State of Idaho
DEPARTMENT OF WATER RESOURCES
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BRAD LITTLE
Governor

GARY SPACKMAN
Director

June 27, 2019

Re: Preliminary Order Requiring Measuring Devices for Ground Water Diversions in Water District No. 33

Dear Water User,

The Idaho Department of Water Resources ("IDWR") has issued the enclosed Preliminary Order ("Order") requiring installation of measuring devices for ground water rights and diversions within Water District 33 ("WD33"). The enclosed Order is a preliminary order pursuant to Section 67-5243, Idaho Code. Any party may file a petition for reconsideration of a preliminary order as explained in the enclosed information sheet.

Please note that flow meters must be installed on ground water irrigation diversions by the start of the 2021 irrigation season and on non-irrigation diversions by January 1, 2021. The Order excludes the following ground water uses and diversions unless further notified by IDWR:

a. Domestic and stockwater uses as defined by Section 42-111, Idaho Code;
b. Diversions for irrigation uses less than or equal to five (5) acres; and
c. Non-irrigation uses with a total rate of diversion less than or equal to 0.24 cubic feet per second (approximately 108 gallons per minute).

Please refer to the enclosed documents *"Minimum Acceptable Standards for Open Channel and Closed Conduit Measuring Devices"* and "*List of Approved Closed Conduit Measuring Devices"* for information on types of IDWR-acceptable measuring devices. These documents and other information on the topic are available on IDWR's website: www.idwr.idaho.gov → Water Data → Water Measurement → Guidelines.

If you have questions concerning this Preliminary Order or IDWR's water measurement standards, please contact the IDWR State office (208-287-4800) or Eastern Regional office (208-525-7161).

Respectfully,

Tim Luke
Water Compliance Bureau

Encl: *Preliminary Order*
Explanatory Information to Accompany a Preliminary Order
Minimum Acceptable Standards for Open Channel and Closed Conduit Measuring Devices
List of Approved Closed Conduit Measuring Devices

Cc: James Cefalo, IDWR Eastern Region Acting Manager

BEFORE THE DEPARTMENT OF WATER RESOURCES
OF THE STATE OF IDAHO

IN THE MATTER OF REQUIRING MEASURING DEVICES FOR GROUND WATER DIVERSIONS IN WATER DISTRICT NO. 33 (LITTLE LOST RIVER AND TRIBUTARIES)	)))))	**PRELIMINARY ORDER**

BACKGROUND

On January 18, 2019, the Director ("Director") of the Idaho Department of Water Resources ("Department") issued a *Preliminary Order Revising Water District No. 33, Little Lost River and Tributaries, to Include Ground Water Rights Within Water District No. 33.* ("Preliminary Order"). The purpose of the Preliminary Order was to expand Water District No. 33 ("WD33") to include administration of ground water rights in IDWR's Administrative Basin No. 33[1], including that portion of the basin within the Eastern Snake Plain Aquifer ("ESPA") Ground Water Management Area and the ESPA Ground Water Model 2.1 boundary.[2] The Preliminary Order added all ground water rights located within WD33 except those ground water rights used for domestic and stockwater purposes as defined by Idaho Code §§ 42-111 and 42-1401A (11).

A primary purpose of a water district is the administration of water rights and distribution of water within the water district by a watermaster. Idaho Code § 42-602. The watermaster delivers the flow rate and/or volume authorized by the water right to the water right holder by measuring diversions and adjusting controlling works. Idaho Code § 42-607. The watermaster's expenses for distributing water within the water district are covered by assessments to individual water users based on the amount of water delivered, consistent with Idaho Code §§ 42-612(3) and 42-615. The Director can require installation of a measuring device by a water right holder to assist a watermaster in the administration and distribution of water in a water district. Idaho Code § 42-701.

The WD33 watermaster currently measures and regulates surface water diversions in the district using acceptable measuring devices and controlling works. To assist the WD33 watermaster in the administration of ground water rights, holders of ground water right diversions added to WD 33 by the Preliminary Order must install measuring devices.

[1] IDWR Administrative Basin No. 33 is the Little Lost River drainage basin. The boundaries of Basin 33 and WD33 are identical.

