated by IGWA for groundwater to surface water conversions.

Long Term Practices

1. Ground water diversion reduction of 240,000 acre-feet annually (note that this reduction is split proportionately between the Agreement's participating ground water users, see Appendix C for the reduction spreadsheet).
2. Annual storage water delivery of 50,000 acre-feet from IGWA to the SWC
3. Reduction of ground water irrigation season to April 1 to October 31.

4. Mandatory flow meter measurement devices on all wells party to the Agreement prior to the 2018 irrigation season.
5. Support for the State's 250,000 acre-feet annual recharge effort The Agreement also contemplates the following Goals and Benchmarks:

a. Stabilize and ultimately reverse the trend of declining ground water levels and return ground water levels to levels equal to the average ground water levels from 1991 to 2001.

b. By 2020, ground water levels will equal ground water levels seen in 2015.

c. By 2023, ground water levels will equal ground water levels halfway between 2015 ground water levels and the 1991-2001 average; By 2026 ground water levels equal or exceed the 1991-2001 average.

The metric for success will be the measurement of ground water levels in 19 mutually agreed to "sentinel" observation wells (See Figure 7).

A Steering Committee comprised of representatives from SWC, IGWA, and the State of Idaho is established, and will be responsible to review compliance with the Agreement. In addition, the Steering Committee will have the ability to implement adaptive water management measures if goals are not being met. The Agreement states:

"if any of the benchmarks or the ground water level goal is not met, additional recharge, consumptive use reduction, or other measures as recommended by the Steering Committee shall be implemented by the participating ground water parties to meet the benchmarks or ground water level goal"

1.3. Progress Report

Since the implementation of the SWC-IGWA Settlement Agreement in 2015 the groundwater districts (GWD)s have had two years of implementation. Because of the previous WaterSmart Grants for magnetic flow meters in 2016-17 those GWDs have met their reduction obligations thru both reduced consumption and recharge. The overall settlement agreement has been met the last two years and many of the GWDs has said it is because of the magnetic flow meter installation measurement.

Aquifer modeling completed as part of the Agreement indicates that ground water users will be required to reduce diversions from the aquifer in order to meet the goal of stabilizing and reversing the declining trend in aquifer levels. A 240,000 acre-feet annual reduction, or approximately 12.6% of the nearly 2,000,000 acre-feet currently pumped from the aquifer, was agreed upon by the parties. In order to accomplish this requirement, it is vitally important that accurate measurement of ground water diversions occurs to ensure the objectives are being met, and that individual users are all doing their part. As such, flowmeters will be required to be installed on all ground water diversions that are participants in the Agreement. In total, roughly 4,500 wells are part of the Agreement, 3,700 of which do not currently have flow meters installed.

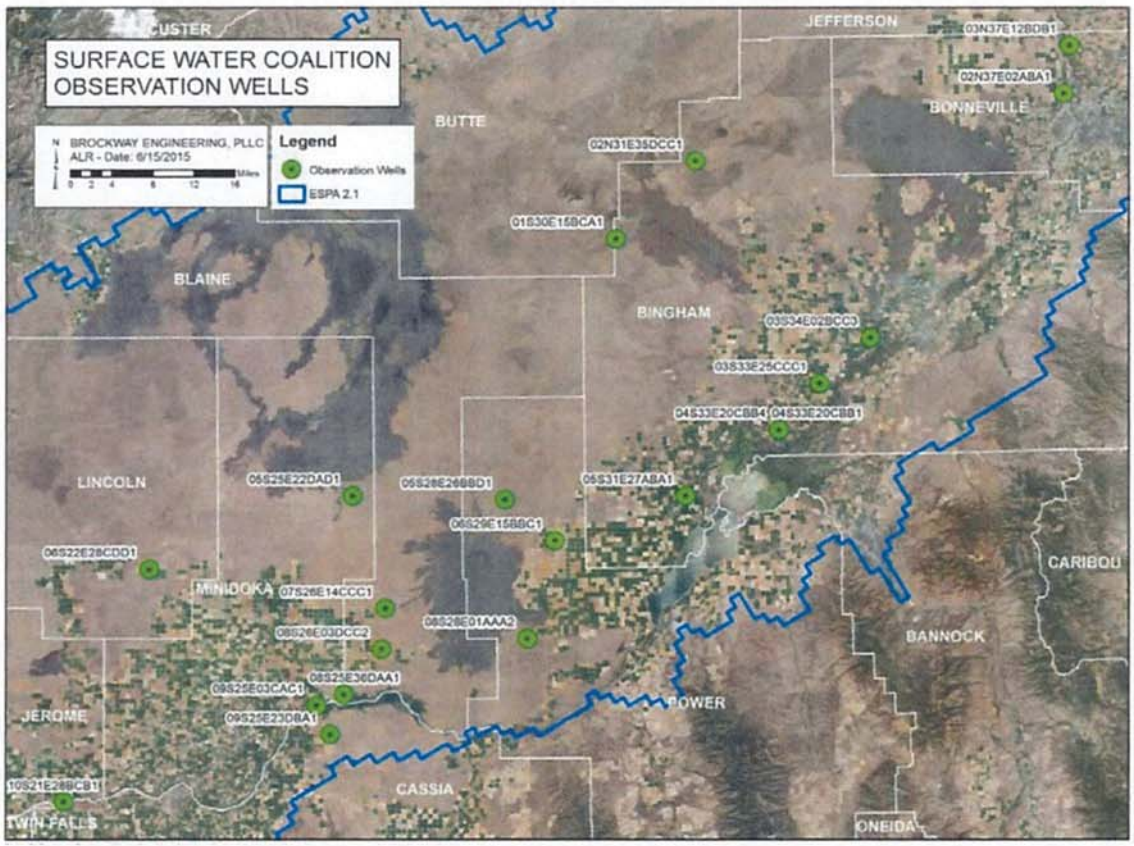

Figure 7. Map of 19 Sentinel Wells.

The primary objective of this grant request is to increase flow measurement accuracy of withdrawals from the ESPA. Flow measurement has been occurring on the majority of ground water diversions out of the ESPA, however, the means and methods for measurement have not been to the degree of accuracy required for adherence to the Agreement. The majority of ground water diversions have relied on the Power Consumption Coefficient (PCC) method for determination of ground water withdrawals. This method is used to relate the amount of power used by a pump to the amount of water being pumped. The PCC method can be relatively accurate for simple (one pump, one pivot) systems and constant conditions which tend to have consistent power usage for the amount of water pumped. However, few systems meet this "simple" classification. Instead, most systems are described as "complex", with multiple system configurations and operating conditions used daily throughout the irrigation season (multiple pumps, multiple pivots). The PCC method becomes very inaccurate, prone to error, and dependent on human subjectivity for complex systems. A far superior method of water measurement of ground water withdrawals, is the use of flow meters installed on ground water well pump systems. Flow meters are highly accurate, remove nearly all error from the equation and provide a much more complete record of ground water withdrawals. In addition, the flow meters provide the water user with a critical tool to help guide water use, management, and operations throughout the season. Accurate flow measurement will be a critical component if the

users are to meet the pumping obligations required of them in the Settlement Agreement.

HFGWD and MGWD are participants in the Agreement. This groundwater district was created under Idaho Code 42-5224 (which was developed in the mid-1990s as a result of water calls to junior groundwater users). The statute allows individual ground water users to organize into ground water districts, and grants these districts the authority to deliver water, measure and report water usage as required by law, levy assessments, develop mitigation plans to address water delivery calls, and represent the individual members of the district in various water issues and related legal matters, among other duties that can be seen in the statute included as Appendix A. Figure 8 below (IDWR, 2015) is a map depicting the general location of the HFGWD and MGWD along with other ground water districts in the area.

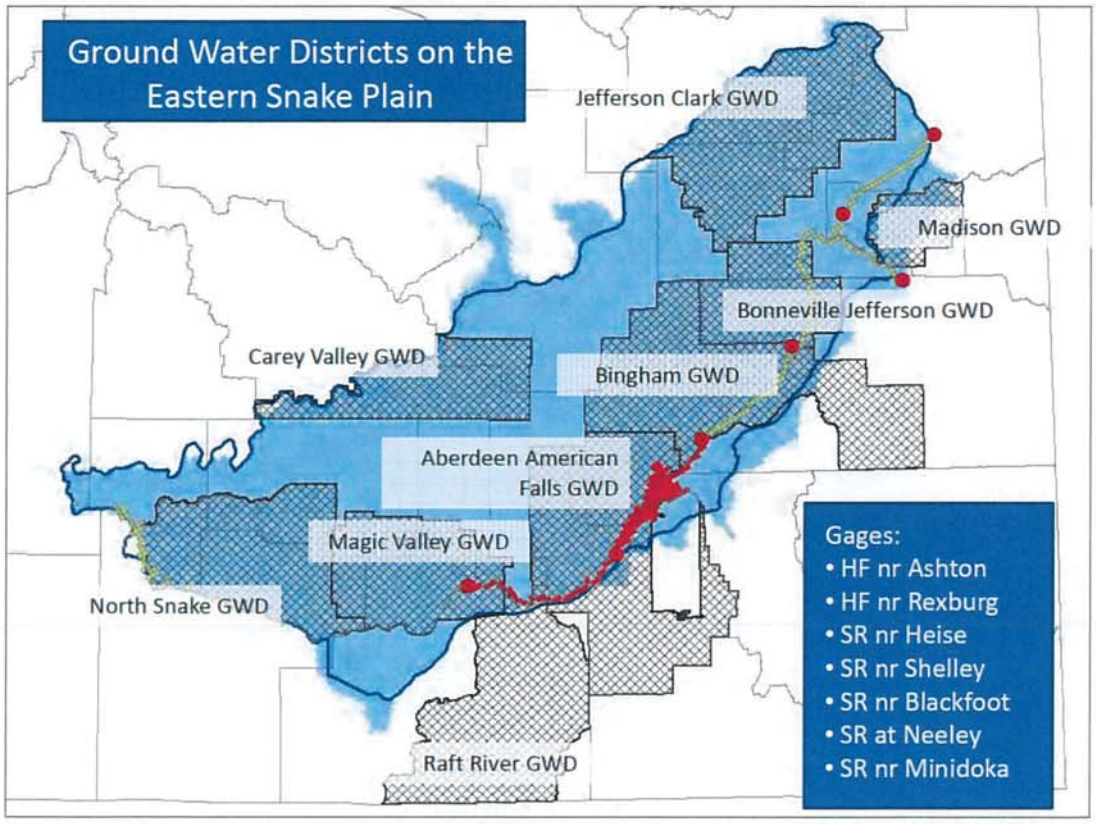

Figure 8. Ground Water Districts on the Eastern Snake Plain.

HFGWD and MGWD will be to reducing groundwater diversions by its reduction and more accurately knowing its acre-feet reduction requirement based on their 2010 to 2014 historical usage. is faced with a complying with the Settlement Agreement and the districts are doing a mitigation plan based on its actual depletion to the ESPA based on IDWR records. HFGWD and MGWD, consists of approximately 300 wells, irrigating approximately 75,000 acres. About 20% of the wells currently have a flow meter installed. This grant is being requested to purchase and install advanced water flow measurement devices for 86 separate groundwater wells owned or operated by

individuals within the HFGWD and MGWD. The number of wells requiring flow meters within both GWDs greatly outnumbers the funding available for this grant. In fairness to all users within the district, individual wells have not been selected for flow meter installations as part of this grant. Instead, grant funding will be made available through the groundwater district on a first-come-first-serve basis. Appendix D includes a map for the HFGWD and MGWD showing the location of the wells requiring flow meters to give perspective on the number of flow meters that are needed.

The benefits of accurate measurements of groundwater withdrawals to better manage, stabilize and reverse the downward trend of the ESPA are far more than simply satisfying the requirements outlined in the Agreement between the surface water users and the groundwater users. Goals and benefits include, but are not limited to, the following:

1. Provide protection to minimum stream flow rights established on the Snake River pursuant to the Swan Falls Agreement (SFA) between the State of Idaho (State) and the Idaho Power Company (IPC) (State of Idaho/Idaho Power Company, 1984). This Agreement was developed to resolve the nature and extent of water rights for the use of water for hydropower production at IPC's hydropower projects on the Snake River.
2. In 2015, minimum stream flows outlined in the SFA were breached at the Snake River near Murphy gage for the first time since the SFA was developed in 1984. As a result, junior groundwater users were once again faced with curtailment. The crisis was averted in 2015 by quick action from the Idaho Water Resource Board to provide storage water to mitigate for the shortfall, however, this is not a long-term solution and cannot be counted on in the future. See Figure 9 below for a graphical representation of the minimum stream flow requirements for 2016.

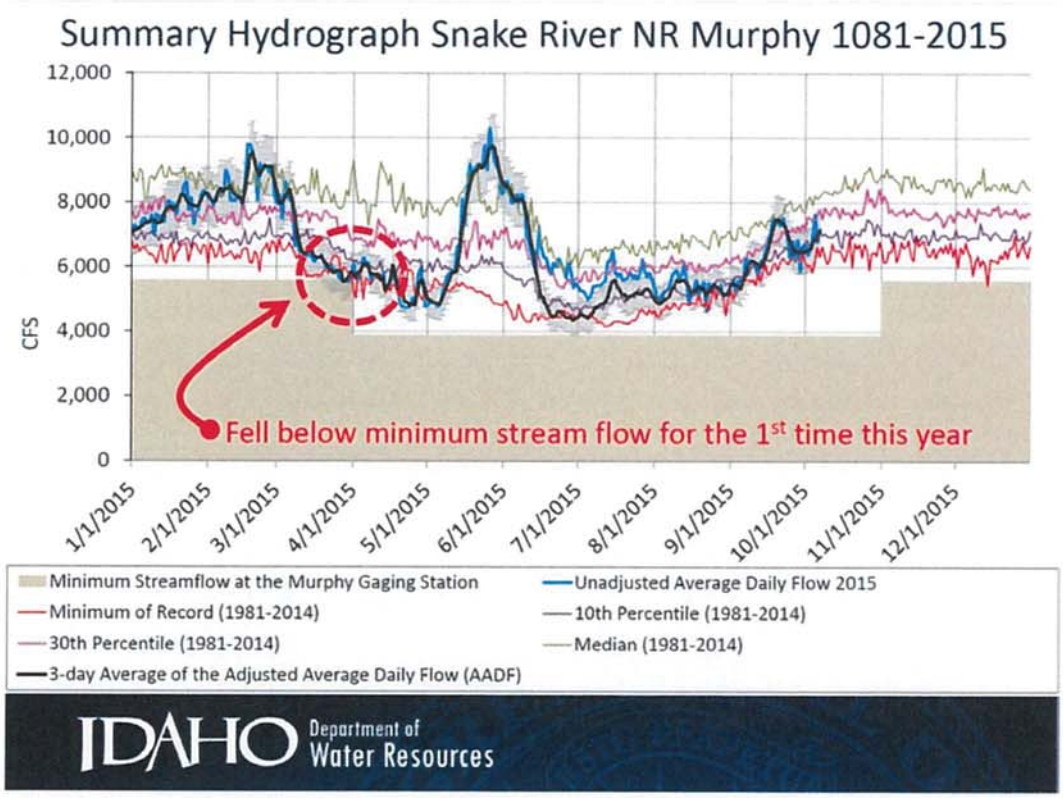

Figure 9. Minimum Stream Flows at Snake River near Murphy Gage.

Increased spring flows and reach gains to the Snake River as a result of restoring the aquifer as part of the Agreement will be critical to avoiding a breach of minimum stream flows in the future. Estimates of the increases in reach gains that will be seen as a result of successful implementation of the Agreement were quantified through the use of Idaho's Eastern Snake Plain Aquifer Model version 2.1 (a.k.a. ESPAM2.1) by the Idaho Department of Water Resources. Modeling shows that the successful implementation of the Agreement will result in an increase in reach gains of approximately 65 to 100 cfs at the Murphy Gage (see "Consumptive Use Reduction" line in Figure 10 below).

The primary objective of this grant is to increase flow measurement accuracy of withdrawals from the Eastern Snake Plain Aquifer (ESPA) by groundwater wells. Goals and benefits include, but are not limited to, the following:

1. Provide protection to minimum stream flow rights established on the Snake River pursuant to the Swan Falls Agreement (SFA) between the State of Idaho (State) and the Idaho Power Company (IPC) (State of Idaho/Idaho Power Company, 1984). This Agreement was developed to resolve the nature and extent of water rights for the use of water for hydropower production at IPC's hydropower projects on the Snake River;
2. Improved surface water supply from increased reach gains to the Snake River will increase the amount of water available to fill

Reclamation reservoir storage accounts, in turn providing a more reliable water supply for irrigators, Indian Tribes, recreationalists, and cities among others. Increased reservoir storage will also provide additional opportunity for Reclamation flow augmentation rentals for the benefit of endangered species. Additional water would also be available for hydropower generation;

3. Increased opportunity for water users to implement irrigation efficiencies and techniques through better management of their water supply. Good irrigation management requires knowledge of the total amount of water delivered to the irrigation system. Regular monitoring of diversion rates over time, along with a better understanding of crop demands, provides an opportunity to monitor performance of the irrigation system, resulting in better management of pump and motor maintenance, improvements to irrigation scheduling, and the minimizing of water usage and waste. All of which will help to improve system energy efficiency and provide overall energy and operator cost savings;
4. Increase reliability and enforcement of water use, measurement, and reporting across the ESPA;
5. Increase compliance with all elements and conditions of all water rights and increase enforcement when there is not compliance, thereby limiting potential for excess diversions or deliveries and providing potential water savings;
6. Assure that authorized water usage in areas on the ESPA are not prematurely curtailed in times of water shortage;
7. Minimize economic impact to individual water users and the state economy arising from water supply shortages and potential curtailment based on Prior Appropriation Doctrine and State law;
8. Part of an adaptive groundwater management plan to stabilize and enhance ESPA levels to meet existing water right needs;
9. Help to counteract the effects of drought and climate change in the Upper Snake River basin;
10. Help to reduce potential for future conflicts and costly litigation related to water delivery calls; and
11. Reduction to overall power usage throughout the ESPA through reductions in pumping and decreases in pumping lift requirements as the aquifer rises.

12. Create a sustainable water supply for those entities dependent on the ESPA.

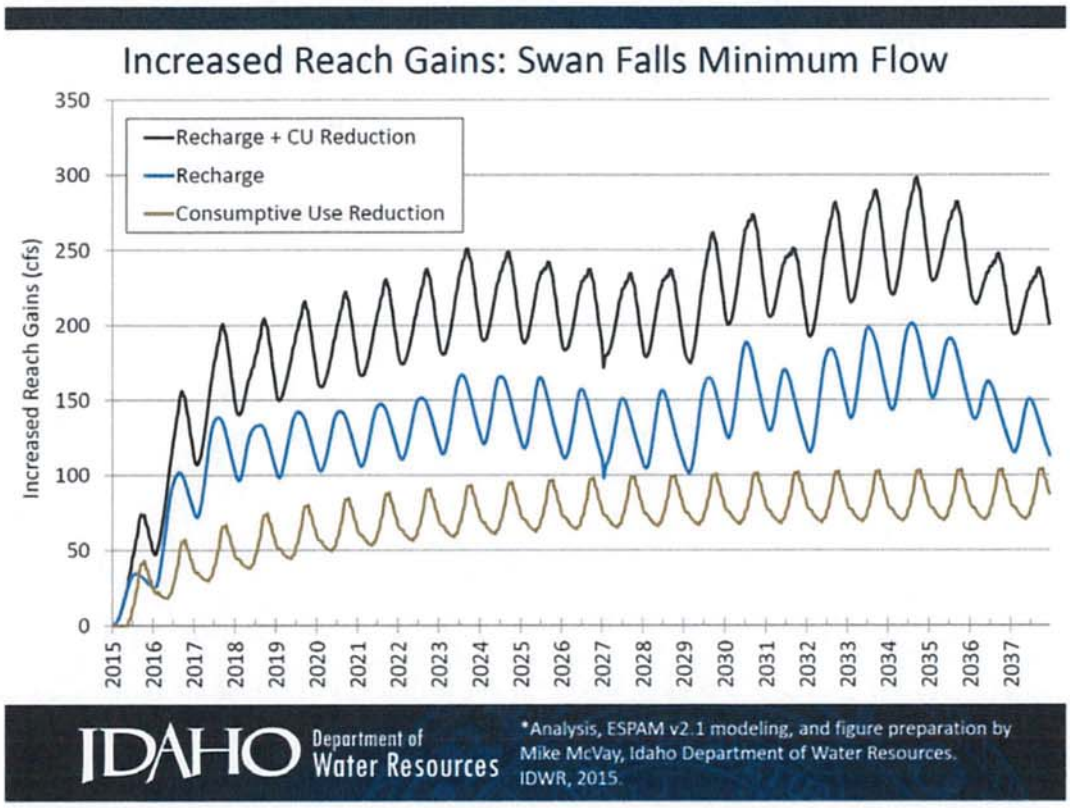

Figure 10. Increased Rach Gains.

1.4. Technical Project Description

Ground water withdrawals from the ESPA generally occur with the use of a ground water well and pump. Withdrawals from individual wells generally range from a few acre-feet to thousands of acre-feet per irrigation season. Depths to ground water can range from very shallow (tens of feet) to very deep (more than 500 feet). As such, horsepower required to extract the ground water can vary widely depending on flow rate and depth to water. Flow meter sizing and installations are independent of required horsepower and lifts. Instead, flow rate and well discharge piping configuration are the controlling factors.

Ground Water District personnel visited wells within the districts to determine meter size and installation complexity. It is expected that approximately 11% of the wells will require an 8-inch flow meter, 47% will require a 10-inch flow meter, and 42% will require a 12-inch flow meter. Some may require larger or smaller flowmeters. Based on this analysis, this grant request focuses on obtaining 8-inch, 10-inch, and 12-inch

flow meters. In addition, the analysis of the measurement records indicated that three installation complexities are likely to be encountered; simple, moderate, and difficult.

- Easy installations would include an installation on existing well discharge piping that has a straight run of sufficient length to comply with the three diameters upstream and two diameters downstream (3D/2D) spacing for magnetic flowmeters as required by the Idaho Department of Water Resources (IDWR). In this case, the flowmeter could simply be cut into the straight run of pipe and attached to the existing pipe with new flanges.
- Moderate installations would require moderate modification to existing well discharge piping to achieve the 3D/2D spacing required by IDWR. An example of this installation would be lengthening the above ground discharge piping upstream of a 45 degree dive into the ground. This installation would require more time and materials, and therefore would be more costly than a simple installation.
- Difficult installations will require major modification to existing well discharge piping in order to achieve the 3D/2D spacing required by IDWR. This type of installation would require the most time and materials, and therefore would be the most expensive installation type.

The well site analysis indicates the following installation complexity distribution for each meter size:

Meter Size	Simple	Moderate	Difficult
8-Inch	50%	50%	0%
10-Inch	50%	44%	6%
12-Inch	7%	53%	40%

Table 1. Installation Complexity Distribution

The IDWR requires flow meters to meet certain standards, and as such developed a list of flow meters that are approved for use within the State of Idaho. These approved flow meters are subjected to testing at Utah State University's National Institute of Standards and Technology traceable lab in Logan, Utah. Each meter on the list performed at or above IDWR minimum acceptable standard for accuracy. Flow meters chosen for installation as part of this grant will ultimately be chosen from the approved IDWR list which can be found in Appendix E. For purposes of budgeting, Siemens Sitrans FM Magflo Mag 5100W/5000 have been used. The Magflo is approved for diameters ranging from 1-inch to 78-inches, and is capable of measuring the flow rates necessary while exceeding IDWR's +/- 2% adopted accuracy standard. Stated manufacturer accuracy for the Magflo is 0.20%. A remote mounted set of electronics will be installed and housed in a waterproof rated enclosure to ensure longevity of the meter. Flow meters generally have the option to be battery powered or use AC power. To ensure continuous operation into the future, all meters will be fitted with a hardwire option to provide AC power to the units. Due to the fact that the vast majority of well pumping

systems in Idaho are electrically powered, it is anticipated that AC power is readily available at all proposed flow meter installation locations.