[2] Where they overlap Basin 33, The ESPA GWMA boundary and Ground Water Model 2.1 boundary are identical and are depicted in Attachment A of the Director's November 2, 2016 *Order Designating the Eastern Snake Plain Aquifer Ground Water Management Area*.

FINDINGS OF FACT

On June 30, 2015, the Surface Water Coalition[3] ("SWC") and the Idaho Ground Water Appropriators, Inc.[4] ("IGWA"), executed a settlement related to the SWC water rights delivery call (IDWR Docket No. CM-DC-2010-001). *See Settlement Agreement Entered Into June 30, 2015 Between Participating Members of the Surface Water Coalition and Participating Members of the Idaho Ground Water Appropriators, Inc.* ("Settlement Agreement"). Parties to the settlement subsequently filed the Settlement Agreement with the Director as a mitigation plan pursuant to Rule 43 of the Department's *Rules for Conjunctive Management of Surface and Ground Water Resources* ("CM Rules"). The Director approved the mitigation plan on May 2, 2016. *Final Order Approving Stipulated Mitigation Plan* at p. 4.

The Settlement Agreement acknowledges a decades-long declining trend in the ground water levels of the ESPA and establishes practices that participants in the mitigation plan will implement for the following purposes: (1) to mitigate material injury to the SWC from junior ground water right diversions; (2) to provide "safe harbor" from curtailment under the SWC delivery call to participating ground water right holders; (3) to stabilize ESPA water surface elevations; and (4) to enhance ESPA water surface elevations to the average ESPA water surface elevations observed during the period of time 1991-2001. *Settlement Agreement* at p. 1.

On July 20, 2016, the Director issued a *Final Order on Reconsideration,* In the Matter of Requiring Measuring Devices for Ground Water Diversions in the Portions of Water Districts Nos. 31, 34, 100, 110, 120, 130, and 140 Overlying the ESPA ("ESPA Measurement Order") to assist watermasters in the administration of water rights within the boundaries of the water districts affected by the ESPA Measurement Order. The ESPA Measurement Order was limited to ground water rights and diversions located within the ESPA Area of Common Ground Water Supply ("ESPA ACGWS")[5], except those ground water rights used for domestic and stockwater purposes as defined by Idaho Code §§ 42-111 and 42-1401A (11). The ESPA Measurement Order did not include ground water rights located within Basin 33 because the rights were not included in a water district and because most Basin 33 ground water rights are not located within the ESPA ACGWS. However, the SWC petitioned the Director to amend the ESPA Measurement Order to require measuring devices on all ground water diversions within the ESPA Model 2.1 boundary and all ground water diversions within the boundaries of ground water districts signatory to the Settlement Agreement. *See Surface Water Coalition's Petition for Reconsideration and Request for Hearing* at

[3] The Surface Water Coalition consists of the following seven surface water delivery organizations: A&B Irrigation District, American Falls Reservoir District No. 2, Burley Irrigation District, Milner Irrigation District, Minidoka Irrigation District, North Side Canal Company, and the Twin Falls Canal Company.

[4] The Idaho Ground Water Appropriators, Inc., includes, but is not limited to, the following entities: 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, and Glanbia Cheese.

[5] The ESPA Area of Common Ground Water Supply is:

> [T]he aquifer underlying the Eastern Snake River Plain as the aquifer is defined in the report, Hydrology and Digital Simulation of the Regional Aquifer System, Eastern Snake River Plain, Idaho, USGS Professional Paper 1408-F, 1992 excluding areas south of the Snake River and west of the line separating Sections 34 and 35, Township 10 South, Range 20 East, Boise Meridian.

6, In the Matter of Requiring Measuring Devices for Ground Water Diversion in the Portions of Water Districts 31, 34, 100, 110, 120, 130 and 140 Overlying the Eastern Snake Plain Aquifer (July 1, 2016).

On November 2, 2016, the Director designated the ESPA Ground Water Management Area ("ESPA GWMA") which includes a portion of WD33 within the ESPA Model 2.1 boundary. *See Order Designating the Eastern Snake Plain Aquifer Ground Water Management Area* at Attachment A. Ground water in WD33 and the ESPA Model 2.1 boundary is hydraulically connected to the ESPA and the Snake River. About 75 percent of the ground water wells in WD33 are located within the ESPA Model 2.1 boundary and ESPA GWMA.