Upon completion of the project and the measurement of all diversions, water managers will be able to:

1. Regulate ground water diversions within the NSGWD based on authorized water right rate of flow and authorized volume determined as part of the Agreement;
2. Conserve water diversions (12.6%), and keep water savings in the ESPA as part of the effort to stabilize and reverse the downward trend of aquifer storage;
3. Curtail excessive diversions of water; and
4. Better manage limited water supplies.

1.5. Evaluation Criteria

1.5.1. Evaluation Criterion A: Quantifiable Water Savings (30 points)

Ground water users party to the Agreement will be required to reduce historical ground water usage by 12.6% in order to reach the goals of the Agreement. Historical ground water usage for each district has been based on historical water measurement data collected by each ground water district, which consists of mostly PCC measurement data with flow meter data in the few instances that it is available. This data is compiled on an annual basis in the Idaho Department of Water Resources "Water Measurement Information System", otherwise known as WMIS. For purposes of the Agreement, the historical usage has been based on the average usage history for the 2010 to 2015 irrigation seasons. This time period represents the most recent, complete set of records available. In addition, the 2010 to 2015 time period represents a great variance in water supply conditions, ranging from very wet in 2011 to very dry in 2013.

Table 2 shows the average historical water supply and the total estimated water savings for HFGWD and MGWD. Total average historical water supply was determined to be 43,491 acre-feet based on the 2010 to 2015 record for HFGWD. MGWD does not have a PCC measurement history, thus baseline use is based on 55,000 irrigated acres with an average annual usage of 1.5 acre-feet per acre. With a required 12.6% reduction, it is estimated that a total water savings of 15,875 acre-feet will be seen. As part of this grant application, HFGWD and MGWD proposed to install flowmeters on 33% of the unmetered wells within their districts (86 of the 257 unmetered wells within the districts). To calculate the water savings attributed to the flowmeters proposed as part of this grant application, the total water savings for the District was multiplied by the percentage of flowmeters being installed within the District. The results can be seen in Table 2.

Non-Federal Irrigation Entities	Average Historical Baseline Usage (Acre-Ft)	Reduction Requirement (%)	Total Water Savings (Acre-Ft)	% of Water Savings Attributed to the Grant (%)	Water Savings Attributed to the Grant (Acre-Ft)
1. Henry's Fork GWD	43,491	12.6%	5,480	82%	4,485
2. Madison GWD	82,500	12.6%	10,395	82%	8,508
TOTALS	**125,991**		**15,875**		**12,993**

Table 2. Estimated Water Savings Attributed to Grant.

Table 3 describes the allowable future water supply for HFGWD and MGWD after the required reduction is implemented. Similar to the water savings attributed to the flow meters requested as part of this grant, the allowable future water supply attributed to the grant has been calculated as 82% of the allowable future water supply for NSGWD.

Non-Federal Irrigation Entities	Average Historical Baseline Usage (Acre-Ft)	Total Water Savings (Acre-Ft)	Allowable Future Water Supply (Acre-Ft)	% of Future Water Supply Attributed to the Grant (%)	Future Water Supply Attributed to the Grant (Acre-Ft)
1. Henry's Fork GWD	43,491	5,480	38,011	82%	31.111
2. Madison GWD	82,500	10,395	72,105	82%	59,016
TOTALS	**125,991**	**15,875**	**110,116**		**90,127**

Table 3. Estimated Future Water Supply Attributed to Grant.

1.5.1.1. Percentage of Total Supply

As explained in the Quantifiable Water Savings section and as shown in Table 2, the estimated water savings attributed to the flowmeters proposed as part of this grant is 12,993 acre-feet. The estimated percentage of total annual water supply conserved therefore is as follows:

$$\frac{Estimated\ Amount\ of\ Water\ Conserved}{Average\ Annual\ Water\ Supply} = \frac{12{,}993\ AF}{125{,}991\ AF} = 10.3\%$$

1.5.2. Evaluation Criterion B: Water Supply Reliability (18 points)

Many additional benefits to water supply reliability will be seen through the installation of flow meters and the water savings associated with those installations. Examples include the following:

1. By reducing ground water diversions by 240,000 Acre-Feet annually, the declining trend of the ESPA is expected to stabilize and reverse. Surface water supplies will benefit from increased reach gains to the Snake River. Ground water users will ultimately have a more reliable supply that is secure from curtailment or litigation.
2. Drought has exacerbated the conflict between junior ground water users and senior ground users by contributing to further declines in the ESPA. The ESPA relies on precipitation for replenishment. Historically, flood irrigation practices helped to build up water levels in the aquifer, but with more efficient irrigation practices, this source of inflow to the aquifer has become limited. Instead, the aquifer now relies more on precipitation and managed aquifer recharge for replenishment. During drought, neither of these sources provide enough water to keep up with the aquifer withdrawals, creating a negative aquifer balance. Flow meter measurements will allow the irrigator to more tightly manage available water supply. By meeting the terms of the Settlement Agreement (including the installation of flow meters as proposed herein), ground water users will be protected from curtailment during drought years. Increased aquifer levels will improve spring flows and Snake River reach gains which will improve water supply for senior surface water diverters.

   HFGWD & MGWD lies mainly within Fremont, Custer, and Madison Counties in Idaho. Since the spring of 2015 and 2016, all or portions of Jefferson Custer and Madison Counties have been under one or more categories of drought as described by the United States Drought Monitor (D0 to D4).
3. This project will address the specific concern of the ground water users adhering to the IGWA-SWC Agreement which requires 240,000 acre-feet of reduction to ground water withdrawals to ultimately increase the surface water supply to the senior surface water users. To accurately account for these reductions, flow meters are necessary.
4. Ground water supplies have been over allocated to a point that they are not sustainable without detrimental impacts to springs and Snake River water users. In addition to irrigation shortages, the ESPA provides drinking water to nearly 300,000 residents of eastern Idaho. Future population growth depends on a sustainable water supply. With metering and implementation of the required reductions, competition for water supplies can be more tightly managed.
5. If reductions required by the Agreement are not implemented, an interruption to the water supply for hundreds of thousands of acres of

irrigated agriculture is in jeopardy through continued water delivery calls. Without the Agreement, water calls will vary from year to year, adding additional uncertainty.

6. Increasing water levels in the ESPA will increase reach gains to the Snake River, increasing year-round base flows which in turn will create additional water availability to fill Shoshone-Bannock Tribal irrigation water rights and storage rights, along with providing Reclamation with a greater ability to supply flow augmentation as required by the Nez Perce Agreement.
7. The surface water and ground water entities have been parties to water delivery call litigation for many years. This is a historic achievement to have the opposing parties working together to try and reverse the declining trend of the ESPA. Widespread support for this project can be evidenced by the letters of support included with this proposal in Appendix G.
8. Installation of flow meters will help to avoid additional conflict and litigation in the future. Figure 11 below shows the frequency of delivery calls compared to declining storage in the ESPA.

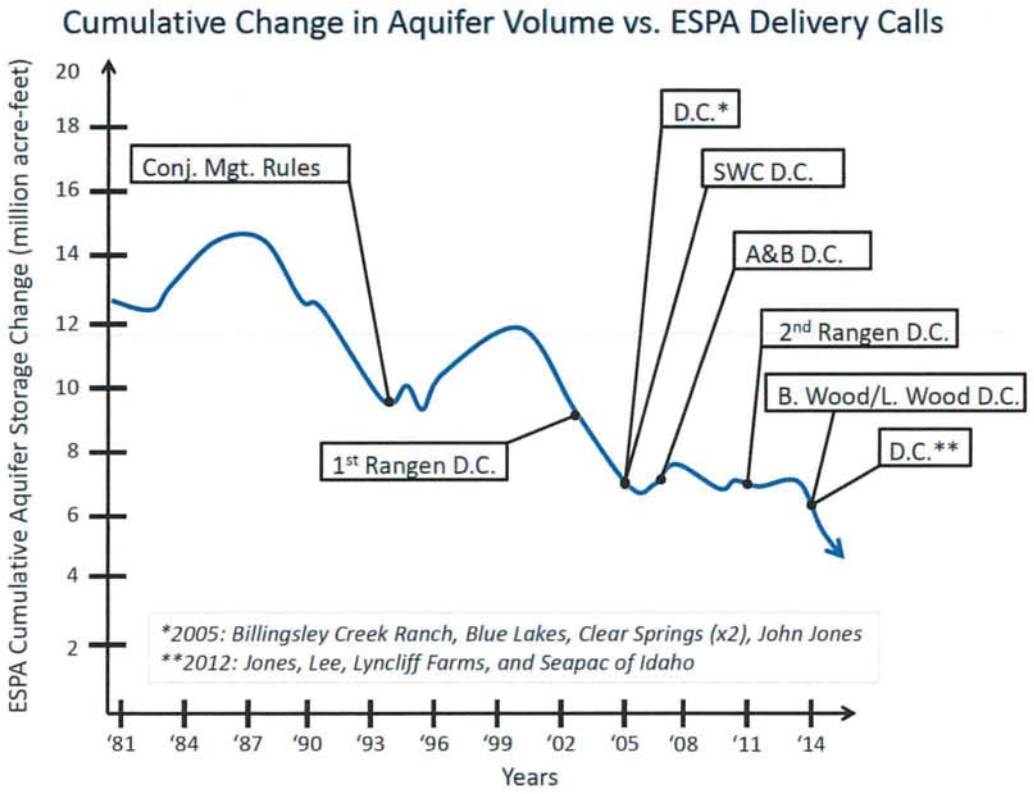

Figure 11. Change in Aquifer vs. ESPA Delivery Calls.

9. This project will provide others involved in the Agreement an example of installation of flow meters, and will allow them to see how flow meters can increase management of a water supply.

1.5.3. Evaluation Criterion D: Complementing On-Farm Irrigation Improvements (10 points)

Installation of flow meters provides many opportunities for on-farm irrigation improvements in the future. The flow meter offers the individual user a tool to track water usage on a real-time basis, and to more thoroughly gain an understanding of water requirements. All flow meters installed will be capable of being connected to telemetry in the future, providing the individual user even more opportunity to manage his or her water supply. Technology continues to improve to maximize usage efficiency, such as variable rate irrigation systems, remote pivot controls, and variable frequency drive pumps. By understanding exactly how much water is being used, future improvements will be able to maximize the usage of a limited water supply. In addition, the ability to accurately measure flow rate will allow irrigators to immediately identify pumping inefficiencies. Elimination of pumping inefficiencies (through pump or motor rebuild/replacements or other actions) will result in significant energy savings.

1.5.4. Evaluation Criterion F: Implementation and Results (6 points)

1.5.4.1. Subcriterion F.1: Project Planning

HFGWD and MGWD will be required to reduce a portion of the 240,000 acre-feet annual reduction amount attributed to the ground water users of the ESPA. HFGWD's and MGWD's share is approximately 16,000 acre-feet. This will be required starting with the 2016 irrigation season. Accurate flow measurement provided by flow meters will be essential during implementation.

1.5.4.2. Subcriterion F.2: Performance Measures

Performance measures have been described in the Performance Measures section of this proposal.

1.5.5. Evaluation Criterion G: Nexus to Reclamation Project Activities (4 points)

Reclamation is highly involved with water operations in the Upper Snake River and Eastern Snake River Plain. Reclamation is responsible for three major projects in the Upper Snake River: Minidoka Project, Ririe Project, and Palisades Project.

The SWC, party to the agreement, consists of surface water canals in the Magic Valley area whose canals were constructed by Reclamation as part of the Minidoka Project, or are canals constructed under the Carey Act that became spaceholders in Reclamation's Minidoka Project reservoirs. The Minidoka Project consists of five of the nine Upper Snake River reservoirs (Minidoka Dam, American Falls Dam, Island Park Dam, Grassy Lake Dam, and Jackson Lake Dam) with a total storage capacity of more than 2.7 million acre-feet. The Minidoka project reservoirs store flow of the Snake River system for later irrigation use, electricity production, and flood control. The reservoirs also

provide fish and wildlife habitat and recreation opportunities. It is estimated the project contributes to $622 million of irrigated crops, $342 million in livestock, $5.6 million in power generation, and $8.8 million in flood damage presented on average each year (United States Bureau of Reclamation, 2011). The Minidoka Project also consists of many ground water wells.

The Palisades Project consists of the Palisades Reservoir with a storage capacity of 1.2 million acre-feet. The Palisades Project facilities store flow of the Snake River system for later irrigation use during dry years. It also helps to reduce flood damages, produces electricity, and provides fish and wildlife habitat and recreation opportunities. It is estimated the project contributes $575 million to irrigated crops, $314 million to livestock, $27 million in power generation, and $18 million in flood damage prevention on an average year (United States Bureau of Reclamation, 2011).

The Ririe Project consists of Ririe Reservoir with a storage capacity of 80,000 acrefeet. Ririe Reservoir was a critical component to settling the 1990 Fort Hall Indian Water Rights Agreement, and storage water from Ririe continues today to mitigate surface water users of the Upper Snake for the effects of that Agreement.

Reclamation is also responsible for providing flow augmentation water as part of the Nez Perce Agreement. Reclamation has access for up to 205,000 acre-feet of flow augmentation water from the Upper Snake River system.

With the installation of flow meters to help with implementation of the IGWA-SWC Agreement, the ultimate goal is to stabilize and reverse the declining trend of the ESPA. The anticipated effect of stabilizing the aquifer is to increase spring flows and reach gains to the Snake River system, which in turn will help to fill Reclamation reservoirs.

1.5.6. Evaluation Criterion H: Additional Non-Federal Funding (4 points)

As shown in the Budget section of this grant proposal, the total cost of the project is $669,000. The non-federal share of this cost is $300,000. The non-Federal share is therefore:

$$\frac{Non-Federal\ Funding}{Total\ Project\ Cost} = \frac{\$369,000}{\$669,000} = 55\%$$

1.6. Performance Measures

1.6.1. Performance Measure No. A: Project with Quantifiable Water Savings

1.6.1.1. Performance Measure No. A.2: Measuring Devices – b. Irrigation Metering

As previously described in this proposal, and as shown in the Budget section, 86 ground water wells will be measured using high-precision magnetic flow meter devices installed on the discharge piping of the wells. The installed measuring devices will be used to provide the following benefits:

1. Water diversion accountability and transparency;

2. Accurate measurement for annual reporting of water usage to the district will provide a basis for fair and accurate determination of individual compliance with Agreement requirements;
3. Reduction to district staff travel time and expenses for historical PCC water measurement methods;
4. Flow meter devices provide an opportunity in which other technologies can be potentially implemented in the future for water management and diversion system enhancements, such as telemetry installation for real time data collection of well usage.

Pre-project estimation of baseline data:

Pre-project diversion data for ground water wells within the HFGWD are based on the average of the 2010 to 2014 historical measurement data, which includes PCC measurement records and flow meter measurements where applicable. This data is identified in the Water Conservation Evaluation Criterion A section of this proposal. Pre-project diversions for the HFGWD are estimated to be 43,491 acre-feet. Baseline 2010 to 2014 historical measurements are not available for MGWD, and thus a baseline is calculated based on 55,000 irrigated acres at 1.5 acre-feet per acre of ground water delivery. *Post-project benefits will be measured based on the following methods:*

1. Compare pre-project baseline flow measurements and estimates with actual post-project measured data; and
2. Demonstrate, through annual ground water district reporting, that diversions are limited to authorized rates of diversion as described in the Agreement and District reduction plans.

1.6.2. Performance Measure No. B: Water Supply Reliability

Installation of flow meters is a critical component of the Agreement and is necessary for continued cooperation and collaboration between the surface water users and ground water users to prevent additional conflicts in the future that have the potential to interrupt water supplies in the ESPA. This can be measured by the number of flow meter installations that occur in HFGWD and MGWD.

Pre-project estimation of baseline data:

HFGWD and MGWD currently have 57 flow meters installed.

Post-project benefits will be measured based on confirming the 86 flow meter installations occur as proposed as part of this grant.

2. Environmental and Cultural Resources Compliance

HFGWD and MGWD do not anticipate any probable environmental or cultural impacts associated with this project. Water measurement devices are frequently installed on well pump systems and there have been no known impacts associated with those tasks.

Nevertheless, we have included an environmental compliance item in our budget proposal that is equal to 5% of anticipated total project costs (approximately $70,000). It is anticipated that if the full amount of this budget item is not necessary, additional flow meters would be purchased and installed with the remaining budget amount.

There are 86 ground water irrigation wells proposed for flow meter installations in this grant proposal. All of the wells are located within HFGWD and MGWD. This budget proposal anticipates that the installations will occur in close proximity to the well head on the pump discharge piping. The installations will generally occur on 8-inch, 10-inch, and 12-inch discharge piping located on privately-owned lands.

It is not anticipated that construction associated with these projects will affect the air, water, or animal habitat in the project area. The applicant is not aware of any species listed, or proposed to be listed, as a Federal threatened or endangered species, or of designated critical habitat in the individual project areas. There are no known wetlands or other surface waters inside the individual project boundaries that potentially fall under Clean Water Act (CWA) jurisdiction. Installation of measurement devices will involve cutting pipe and inserting flow meter devices into the well pump discharge piping.

The delivery systems for the project area were originally constructed between 1930 and 1990 according to a review of the associated water right priority dates. A small portion of the lands were developed prior to 1950, however, the bulk of these lands were developed for irrigation in the period between 1950 and 1990. The applicant is not aware of any structures or buildings that are listed or eligible for listing on the national register of historic places that would be impacted by these flowmeter installations.

The applicant is not aware of any archaeological sites in the proposed project area. It is not anticipated that this project will have any impact on low income or minority plot populations. This project will not limit access to any known Indian sacred sites, or result in any impacts to tribal lands. This project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species and the project area.

3. Required Permits or Approvals

No permits or approvals are expected to be needed to complete this work.

4. Letters of Project Support

Letters of funding commitment from non-federal entities are included in Appendix H. These funding commitments will be discussed in the funding plan. Additional letters of support for this grant application are included in Appendix G.

5. Official Resolution

HFGWD has adopted by official resolution support for this grant at their board meeting on May 4, 2018. MGWD has adopted by official resolution support for this grant at their board meeting on May 8, 2018. The ground water districts support and encourages the goal of installing irrigation measurement devices on diversions from the ESPA within their district. Copies of the official resolution are included in Appendix H.

6. Project Budget

6.1. Funding Plan and Letters of Commitment

Total cost of this proposal is $669,000. Reclamation's share would be $300,000 and the non-Federal entities' share is $369,000. The non-Federal water user entities listed in Table 4 are willing to commit these funds given the importance of the project and the understanding of this entity that there is a need to be accountable for their water use. Letters of commitment have been secured from the non-Federal water user entities listed in Table 4. Copies of this commitment letter is attached in Appendix E. Table 5 summarizes the overall budget costs with total percentage and amounts attributed to recipient funding and Reclamation funding. 6 is the Budget Proposal Form showing itemized costs for the GWDs. Costs are provided for equipment acquisition and construction/installation and shown below in the Equipment and Contractual Labor/Construction section of this budget narrative. The Federal Budget form is included in Appendix I.

Funding Sources	Funding Amount
Non-Federal Entities	
1. Henry's Fork and Madison GWDs	$369,000
Non-Federal Subtotal	$300,000
Other Federal Entities	NA
Requested Reclamation Funding	
1. Henry's Fork and Madison GWDs	$300,000
Total Reclamation Funding	$300,000
Total Project Funding	**$669,000**

Table 4. List of Third Party non-Federal Entities.

Funding Sources	Percent of Total Project Cost	Total Cost by Source
Recipient Funding	55%	$369,000
Reclamation Funding	45%	$300,000
Other Federal Funding	NA	NA
Totals	**100%**	**$669,000**

Table 5. Overall Budget Costs.

6.2. Budget Proposal

The anticipated total costs of this project are shown in 6:

Table 5: Budget Item Description	Computation		Quantity Type	Total Cost
	$/Unit	Quantity		
1. Henry's Fork and Madison Ground Water Districts				
Equipment:				
8" mag meter	$2,265	11	EA	$24,915
8" Piping Materials – Simple	$100	14	LS	$1,400
8" Piping Materials – Moderate	$375	6	LS	$2,250
8" Piping Materials – Difficult	$1,400	0	LS	$0
10" mag meter	$2,635	40	EA	$105,400
10" Piping Materials – Simple	$150	61	LS	$9,150
10" Piping Materials – Moderate	$750	53	LS	$39,750
10" Piping Materials – Difficult	$1,925	7	LS	$13,475
12" mag meter	$2,995	35	EA	$104,825
12" Piping Materials – Simple	$175	7	LS	$1,225
12" Piping Materials – Moderate	$900	56	LS	$50,400
12" Piping Materials – Difficult	$2,850	43	LS	$122,550
Remote Mount Kit	$175	86	EA	$15,050
Remote Mount Data Cable	$150	86	EA	$12,900
480V to 24V Transformer	$125	86	EA	$10,750
24V Power Supply	$200	86	EA	$17,200
Wiring Harness and Cable	$125	86	EA	$10,750
Conduit, Connectors, and Enclosure	$140	86	EA	$12,040

Contractual/Construction:				
Electrical	$195	86	LS	$16,770
8" Installation/Welding – Simple	$285	3	LS	$855
8" Installation/Welding – Moderate	$475	6	LS	$2,850
8" Installation/Welding – Difficult	$1,200	2	LS	$2,400
10" Installation/Welding – Simple	$380	11	LS	$4,180
10" Installation/Welding – Moderate	$475	36	LS	$17,100
10" Installation/Welding – Difficult	$1,295	6	LS	$7,770
12" Installation/Welding – Simple	$475	6	LS	$2,850
12" Installation/Welding – Moderate	$665	19	LS	$12,635
12" Installation/Welding – Difficult	$1,580	10	LS	$15,800
Environmental Compliance	5		%	$31,862.00
Grand Total				$669,102

Table 6. Total Project Cost Summary.

6.3. Budget Narrative

There are 314 total ground water wells but 257 without flow meters located within the HFGWD and MGWD. The Agreement requires all ground water wells within HFGWD and MGWD to install flow meters by the start of the 2018 irrigation season. This grant budget proposes to address costs for acquisition and installation of flow meters on 86 of the 314 total wells without meters within HFGWD & MGWD.

As described in the Technical Project Description, this grant request focuses on obtaining 8-inch, 10-inch, and 12-inch flowmeters. It is expected that approximately 11% of the wells will require an 8-inch flowmeter, 47% will require a 10-inch flowmeter, and 42% will require a 12-inch flowmeter. In addition, three installation complexities are likely to be encountered; simple, moderate, and difficult. These meter size and installation complexities have been taken into account in the project budget.

Due to the number of flow meters being requested as part of this grant application, and due to the fact that many more wells require flow meters than there is available funding for, individual entities have not been identified.

HFGWD & MGWD propose to fund 55% of the total cost for measuring device acquisition and installation, with Reclamation providing a 45% cost share for the project. Table 4 shows the 55% funding amount provided by the GWDs as well as the 45% Reclamation funding amount.

6.3.1. Salaries and Wages

The designated program manager for this grant will be Lynn Tominaga, executive director for IGWA. In addition, the Watermaster for Water Districts 100, will be designated as a compliance coordinator. The Watermaster and Watermaster's staff

will review the flow meter installation work to ensure compliance with the measuring devices standards established by IDWR. In order to maximize grant dollars for measuring device installations, no program manager or other staff costs will be charged to the grant.

All measuring device installations will be contracted with private vendors. Contractual labor costs are estimated based on quotes from contractors for this proposed project. These labor costs are built into the Budget Proposal in 6. Labor costs are also detailed below under the Equipment and Contractual Labor/Construction sections of this budget narrative. The explanations of costs provided in these following sections are used in the Budget Proposal Form in 6.