On January 18. 2019, the Director issued the Preliminary Order revising WD33 to administer ground water rights in WD33. Paragraph two of the Preliminary Order states the following:

> The Director shall issue a separate order requiring the installation of measuring devices for ground water diversions within WD33. The measuring device order shall be issued at least sixty days after the issuance of this Preliminary Order Revising WD33 to provide time for area water users to work with the Department toward developing a reasonable water measurement implementation plan.

On June 11, 2019, the Department met with the WD33 watermaster, several WD33 advisory committee members and several WD33 water users to discuss details of a ground water diversion measurement order. Water users participating in the meeting recommended at least a two-year time frame to install measuring devices on ground water diversions in WD33.

RELEVANT LEGAL PROVISIONS

Idaho Code § 42-233b, states that the "director may require all water right holders within a designated water management area to report withdrawals of ground water and other necessary information for the purpose of assisting him in determining available ground water supplies and their usage."

Idaho Code § 42-701(1) authorizes the Director to require installation and maintenance of suitable, lockable headgates and controlling works and measuring devices at the point where the water is diverted.

The Director has a "clear legal duty to distribute water" according to the partial decrees issued by the Snake River Basin Adjudication ("SRBA") District Court. *City of Blackfoot v. Spackman*, 162 Idaho 302, 309 (2017). The SRBA District Court issued the *Final Unified Decree* on August 26, 2014. *Final Unified Decree*, In re SRBA, Case No. 39576 (Fifth Jud. Dist. Ct. Aug. 26, 2014).

Idaho Code § 42-612(3) states that "for the purpose of computing the respective amounts to be paid by each water user [of a water district], the water delivered to the various ditches, canal companies, irrigation districts or other users during past season or seasons, not exceeding five (5) seasons, shall be used as the basis."

Idaho Code § 42-615 states "that each watermaster shall, at least fourteen (14) days prior to the annual meeting of the water users of the water district, also prepare a proposed budget for the

succeeding year, together with a distribution of the amount of the budget to the respective water users, using the actual deliveries for the past irrigation season or seasons, as the basis of distribution."

CONCLUSIONS OF LAW

Measurement of ground water diversions in WD33 is necessary for the Director to comply with his "clear legal duty to distribute water" according to decreed water rights. Measurement of ground water diversions has the following administrative benefits:

i. Collective quantification of ground water withdrawals assists the director of the Department, the water district and local ground water right holders in determining the available ground water supplies and usage;

ii. Quantification of individual ground water withdrawals creates the necessary evidence to ensure ground water right holders are using water within their authorized diversion limits and that withdrawals can be regulated to the authorized diversion limits of the water rights; and

iii. Collective and individual quantification of ground water withdrawals establishes an equitable, defensible, and legal basis for determining water user assessments, consistent with Idaho Code §§ 42-612(3) and 42-615.

The Director should issue an order requiring the installation of measuring devices for diversions of ground water within WD33. The measurement order should require the installation of flow meters on irrigation wells by the start of the 2021 irrigation season, and by January 1, 2021, for non-irrigation wells. The 2021 installation deadline is consistent with the deadline and time that other ground water users in the ESPA were given under the Department's 2016 ESPA Measurement Order.

ORDER

IT IS HEREBY ORDERED AS FOLLOWS:

1. The holders of ground water rights within WD33, except those ground water rights, uses, and diversions identified in item 2 below, shall install and maintain on each point of diversion or well, a measuring device of a type acceptable to the Department. **Owners of irrigation wells or diversions that are required to be measured shall install acceptable measuring devices by the start of the 2021 irrigation season. Owners of non-irrigation diversions that are required to be measured shall install acceptable measuring devices by January 1, 2021.**

2. The installation of measuring devices required by this order is waived until further notification by the Department for the following water uses and diversions:

    a. Domestic and stockwater uses as defined by Idaho Code §§ 42-111 and 42-1401A(11);

b. Diversions of ground water or water systems with multiple ground water diversions irrigating less than or equal to five (5) acres; or

c. Diversions of ground water or water systems with multiple ground water diversions delivering ground water for any purpose other than irrigation that divert less than or equal to 0.24 cubic feet per second (approximately 108 gallons per minute).