6.3.2. Fringe Benefits

No fringe benefits are included in the budget proposal for this project.

6.3.3. Travel

No travel is required for this project.

6.3.4. Equipment, Materials, and Supplies

Equipment items and Materials and Supplies items are combined under one category for purposes of this grant proposal. Flow meters and related materials are all included under the Equipment category in Table 8.

6.3.4.1. Equipment

1. Magnetic Flow Meters – 8, 10, and 12-inch meters identified
    a. Meter cost is $2,265 for 8-inch, $2,635 for 10-inch, and $2,995 for 12-inch
    b. Piping material costs vary with diameter and installation complexity
        i. 8" Simple Installation - $100
        ii. 8" Moderate Installation - $375
        iii. 8" Difficult Installation - $1,400
        iv. 10" Simple Installation - $150
        v. 10" Moderate Installation - $750
        vi. 10" Moderate Installation - $750
        vii. 10" Difficult Installation - $1,925
        viii. 12" Simple Installation - $175
        ix. 12" Moderate Installation - $900
        x. 12" Difficult Installation - $2,850
2. Remote Mount Kit - Use to mount flow meter display in a protective enclosure for protection from elements a. Cost is $175 per meter
    a. Cost for 50 foot remote mount data cable is $150 per meter

3. Electrical – Flow meters will utilize AC power from pump panels to ensure longevity
    a. Cost for 480V to 24V transformer is $125 per meter
    b. Cost for 24V power supply is $200 per meter
    c. Cost for flow meter wiring harness with 25 foot cable is $125 per meter
    d. Cost for conduit, connectors and water tight enclosure is $140 per meter

6.3.4.2. Contractual Labor/Construction

4. Electrical – Unit cost is $195 per site. The cost includes the following items:
    a. Labor – $125 per site
    b. Trenching and placement of conduit between meter and enclosure and meter and power source – 2 hours at $35/hr - $70
5. Installation/Welding
    a. Cut pipe
    b. Install flanges and flanged meter spool
    c. Install additional discharge piping if necessary to achieve 3D/2D spacing
    d. Initial meter set-up
    e. Cost is pipe diameter and complexity dependent
        i. 8" Simple Installation - $285
        ii. 8" Moderate Installation - $475
        iii. 8" Difficult Installation - $1,200 iv. 10" Simple Installation - $380
        iv. 10" Moderate Installation - $475
        v. 10" Difficult Installation - $1,295
        vi. 12" Simple Installation - $475
        vii. 12" Moderate Installation – $665
        viii. 12" Difficult Installation - $1,580

6.3.5. Indirect Costs

No indirect costs are budgeted

6.3.6. Environmental and Regulatory Compliance Costs

It is anticipated that no environmental and regulatory compliance issues will be encountered during construction of this project, and no regulatory permits should be required for this project. However, five percent (5%) of the total project costs for equipment and construction/installation has been estimated and added to the total proposed grant budget to account for the NEPA process and any unforeseen

environmental or regulatory requirements. Any questions or issues concerning environmental or regulatory matters may be directed to the program manager, Lynn Tominaga, or the compliance coordinator at IDWR.

6.3.7. Reporting

All required reporting will be provided by the program manager, Lynn Tominaga. In an effort to maximize grant dollars for measuring device and telemetry installations, no program manager or other staff costs will be charged to the grant for any reporting requirements.

6.3.8. Other Expenses

No other expenses or price contingencies are included or provided in this budget. The participating non-Federal entities will pay for any unforeseen equipment or material price increase to the extents such increases result in costs that exceed the overall amounts proposed in this budget.

6.3.9. Total Costs

Total cost of this proposal is $669,000. Reclamation's share would be $300,000 and the non-federal entity's share is $369,000. The non-Federal water user entity listed in Table 3 is willing to commit these funds given the importance of the project and the understanding of this entity that there is a need to be accountable for their water use. Letters of commitment have been secured from the non-Federal water user entity listed in Table 6. Copies of this commitment letter is attached in Appendix H.

6.3.10. Budget Form SF-424C

Please see Appendix I.

7. REFERENCES

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Idaho State Legislature

Idaho Statutes

TITLE 42
IRRIGATION AND DRAINAGE — WATER RIGHTS AND RECLAMATION
CHAPTER 52
GROUND WATER DISTRICTS

42-5224. Powers and duties of board of directors. The board shall, in addition to any other powers and duties provided in this chapter, and provided that nothing in this chapter shall abrogate or impair the right of any person to take any action necessary to acquire, protect, challenge or defend any water right, have the following powers and duties:

(1) To acquire, and/or construct, operate, control or use by appropriation, grant, purchase, bequest, devise, contract or lease works or facilities, water rights, water permits or licenses, well-drilling permits, wells, pipelines, ditches and any other real and personal property (including easements and rights-of-way) or contract entitlement within or without the district necessary or convenient to fully exercise its powers;

(2) To sell, lease, encumber, alienate, or otherwise dispose of works or facilities, water, water rights, wells, pipelines, ditches, reservoirs, recharge facilities, and any other real and personal property owned by the district within or without its boundaries, and to incur indebtedness on behalf of the district as specified in this chapter;

(3) To enter into contracts and agreements, cooperative and otherwise, including contracts with the United States of America and any of its agencies or instrumentalities, and tribes, and contracts with corporations, public or private, municipalities, or governmental subdivisions necessary or convenient to fully exercise its powers;

(4) To hire and retain agents, employees, engineers, hydrologists, geologists, and attorneys as shall be necessary and convenient to transact the district's business and to represent the district's interests;

(5) To levy assessments for the operation of the district and its programs;

(6) To represent district members, with respect to their individual water rights, in general water rights adjudications and other legal and administrative proceedings or before political bodies, provided that the board may levy assessments for these matters against only those members who have given written consent for the representation;

(7) To represent district members in proceedings or meetings of a water district established by the director of the department notwithstanding any provision to the contrary in chapter 6, title 42, Idaho Code. Provided however, that the board shall not be authorized to cast a vote in any proceeding or meeting of a water district established pursuant to chapter 6, title 42, Idaho Code, on behalf of any district member who has, prior to such proceeding or meeting, given written notice to the board and to the water district that such district member intends to vote on his own behalf, or on behalf of any district member who attends such meeting or proceeding and intends to vote on his own behalf. The board shall provide a verified list of the water rights that it represents at any water district proceeding or meeting to the chairman of the water district proceeding or meeting;

(8) To appropriate, develop, store, and transport water within the state;

(9) To acquire stock in canal companies, water companies, and water users' associations;

(10) To invest any surplus money in the district treasury pursuant to the public depository law as contained in chapter 1, title 57, Idaho Code;

(11) To develop, maintain, operate and implement mitigation plans designed to mitigate any material injury caused by ground water use within the district upon senior water uses within and/or without the district;

(12) To finance the repair or abandonment of wells in the ground water district which have experienced or are experiencing declines in water level or water pressures because of reasons including, but not limited to, flow, leakage, and waste from improper construction, maintenance, and operation of wells;
(13) To have and exercise the power of eminent domain in the manner provided by law for the condemnation of private property for easements, rights-of-way, and other rights of access to property necessary to the exercise of the mitigation powers herein granted, both within and without the district;
(14) To sue and be sued, and be a party to suits, actions and proceedings;
(15) To enter into joint powers agreements and/or memoranda of understanding with other districts, governmental or quasi-public entities;
(16) To develop and acquire water rights for, and operate, aquifer storage or recharge projects;
(17) To monitor, measure, study, and implement programs in the interests of the district's members regarding the protection of ground water diversions, depth of water in wells, aquifer water levels and characteristics;
(18) To adopt and amend bylaws not in conflict with the constitution and laws of the state for carrying on the business, objects and affairs of the board and of the district and to establish a fiscal year;
(19) To enter upon land to make surveys, locate district property, works, or facilities, and to otherwise conduct the affairs of the district;
(20) To make, record and report annually to the director sufficient measurements of diversions and water levels of district members to allow the district to be excluded from any water measurements district created pursuant to sections 42-705 through 42-715, Idaho Code;
(21) To manage and conduct the affairs of the district and to have and exercise all rights and powers necessary or incidental to or implied from the specific powers granted herein. Such specific powers shall not be considered as a limitation upon any power necessary or appropriate to carry out the purposes and intent of this chapter.
History:
[42-5224, added 1995, ch. 290, sec. 1, p. 993; am. 1996, ch. 298, sec. 8, p. 984; am. 2003, ch. 137, sec. 1, p. 400; am. 2005, ch. 367, sec. 10, p. 1161.]

APPENDIX B

ORIGINAL

SETTLEMENT AGREEMENT ENTERED INTO JUNE 30, 2015 BETWEEN PARTICIPATING MEMBERS OF THE SURFACE WATER COALITION[1] AND PARTICIPATING MEMBERS OF THE IDAHO GROUND WATER APPROPRIATORS, INC.[2]

IN SETTLEMENT OF LITIGATION INVOLVING THE DISTRIBUTION OF WATER TO THE MEMBERS OF THE SURFACE WATER COALITION, THE PARTIES AGREE AS FOLLOWS:

1. **Objectives.**
   a. Mitigate for material injury to senior surface water rights that rely upon natural flow in the Near Blackfoot to Milner reaches to provide part of the water supply for the senior surface water rights.
   b. Provide "safe harbor" from curtailment to members of ground water districts and irrigation districts that divert ground water from the Eastern Snake Plain Aquifer (ESPA) for the term of the Settlement Agreement and other ground water users that agree to the terms of this Settlement Agreement.
   c. Minimize economic impact on individual water users and the state economy arising from water supply shortages.
   d. Increase reliability and enforcement of water use, measurement, and reporting across the Eastern Snake Plain.
   e. Increase compliance with all elements and conditions of all water rights and increase enforcement when there is not compliance.
   f. Develop an adaptive groundwater management plan to stabilize and enhance ESPA levels to meet existing water right needs.

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[1] The Surface Water Coalition members ("SWC") are A&B Irrigation District (A&B), American Falls Reservoir District No. 2 (AFRD2), Burley Irrigation District (BID), Milner Irrigation District (Milner), Minidoka Irrigation District (MID), North Side Canal Company (NSCC), and Twin Falls Canal Company (TFCC). The acronym "SWC" in the Settlement Agreement is used for convenience to refer to all members of the Surface Water Coalition who are the actual parties to this Settlement Agreement.

[2] The Idaho Ground Water Appropriators, Inc. ("IGWA") are Aberdeen-American Falls Ground Water District, Bingham Ground Water District, Bonneville-Jefferson Ground Water District, Carey Valley Ground Water District, Jefferson Clark Ground Water District, Madison Ground Water District, Magic Valley Ground Water District, North Snake Ground Water District, Southwest Irrigation District, and Fremont-Madison Irrigation District, Anheuser-Busch, United Water, Glambia Cheese, City of Blackfoot, City of American Falls, City of Jerome, City of Rupert, City of Heyburn, City of Paul, City of Chubbuck, and City of Hazelton. The acronym "IGWA" in the Settlement Agreement is used for convenience to refer to all members of the Idaho Ground Water Appropriators, Inc. who are the actual parties to this Settlement Agreement.

2. **Near Term Practices.**
   a. For 2015 IGWA on behalf of its member districts will acquire a minimum of 110,000 ac-ft for assignment as described below:
      i. 75,000 ac-ft of private leased storage water shall be delivered to SWC;
      ii. 15,000 ac-ft of additional private leased storage water shall be delivered to SWC within 21 days following the date of allocation;
      iii. 20,000 ac-ft of common pool water shall be obtained by IGWA through a TFCC application to the common pool and delivered to SWC within 21 days following the date of allocation; and
      iv. Secure as much additional water as possible to be dedicated to on-going conversion projects at a cost not to exceed $1.1 million, the cost of which will be paid for by IGWA and/or the converting members.
   b. The parties stipulate the director rescind the April 16 As-Applied Order and stay the April 16 3rd Amended Methodology Order, and preserve all pending rights and proceedings.
   c. "Part a" above shall satisfy all 2015 "in-season" mitigation obligations to the SWC.
   d. This Settlement Agreement is conditional upon approval and submission by the respective boards of the Idaho Ground Water Appropriators, Inc. ("IGWA") and the Surface Water Coalition ("SWC") to the Director by August 1.
   e. If the Settlement Agreement is not approved and submitted by August 1 the methodology order shall be reinstated and implemented for the remainder of the irrigation season.
   f. Parties will work to identify and pass legislative changes needed to support the objectives of this Settlement Agreement, including, development of legislation memorializing conditions of the ESPA, obligations of the parties, and ground water level goal and benchmarks identified herein.

3. **Long Term Practices, Commencing 2016.**
   a. *Consumptive Use Volume Reduction.*
      i. Total ground water diversion shall be reduced by 240,000 ac-ft annually.
      ii. Each Ground Water and Irrigation District with members pumping from the ESPA shall be responsible for reducing their proportionate share of the total annual ground water reduction or in conducting an equivalent private recharge activity. Private recharge activities cannot rely on the Water District 01 common Rental Pool or credits acquired from third parties, unless otherwise agreed to by the parties.
   b. *Annual storage water delivery.*
      i. IGWA will provide 50,000 ac-ft of storage water through private lease(s) of water from the Upper Snake Reservoir system, delivered to SWC 21 days after the date of allocation, for use to the extent needed to meet irrigation

requirements. Any excess storage water will be used for targeted conversions and recharge as determined by SWC and IGWA.

ii. IGWA shall use its best efforts to continue existing conversions in Water Districts 130 and 140.

c. *Irrigation season reduction.*

Ground water users will not irrigate sooner than April 1 or later than October 31.

d. *Mandatory Measurement Requirement.*

Installation of approved closed conduit flow meter on all remaining unmeasured and power consumption coefficient (PCC) measured ground water diversions will be completed by the beginning of the 2018 irrigation season. Measurement device installation will be phased in over three years, by ground water district, in a sequence determined by the parties. If an adequate measurement device is not installed by the beginning of the 2016 irrigation season, a cropping pattern methodology will be utilized until such measuring device is installed.

e. *Ground Water Level Goal and Benchmarks.*

i. Stabilize and ultimately reverse the trend of declining ground water levels and return ground water levels to a level equal to the average of the aquifer levels from 1991-2001. Utilize groundwater levels in mutually agreed upon wells with mutually agreed to calculation techniques to measure ground water levels. A preliminary list of 19 wells has been agreed to by the parties, recognizing that the list may be modified based on additional technical information.

ii. The following benchmarks shall be established:

- Stabilization of ground water levels at identified wells by April 2020, to 2015 ground water levels;
- Increase in ground water levels by April 2023 to a point half way between 2015 ground water levels and the ground water level goal; and
- Increase of ground water levels at identified wells by April 2026 to the ground water level goal.

iii. Develop a reliable method to measure reach gain trends in the Blackfoot to Milner reach within 10 years.

iv. When the ground water level goal is achieved for a five year rolling average, ground water diversion reductions may be reduced or removed, so long as the ground water level goal is sustained.

v. If any of the benchmarks, or the ground water level goal, is not achieved, adaptive measures will be identified and implemented per section 4 below.

f. *Recharge.*

Parties will support State sponsored managed recharge program of 250 KAF annual-average across the ESPA, consistent with the ESPA CAMP and the direction in HB

547. IGWA's contributions to the State sponsored recharge program will be targeted for infrastructure and operations above American Falls.

g. *NRCS Programs.*
Parties will support NRCS funded permanent water conservation programs.

h. *Conversions.*
IGWA will undertake additional targeted ground water to surface water conversions and/or fallow land projects above American Falls (target near Blackfoot area as preferred sites).

i. *Trust Water Rights.*
The parties will participate and support the State in initiating and conducting discussions regarding long-term disposition of trust water rights and whether trust water rights should be renewed or cancelled, or if certain uses of trust water rights should be renewed or cancelled.

j. *Transfer Processes.*
Parties agree to meet with the State and water users to discuss changes in transfer processes within or into the ESPA.

k. *Moratorium Designations.*
State will review and continue the present moratoriums on new applications within the ESPA, including the non-trust water area.

l. *IDWR Processes.*
Develop guidelines for water right applications, transfers and water supply bank transactions for consideration by the IDWR.

m. *Steering Committee.*
   i. The parties will establish a steering committee comprised of a representative of each signatory party and the State.
   ii. Steering committee will be formed on or before September 10, 2015 and will meet at least once annually.
   iii. The Steering Committee will develop an adaptive management plan for responding to changes in aquifer levels and reach gain trends, review progress on implementation and achieving benchmarks and the ground water goal.
   iv. A technical work group ("TWG") will be created to support the Steering Committee. The TWG will provide technical analysis to the Steering Committee, such as developing a better way to predict and measure reach gains and ground water levels, to assist with the on-going implementation and adaptive management of the Settlement Agreement.

4. **Adaptive Water Management Measures.**
   a. If any of the benchmarks or the ground water level goal is not met, additional recharge, consumptive use reductions, or other measures as recommended by the

Steering Committee shall be implemented by the participating ground water parties to meet the benchmarks or ground water level goal.

b. The SWC, IGWA and State recognize that even with full storage supplies, present (2015) reach gain levels in the Near Blackfoot to Milner reach (natural flows) are not sufficient to provide adequate and sustainable water supplies to the SWC.

5. **Safe Harbor.**
No ground water user participating in this Settlement Agreement will be subject to a delivery call by the SWC members as long as the provisions of the Settlement Agreement are being implemented.

6. **Non-participants.**
Any ground water user not participating in this Settlement Agreement or otherwise have another approved mitigation plan will be subject to administration.

7. **Term.**
This is a perpetual agreement.

8. **Binding Effect.**
This Agreement shall bind and inure to the benefit of the respective successors of the parties.

9. **Entire Agreement.**

This Agreement sets forth all understandings between the parties with respect to SWC delivery call. There are no other understandings, covenants, promises, agreements, conditions, either oral or written between the parties other than those contained herein. The parties expressly reserve all rights not settled by this Agreement.

10. **Effect of Headings.**
Headings appearing in this Agreement are inserted for convenience and reference and shall not be construed as interpretations of the text.

11. **Effective Date.**
This Agreement shall be binding and effective when the following events have occurred:
    a. This Agreement is approved and executed by the participating parties consistent with paragraph 2.e. above; and
    b. IGWA has assigned all of the storage water required by paragraph 2.a.i. , ii., and iii. to the SWC by July 8, 2015.

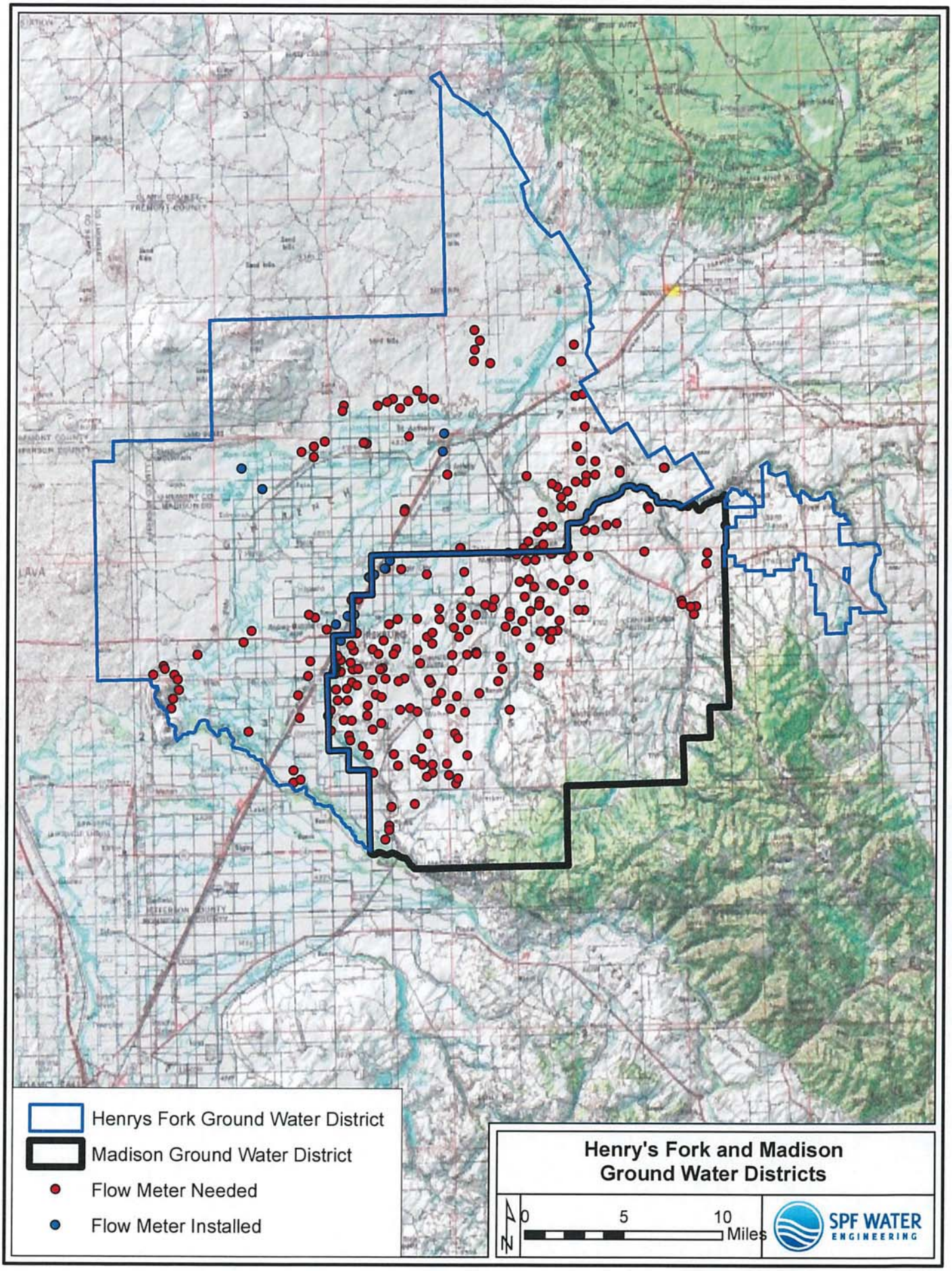
The parties have executed this Agreement on the date following their respective signatures.

IGWA-SWC Agreement
240,000 Acre-Feet Reduction Allocation

	AF/Yr	District % Total	AF Reduction	% Reduction
Aberdeen - American Falls GWD	262,102	13.7%	32,900	12.6%
Bingham GWD	270,975	14.2%	34,013	12.6%
Bonneville - Jefferson GWD	143,880	7.5%	18,060	12.6%
Carey Valley GWD	5,671	0.3%	712	12.6%
Jefferson - Clark GWD	348,750	18.2%	43,776	12.6%
Fremont-Madison ID	27,196	1.4%	3,414	12.6%
WD100	12,193	0.6%	1,530	12.6%
Madison GWD	4,102	0.2%	515	12.6%
Magic Valley GWD	260,446	13.6%	32,692	12.6%
A&B ID	174,735	9.1%	21,933	12.6%
North Snake GWD	182,249	9.5%	22,876	12.6%
Southwest ID	104,417	5.5%	13,107	12.6%
Non-Participant*	115,295	6.0%	14,472	12.6%
Total:	**1,912,011**	100.0%	**240,000**	12.6%

*Not participating in GWD, some still praticipating individually.