3. Measuring devices acceptable to the Department for wells required to be measured shall be flow meters identified in the Department's *List of Approved Closed Conduit Flow Meters* (Version 3.0 updated 05-10-2019) (copy attached*).* These specifications apply to both irrigation and non-irrigation water uses.

4. The Department will consider a request for a variance from the Department-approved flow meter requirement upon submittal of a written plan to the Department and the WD33 watermaster. Acceptable variances may include the following methods or devices:

   a. Development of a PCC, which is a ratio of power usage to water withdrawal. Acceptance of the PCC method may be provided *only for irrigation diversions that consist of one (1) well and one irrigation discharge point or one distinct flow and demand condition, and water levels do not change significantly during the irrigation season (example: a well diverting water to one center pivot only with no end gun, a well diverting water to one wheel line, or multiple wheel lines as long as the same multiple wheel lines are always on at the same time)*;

   b. Timing diversion with an hour meter (time clock) *for one well that discharges to an open ditch or pond where a) discharge is constant and not controlled by valves, b) ground water levels do not change significantly during the annual season of use, and c) the rate of flow is measured annually by the water district watermaster*;

   c. Measurement with a properly functioning flow meter that was installed *before the date of this order, and determined as acceptable by the Department* (meters installed before the date of this order and included in the Department's *List of Approved Closed Conduit Flow Meters version 3.0* are deemed acceptable); and

   d. Measurement with a standard open channel measuring device installed in an open channel or ditch for measuring multiple wells in a well field and the measuring device is read daily, or daily flows are recorded by use of a continuous recorder or data logger.

5. The Department and WD33 watermaster must receive all requests for a variance by **November 1, 2020**. The Department and watermaster will not consider untimely requests. The Department and watermaster will consider requests on a case-by-case basis. The Department and watermaster will deny variance requests proposing the use of an existing flow meter unless the existing meter is tested and satisfies the Department's established standards for accuracy and the manufacturer installation specifications. Ground water right holders affected by this order must replace existing meters that do not satisfy the established standard for accuracy and the manufacturer specifications with a meter from the Department's *List of Approved Closed Conduit Flow Meters* (most current version), which is available at https://idwr.idaho.gov/files/water-measurement/approved-flow-meter-list.pdf. Requests for a

variance must be made using the Department's form *"Request for Variance of IDWR Approved Flow Meter Requirement"* available on the Department's website.

6. If a user cannot comply with the deadlines in item 1 of this order, the Department may grant an extension. The Department must receive an extension request for each diversion by **November 1, 2020**. The Department will consider extension requests on a case-by-case basis. Conditions that may result in the Department granting an extension include, but are not limited to, the following:

    a. The diversion is unused;

    b. Unique site specific condition(s) prevent accurate water measurement; or

    c. Delays caused by the requirements of other government entities.

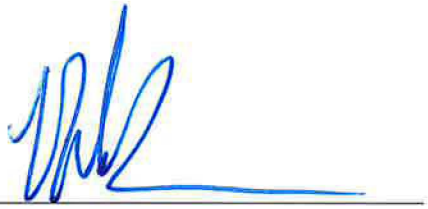
7. Measuring devices must be properly maintained, repaired, or replaced if determined inaccurate or inoperable by the Department or the WD33 watermaster.

8. This order is effective immediately for any new diversion(s) authorized after the date of this order, except water right diversions described in item 2 of this order.

9. If a water user fails to comply with the requirements of this order, the Director may issue an order instructing the WD33 watermaster to shut off and refuse delivery of water at any non-compliant diversion.

10. Pursuant to Idaho Code § 42-1701A(3), any person aggrieved by this order may, within fifteen days after receipt of written notice of the order or receipt of actual notice, file with the Director a written petition stating the grounds for contesting the order and requesting a hearing.