APPENDIX D


Henrys Fork Ground Water District
Madison Ground Water District
Flow Meter Needed
Flow Meter Installed
Henry's Fork and Madison
Ground Water Districts
N
0
5
10
Miles
SPF WATER
ENGINEERING

APPENDIX E

Idaho Department of Water Resources
List of Approved Closed Conduit Flow Meters

The tables below list flow meters (meters) that have been independently tested and subsequently approved by the Idaho Department of Water Resources (IDWR) for use in closed conduit measurement applications. These meters were tested by the Utah Water Research Laboratory at Utah State University using NIST* traceable instrumentation. Meters on this list performed at or above the standard established by IDWR for: 1) accuracy of +/- 2% of flow rate over the entire range of tested flows; and 2) repeatability of +/- 0.5% defined as the percent deviation of flow rate from average accuracy at each data point. More details on IDWR minimum acceptable standards can be at the following URL:
https://idwr.idaho.gov/files/water-measurement/Measuring-Devices-Minimum-Acceptable-Standards.pdf

Prior to selecting a meter, review this list completely and consult the manufacturer's installation requirements to ensure that all installation specifications for the specific model can be achieved. The specific models listed below must also be installed consistent with IDWR installation requirements (below) and any applicable notes (see page 4). This list is subject to change as additional meters are added or removed. The most current list can be found here:
https://idwr.idaho.gov/files/water-measurement/approved-flow-meter-list.pdf

Straight Pipe Length - The required minimum length of straight pipe immediately upstream and downstream of the meter or meter transducers. Straight pipe lengths must be free of flow disturbers and be in-line with the meter or transducer location. For spooled (flanged) meters, this pipe length must be the same nominal diameter as the meter. ***Chemical injection ports must not be located upstream of a meter or meter transducer location.***
Flow Disturber - Any fitting or appliance in the piping that may disturb flow through the meter or meter transducer locations. Flow disturbers may include but are not limited to: pump discharges, elbows, check, butterfly or gate valves, pipe reducers, couplings, intrusions, bells or reducers.

IDWR Installation Requirements:
Magnetic meters and spooled ultrasonic meters must be installed with a minimum straight pipe length equivalent of three (3) pipe diameters upstream and two (2) pipe diameters downstream from the center of the meter. Ultrasonic meters with remote mount transducers require a minimum straight pipe length equivalent of ten (10) pipe diameters upstream and five (5) pipe diameters downstream of the nearest transducer. These straight pipe spacing requirements must be maintained regardless of the manufacturer specifications, unless a variance has been approved by IDWR. All other manufacturer installation specifications must be met.

Notice to Meter Installers:
Installation of flow meters included on this list may require a permit from a local electrical authority or the Idaho Division of Building Safety (DBS). Please contact DBS or your local electrical authority if you need information regarding electrical permitting requirements that may be associated with your specific application.

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* NIST - National Institute of Standards and Technology

APPENDIX E

Approved Full Profile Magnetic Flow Meters				
Manufacturer	**Model/Specifications**	**Power Supply**	**IDWR-accepted Pipe Applications (Nominal Pipe Size)**	**NOTES**
ABB	WaterMaster	AC	3/8" to 96"	See note 1, page 4
ABB	AquaMaster 3 with FER Series Transmitter	INTERNAL	½" to 24"	See note 1 and 8, page 4
Badger	M2000 Amplifier with M2000 Detector	AC	1/4" to 54"	See note 1, page 4
Burkert	8054/8055 with Magflow Transmitter	AC	1" to 80"	See note 1, page 4
Endress+Hauser	ProMag L400	AC	1" to 90"	See note 1, page 4
Endress+Hauser	ProMag W400	AC	2" to 78"	See note 1, page 4
FloCat	MFE	AC	¾" to 24"	See note 1, page 4
Growsmart by Lindsay	IM3000	INTERNAL	4" to 12"	See note 1, page 4
Khrone	Enviromag 2100 C	AC	3/8" to 80"	See note 1, page 4
Khrone	Waterflux 3100 C/F	AC	1" to 24"	See note 1, page 4
McCrometer	Dura Mag	DC	4" to 12"	See notes 1 and 7, page 4
McCrometer	Ultra Mag with M-Series Converter	AC	2" to 48"	See note 1, page 4
Rosemount	8705 with 8732E Transmitter	AC	1/2" to 36"	See note 1, page 4
Rosemount	8750W with 8732 or 8712 Transmitter	AC	1/2" to 48"	See note 1, page 4
~~Seametrics~~	~~AG 2000 (retired)~~	~~DC~~	~~4" to 10"~~	See note 2, page 4

APPENDIX E

Approved Full Profile Magnetic Flow Meters (continued)				
Manufacturer	**Model/Specifications**	**Power Supply**	**IDWR-accepted Pipe Applications (Nominal Pipe Size)**	**NOTES**
Seametrics	AG 3000	DC	4" to 12"	See notes 1 and 3, page 4
Seametrics	iMag 4700	DC	4" to 12"	See notes 1 and 3, page 4
Siemens	Sitrans Mag5100W w/ Mag5000 Transmitter	AC	1" to 78"	See note 1, page 4
Siemens	Sitrans Mag8000	INTERNAL	1" to 24"	See note 1, page 4
Sensus	iPerl	INTERNAL	5/8" to 1"	See note 1, page 4
Sparling	TigermagEP – FM656 (Flanged)	AC	3/8" to 48"	See notes 1 and 5, page 4
Valmont	Valley 3000	DC	4" to 12"	See notes 1 and 3, page 4
Approved Spooled Ultrasonic Flow Meters				
Badger	E-Series	INTERNAL	3/4" to 2"	See note 1, page 4
Master Meter	Octave	INTERNAL	2" to 10"	See note 1, page 4
Netafim	Octave	INTERNAL	2" to 12"	See note 1, page 4
Approved Clamp-on and Wetted Transducer Ultrasonic Flow Meters				
Fuji	Time Delta C w/ 1MHz Transducers	AC	14"+	See notes 1 and 4, page 4
GE Panametrics	AT868 w/ 1MHz Transducers	AC	14"+	See notes 1 and 4, page 4
Siemens	Sitrans FUS1010 w/ High Precision Sensor (type H)	AC	14"+	See notes 1, 4 and 6, page 4

APPENDIX E

Notes:

1. Installation must be consistent with manufacturer specifications and IDWR installation requirements.

2. Removed from approved list October, 2016 (retired and replaced by AG 3000). AG 2000 meters installed prior to October, 2016, may continue to be used unless the meter becomes inoperable or fails to meet the required accuracy standard.

3. Seametrics AG3000, iMag 4700, and Valmont Valley 3000 must be installed with external DC power supply. External power supply options may include: AC/DC transformer or external battery with solar panel. Power supplied must meet the manufacturer specification for DC input voltage sufficient to maintain the meter in a continuous sampling mode. A functional internal battery must remain in the meter.

4. Ultrasonic meters with remote transducers may not be used on pipe smaller than 14 inches unless a variance is approved by IDWR.

5. Sparling FM HT-hot tap model was not tested or approved.

6. Sitrans High Precision sensor selection is based on pipe wall thickness and may only be used on steel pipe.

7. McCrometer Dura Mag must be installed with an external DC power supply. External power supply options may include: an AC/DC transformer, external battery with solar panel, or other charging source. Power supplied must meet the manufacturer specification for DC input voltage sufficient to maintain the meter in a continuous sampling mode.

8. Meter may be operated in connection with an external power supply. Consult the manufacturer specifications for external power supply options. A functional internal battery must remain in the meter.

APPENDIX F

Well I.D.	Lat	Long	Data Start Year	1981-2014 Depth to Water					Agency*	Remarks / Current Monitoring Scheme
				Mean	Median	Max	Min	Std dev		
03N37E12BDB1	-112.056	43.6071	1976	**134.13**	133.86	138	130	2.4	USGS	Manual readings monthly
02N37E02ABA1	-112.069	43.5382	1977	**169.97**	168.08	177.72	163.9	4.27	USGS	Manual readings monthly
03S34E02BCC3	-112.454	43.1902	1980	**25.67**	25.6	30.12	20.53	2.73	USGS	Manual readings, odd months
03S33E25CCC1	-112.553	43.1255	1980	**38.32**	38.21	41.91	34.47	1.86	USBR/IDWR	USBR takes manual readings around the 20th of the odd months; IDWR has datalogger installed and reports daily data. USBR manual readings were used to calculate the well index. There is a disparity between the USBR and IDWR data.
05S31E27ABA1	-112.815	42.9652	1960	**24.21**	23.97	28.25	18.96	2.27	USGS/IDWR	Datalogger installed, daily data reported since 4/29/2010
08S28E01AAA2	-113.121	42.7618	1986	**230.97**	230.9	234.54	226.53	2.52	IDWR	Manual readings, even months
08S25E36DAA1	-113.474	42.6829	1977	**120.9**	120.88	134.39	108.98	7.37	USGS	Manual readings monthly
09S25E03CAC1	-113.526	42.6674	1977	**58.02**	58.11	70.92	45.69	7.25	USGS	Manual readings monthly
02N31E35DCC1	-112.787	43.4499	1960	**589.22**	588.47	594.27	582.56	3.5	USGS	Manual readings, approximately quarterly but recently sporadic
05S28E26BBD1	-113.162	42.9627	1979	**684.64**	684.21	689.79	678.53	3.14	IDWR	Manual readings, approximately quarterly but recently sporadic
06S29E15BBC1	-113.067	42.9027	1986	**415.38**	414.95	419.32	409.78	2.86	IDWR	Manual readings, approximately quarterly but recently sporadic
08S26E03DCC1	-113.401	42.7482	1981	**267.82**	267.66	282.24	253.2	8.72	USGS	Manual readings monthly
06S22E28CDD1	-113.845	42.8652	1986	**210.04**	210.21	222.69	194.65	8.11	IDWR	Manual readings, even months
01S30E15BCA1	-112.943	43.3386	1960	**717.19**	716.58	721.53	710.92	3.07	USGS	Manual readings, quarterly Jan, April, July, October
04S33E20CBB1	-112.634	43.0591	1981	**31.61**	31.61	33.38	29.13	0.92	USBR/IDWR	USBR takes manual readings around the 20th of the odd months; IDWR has datalogger installed and reports daily data. USBR manual readings were used to calculate the well index.
04S33E20CBB4	-112.634	43.0591	1981	**8.41**	8.11	11.89	4.67	1.95	USGS	Manual readings, odd months
07S26E14CCC1	-113.393	42.8071	1981	**322.2**	322.03	336.69	307.43	8.78	USGS	Manual readings monthly
10S21E28BCB1	-114.009	42.5291	1981	**325.12**	321.61	346.23	308.79	11.93	USGS	Manual readings monthly
09S25E23DBA1	-113.5	42.6255	1981	**148.44**	147.61	164.21	135.89	8.7	USGS	Manual readings monthly
05S25E22DAD1	-113.454	42.9699	1981	**507.97**	508.05	520.88	493.78	8.11	USGS	Manual readings, irregular, approximately twice per year

*Sean Vincent Confirmed IDWR monitors the 4 wells noted (in March or April not both) and that there is no intention of discontinued use (e-mail communication 6/30/2015)

[1]Access at Crystal well (05S28E26BBD1) can be limited during the March/April timeframe during high snowpack years when the roads are muddy (Vincent e-mail communication 6/30/2015)

[2]USGS sometimes has difficulty accessing the INL Brockie Lake well 05S25E22DAD1 (Vincent e-mail communication 6/30/2015)

[3]per an MOA with ASCC, all of the ASCC wells are equipped with IDWR-supplied transducers but canal company personnel collect the data (Vincent e-mail communication 6/30/2015)

IDAHO WATER RESOURCE BOARD

May 1, 2018

Darren Olsen, Grants Management Specialist
Bureau of Reclamation, Financial Assistance Program
Department of Interior
PO Box 25007, MS 84-27814
Denver, CO 80225

RE: Henry's Fork Ground Water District and Madison Ground Water District request for grant funding under the USBR WaterSmart, Water and Energy Conservation Program, Funding Announcement No. BOR-DO-18-F006

Mr. Darren Olson,

Please accept this letter of support for the Henry's Fork Ground Water District and Madison Ground Water District WaterSmart 2018 grant application to acquire and install measurement devices.

The Idaho Water Resource (IWRB) is charged with many water resource policy, planning, and project development functions on behalf of the State of Idaho including managing an effort to stabilize and recover water levels on the Eastern Snake Plain Aquifer (ESPA). The IWRB supports this application because the IWRB believes the installation of flow meters is critical step in sustainably managing Idaho's water resources.

The IWRB strongly encourages you to fund this grant. Should you have any questions please feel free to contact me at (208) 287-4837. Thank you for your consideration.

Sincerely,

Brian Patton, P.E.
Executive Officer
Idaho Water Resource Board

State of Idaho
DEPARTMENT OF WATER RESOURCES
322 East Front Street • P.O. Box 83720 • Boise, Idaho 83720-0098
Phone: (208) 287-4800 • Fax: (208) 287-6700 • Website: www.idwr.idaho.gov

C.L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Director

April 27, 2018

Darren Olson, Grants Management Specialist
Bureau of Reclamation, Financial Assistance Program
Department of Interior
PO BOX 25007, MS 84-27814
Denver, CO 80225

RE: Idaho Department of Water Resources and the Idaho Water Resource Board support for the:

Henry's Fork Ground Water District and Madison Ground Water District request for grant funding under the USBR WaterSmart, Water and Energy Conservation Program, Funding Announcement No. BOR-DO-18-F006

Mr. Darren Olson,

The Idaho Department of Water Resources ("Department") is responsible for the following activities:

- administering ground water and surface water measurement and use on the Eastern Snake Plain;
- collecting, archiving, and publishing data from its regional ground water surface elevation, surface water, spring flow, and return flow monitoring networks on the Eastern Snake Plain, which combined total more than 750 individual monitoring sights;
- supporting the Idaho Water Resource Board's ("Board") aquifer enhancement activities on the Eastern Snake Plain, including managed ground water recharge, technical and financial support of ground water to surface water conversion projects, and administration of Idaho's Conservation Reserve and Enhancement Program (i.e. CREP); and
- administering and implementing water markets, which support and enable aquifer mitigation, in the forms of the Board's state-wide Water Supply Bank (ground water) and the Water District 01 Rental Pool (surface water).

The Department strongly supports the Henry's Fork Ground Water District and Madison Ground Water District WaterSmart 2018 grant proposal to acquire and install measurement devices.

The Department believes the installation of closed conduit flow meters on all regulated ground water diversions on the Eastern Snake Plain is critical to the stabilization and on-going recovery of Idaho's most strategic water resource, the Eastern Snake Plain Aquifer.

The Department strongly encourages you to fund this grant.

Respectfully,

Mathew Weaver, PE
Deputy Director, Idaho Department of Water Resources

IDAHO GROUND WATER APPROPRIATORS, INC.

P.O. Box 2624, Boise, ID 83701
Phone: 208.381.0294
Fax: 208.381-5272

Officers:
Tim Deeg, President
2957 Deeg Road
America Falls, ID 83211

Richard Smith, Vice President
P.O. Box 3
Rexburg, ID 83440

Randall C. Budge, Secretary
P.O. Box 1391
Pocatello, ID 83204-1391
Phone: 208.232-6101

Lynn Tominaga
Executive Director,
P.O. Box 2624
Boise, Idaho 83701-2624
Phone: 208.381-0294

U.S. Bureau of Reclamation Denver Federal Center
Financial Assistance Management Branch
Attn: Mr. Darren Olson
P.O. Box 2507
Denver, CO 80225

Re: WaterSmart Grant Application- Letter of Support

Dear Mr. Olson:

My name is Lynn Tominaga, Executive Director for Idaho Ground Water Appropriators, Inc. We are an association of ten Groundwater or Irrigation Districts which represent over one million acres of groundwater irrigated lands on the Eastern Snake Plain Aquifer (ESPA).

IGWA supports the WaterSmart grant application proposal from the Henry's Fork Groundwater District and Madison Ground Water District District. The purpose of this grant requests is to install flow meters on the remaining un-metered ground water wells within these districts.

A historic Settlement Agreement (Agreement) was reached and entered into in October 2015 by the members of the Surface Water Coalition (SWC) (representing 7 surface water entities, and the Idaho Ground Water Appropriators (IGWA). IGWA is an organization that represents agricultural, industrial, and municipal ground water users in the State of Idaho. In this case, IGWA represented 8 ground water districts, 2 irrigation districts, and numerous cities and industries as a party to the Agreement.

A major component of the Settlement Agreement is the installation of flow meters on all ground water wells on the Eastern Snake Plain Aquifer (ESPA). The goal of the Agreement is to stabilize and ultimately reverse the trend of declining ground water levels. The Agreement calls for a reduction of 240,000 acre-feet in ground water consumption. There are 3750 ground water wells without flow meters installed on the Eastern Snake Plain Aquifer.

If the 240,000 acre feet reduction in usage is implemented, it will provide a safe harbor for ground water users. This will minimize economic impact to individual water users and the state economy arising from water supply shortages and potential curtailment based on Prior Appropriation Doctrine and State law.

Improved surface water supply from increased reach gains to the Snake River will increase the amount of water available to fill Reclamation reservoir storage accounts, in turn providing a more reliable water supply for surface water irrigators, Indian Tribes, recreationalists, and cities among others. Increased reservoir storage will also provide additional opportunity for Reclamation flow augmentation rentals for the benefit of endangered species (Fall Chinook Salmon Recovery).

If you have questions about this letter please feel free to call me at 208-381-0294 or my cell phone: 208-890-4014.

Sincerely yours,

Lynn Tominaga
Executive Director

LST:p

APPENDIX G

Surface Water Coalition

April 26, 2018

Mr. Darren Olsen
Grants Management Specialist
U.S. Bureau of Reclamation
WaterSMART Program

Re: Letter of Support Henry's Fork and Madison Ground Water Districts 2018 WaterSMART Grant Application

Dear Mr. Olsen:

The Surface Water Coalition (SWC) is pleased to submit this letter in support of the Henry's Fork and Madison Ground Water Districts' (Districts) 2018 WaterSMART Grant application. The SWC and the Districts signed a long-term settlement agreement in 2015 that seeks to sustain and enhance groundwater resources in the Eastern Snake Plain Aquifer (ESPA) through targeted water conservation efforts and voluntary groundwater use reductions. Specifically, the Districts and other participating ground water districts have collectively agreed to initially reduce groundwater pumping by 240,000 acre feet/year. Further, it is our understanding that although various members within the Districts installed meters over the course of 2016 and 2017, installation may be continuing on certain members' wells. IDWR also issued an order in the fall of 2017 requiring measuring devices to be installed prior to the 2019 irrigation season in Water District 100 (an area covering part of the Districts' boundaries). This vital water conservation effort can be more quickly and efficiently implemented with funding from the WaterSMART program.

The SWC strongly supports the Districts' efforts to reduce groundwater consumption. Our joint efforts will result in long-term stabilization and enhancement of water levels in the ESPA and a sustainable water source for over 2 million acres of surface and ground water irrigated farmland in southern and eastern Idaho for decades to come. To that end the SWC supports the Districts' 2018 WaterSMART application.

Yours Truly,

A&B Irrigation District
American Falls Reservoir District #2
Burley Irrigation District
Milner Irrigation District
Minidoka Irrigation District
North Side Canal Company
Twin Falls Canal Company

cc: Lynn Tominaga, IGWA

APPENDIX H

Henrys Fork Groundwater District
PO BOX 15
St. Anthony
(208)624-3381

Henrys Fork Groundwater District Official Resolution

In the matter of the proposed WaterSMART application to USBOR for measurement devices in Henrys Fork Groundwater District.

Whereas, the Henrys Fork Groundwater District was formed in November of 2017 pursuant to Idaho Code 42-5202; and

Whereas, Henrys Fork Groundwater District is administered within WD100 created in 2006 under Idaho Code 42-604; and

Whereas, Henrys Fork Groundwater District is a party to the negotiated Settlement Agreement between Groundwater Districts and the Surface Water Coalition dated October 1, 2015 which requires installation of water measuring devices; and

Whereas, Henrys Fork Groundwater District supports the installation of measuring devices in WD 100 as evidenced by policy 1H of the Idaho State Water Plan as adopted by the Idaho Water Resource Board in 2012 which states, "Quantification and measuring of Idaho's water supply and use is essential for sound water resource planning, management, and administration; and

Whereas, Henrys Fork Groundwater District has the opportunity to assist land owners in WD100 and apply for Federal WaterSMART grants to offset the costs to users; and

Whereas, the Henrys Fork Groundwater District expects the water users within the District to provide the remainder of the costs.

NOW, THEREFOR, BE IT RESOLVED that the affected water users within Henrys Fork Groundwater District shall provide the remainder of the project costs, and there shall be no additional financial obligation to the District other than the cost of staff time.

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NOW, THEREFOR, BE IT RESOLVED that the WaterSMART grant fund will be accepted in Henrys Fork Groundwater District account until expended for the measurement devices in the district.

Dated this 4th day of May 2018.

Henrys Fork Groundwater District

By: Jeffery D. Raybould, Chairman

Henrys Fork Groundwater District

By: Aaron Dalling, Secretary

APPENDIX H

Madison Ground Water District

IN THE MATTER OF THE PROPOSED WATERSMART APPLICATION TO USBOR FOR MEASUREMENT DEVICES IN MADISON GWD (MGWD)

*Whereas, the District 7th Court created Madison GWD on or about MAY 26, 1999 pursuant to Idaho Code 42-5202; and

Whereas, Madison GWD is administrated within WD 100 created on or about SEPTEMBER 15, 2002 under Idaho Code 42-604; and

Whereas, Madison GWD signed a Negotiated Settlement Agreement between GWDs and Surface Water Coalition October 1, 2015 which requires installation of water measuring devices; and

Whereas, Madison GWD supports the installation of measurement devices in MGWD as evidenced by Policy 1 H of the Idaho State Water Plan as adopted by the Idaho Water Resource Board in 2012 which states, "Quantification and measurement of Idaho's water supply and use is essential for sound water resource planning, management and administration," and

Whereas, the Grant will be in the name of Madison GWD in name only and make the request for funding from BOR; and

**Whereas, Madison GWD applied for a WaterSmart Grant from The U.S. Bureau of Reclamation (BOR) in the amount of $300,000; and*

**Whereas, , JASON WEBSTER, Chairman of Madison GWD, P.O. Box 321, Rexburg, ID 83440 shall be recognized as the legal entity representing said district; and*

**Whereas, the BOR anticipates awarding total Federal funds in the amount of $300,000 over the next two Fiscal Years; and*

**Whereas, Idaho Code* 42-5224, *gives the board its Powers and Duties as Board of Directors, and*

**Whereas; Madison GWD Board has reviewed the WaterSmart Grant proposal and supports the grant application; and*

Whereas, Madison GWD has an opportunity to assist land owners in WD 100 and apply for federal WaterSmart grants to offset costs to users; and

**Whereas; Madison GWD has agreed to supply or back the additional funding of $369,000 the applicant in the grant proposal; and*

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**Whereas, Madison GWD has the financial ability under Idaho Code 42-5233 to incur debt and assess for projects; and*

Whereas, the Madison GWD expects the district to provide the remainder of the costs.

NOW THEREFORE, BE IT RESOLVED that Madison GWD authorizes application to the United States Bureau of Reclamation for a WaterSmart grant for measurement devices and authorizes the JASON WEBSTER, Chairman to enter into an agreement with Bureau of Reclamation for the WaterSmart grant and

**Further it be it resolved, that Madison GWD recognizes that JASON WEBSTER, Chairman will represent Madison GWD as its legal entity in the cooperative agreement; and*

**Therefore it be further resolved that Madison GWD agrees to the WaterSmart funds and will work cooperative with the Bureau of Reclamation to meet established deadlines for entering into a cooperative agreement.*
NOW, THEREFORE, BE IT RESOLVED that the affected water users within, Madison GWD shall provide the remainder of the project costs, and there shall be no additional financial obligation other than the cost of staff time.

*NOW, THEREFORE BE IT FURTHER RESOLVED that the WaterSmart grant fund will be deposited in Madison GWD account and will be used to rebate farmers on a as needed basis until completely expended for the measurement devices in the district.

Dated this 8th day of MAY, 2018.

Jason Webster

Jason Webster,Chairman

Shawn Webster

Shawn Webster, Secretary / Treasurer