Dated this 26 day of June 2019



MAT WEAVER
Deputy Director

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on this 27th day of June 2019, the above and foregoing document was served on each individual or entity on the service list for this matter on file at the Idaho Department of Water Resources, 322 East Front Street, Boise, Idaho and www.idwr.idaho.gov. Each individual or entity on the service list was served by placing a copy of the above and foregoing document in the United States mail, postage prepaid and properly addressed.

Documents served: **Preliminary Order Requiring Measuring Devices for Ground Water Diversions in Water District No. 33**

Sarah Shaul

Sarah Shaul
Technical Records Specialist
Idaho Department of Water Resources

BRENT L, N SCOTT AND NORMAN G ALLEN
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HOWE ID 83244

NORMAN S ALLEN
PO BOX 1072
HOWE ID 83244

ALLEN FARMS INC
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HOWE ID 83244

DAVID S AND SHERI L ANDREASON
3794 LITTLE LOST RIVER HWY
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BRENDA AND DARYL ANDREASON
PO BOX 22
HOWE ID 83244

ELIZABETH AND JAMES O ANDREASON
PO BOX 3
HOWE ID 83244

DAVID S AND SHERI ANDREASON
PO BOX 31
HOWE ID 83244-0031

WAYNE BARE
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HOWE ID 83244

LYNN AND MARCINE BINGHAM
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BIRCH CREEK RANCHES LLC
1032 GRANDVIEW DR
IVINS UT 84738

BORAH PEAK FARMS LLC
C/O OAK RIVER FARMS
PO BOX 158
MONTEREY LA 71354

BUTTE COUNTY CEMETERY MAINTENANCE DISTRICT
PO BOX 302
ARCO ID 83213

BUTTE COUNTY JOINT SCHOOL DISTRICT #111
PO BOX 89
ARCO ID 83213

DAVID R AND MAKAYLA R CALLISTER
1454 W 3700 N
HOWE ID 83244

DON O CALLISTER
1496 W 3700 N
HOWE ID 83244

SANDRA L DRUSSEL
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JASON CHRISTOPHER FUGER
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BRIAN S, CAROLYN J AND ILENE HARRELL
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HOWE ID 83244-8710

BRIAN S AND ILENE HARRELL
3848 N 1700 W
HOWE ID 83244-8715

ILENE HARRELL
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ROBERT L HARRIS
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IDAHO FALLS ID 83405-0130

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HOWE WATER DISTRICT
C/O JERRY PANCHERI
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ISHAM FARMS
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ISHAM FARMS
C/O DONALD ISHAM
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J R SIMPLOT CO
C/O JAMES B ALDERMAN
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PO BOX 27
BOISE ID 83707-0027

JAYMON AND KAREN KNIGHT
1450 W 3800 N
HOWE ID 83244

MATTHEW J, RAMONA AND RICHARD A LAGOMARSINO
PO BOX 20
HOWE ID 83244

LITTLE LOST DAIRY LLC
PO BOX 88
TERRETON ID 83450-0088

LITTLE LOST RIVER LAND & CATTLE LTD
3776 N 1800 W
HOWE ID 83244-8716

MADARIETA SOD FARM
C/O RAYMOND MADARIETA
PO BOX 1062
HOWE ID 83244

DARRELL DEAN AND MARCHETA MAYS
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HOWE ID 83244

KAYALIN AND RUSSELL H MAYS
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HOWE ID 83244-0051

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CHARLES H MC DONALD
C/O JOHN L MC DONALD
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ORVILLE W AND REA E NICHOLSON
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KIRK AND YVONNE NICKERSON
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NICKERSON FARMS LLP
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ROBERT J AND SUZANNE W NORRIS
3842 N 1800 W
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PANCHERI BROTHERS LLC
1494 HIGHWAY 33
HOWE ID 83244-8719

PANCHERI INC
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VELLA JEAN ROMRELL
HC 65 BOX 58
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CAROL AND ROCKY ROSS
PO BOX 10
HOWE ID 83244

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ROY L SERMON
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MERLIN SMITH
833 S STOUT AVE
BLACKFOOT ID 83221

W T WILLIAMS INC
3094 N 3200 E
TWIN FALLS ID 83301

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EXPLANATORY INFORMATION TO ACCOMPANY A PRELIMINARY ORDER

(To be used in connection with actions when a hearing was **not** held)

(Required by Rule of Procedure 730.02)

The accompanying order or approved document is a "**Preliminary Order**" issued by the department pursuant to section 67-5243, Idaho Code. **It can and will become a final order without further action of the Department of Water Resources ("department") unless a party petitions for reconsideration, files an exception and brief, or requests a hearing as further described below:**

PETITION FOR RECONSIDERATION

Any party may file a petition for reconsideration of a preliminary order with the department within fourteen (14) days of the service date of this order. **Note: the petition must be received by the department within this fourteen (14) day period.** The department will act on a petition for reconsideration within twenty-one (21) days of its receipt, or the petition will be considered denied by operation of law. See Section 67-5243(3) Idaho Code.

EXCEPTIONS AND BRIEFS

Within fourteen (14) days after: (a) the service date of a preliminary order, (b) the service date of a denial of a petition for reconsideration from this preliminary order, or (c) the failure within twenty-one (21) days to grant or deny a petition for reconsideration from this preliminary order, any party may in writing support or take exceptions to any part of a preliminary order and may file briefs in support of the party's position on any issue in the proceeding with the Director. Otherwise, this preliminary order will become a final order of the agency.

REQUEST FOR HEARING

Unless a right to a hearing before the Department or the Water Resource Board is otherwise provided by statute, any person aggrieved by any final decision, determination, order or action of the Director of the Department and who has not previously been afforded an opportunity for a hearing on the matter may request a hearing pursuant to section 42-1701A(3), Idaho Code. A written petition contesting the action of the Director and requesting a hearing shall be filed within fifteen (15) days after receipt of the denial or conditional approval.

ORAL ARGUMENT

If the Director grants a petition to review the preliminary order, the Director shall allow all parties an opportunity to file briefs in support of or taking exceptions to the preliminary order and may schedule oral argument in the matter before issuing a final order. If oral arguments are to be heard, the Director will within a reasonable time period notify each party of the place, date and hour for the argument of the case. Unless the Director orders otherwise, all oral arguments will be heard in Boise, Idaho.

CERTIFICATE OF SERVICE

All exceptions, briefs, requests for oral argument and any other matters filed with the Director in connection with the preliminary order shall be served on all other parties to the proceedings in accordance with IDAPA Rules 37.01.01302 and 37.01.01303 (Rules of Procedure 302 and 303).

FINAL ORDER

The Director will issue a final order within fifty-six (56) days of receipt of the written briefs, oral argument or response to briefs, whichever is later, unless waived by the parties or for good cause shown. The Director may remand the matter for further evidentiary hearings if further factual development of the record is necessary before issuing a final order. The department will serve a copy of the final order on all parties of record.

Section 67-5246(5), Idaho Code, provides as follows:

> Unless a different date is stated in a final order, the order is effective fourteen (14) days after its service date if a party has not filed a petition for reconsideration. If a party has filed a petition for reconsideration with the agency head, the final order becomes effective when:
>
> (a) The petition for reconsideration is disposed of; or
> (b) The petition is deemed denied because the agency head did not dispose of the petition within twenty-one (21) days.

APPEAL OF FINAL ORDER TO DISTRICT COURT

Pursuant to sections 67-5270 and 67-5272, Idaho Code, if this preliminary order becomes final, any party aggrieved by the final order or orders previously issued in this case may appeal the final order and all previously issued orders in this case to district court by filing a petition in the district court of the county in which:

i. A hearing was held,
ii. The final agency action was taken,
iii. The party seeking review of the order resides, or
iv. The real property or personal property that was the subject of the agency action is located.

The appeal must be filed within twenty-eight (28) days of this preliminary order becoming final. See section 67-5273, Idaho Code. The filing of an appeal to district court does not itself stay the effectiveness or enforcement of the order under appeal.

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES (IDWR)

MINIMUM ACCEPTABLE STANDARDS AND REQUIREMENTS FOR OPEN CHANNEL AND CLOSED CONDUIT MEASURING DEVICES

The water source, diversion structure and conveyance system must be adequately evaluated prior to selection of a measuring device. Surface water sources such as streams, springs and drains are commonly diverted into open channels, ditches or canals. Closed conduits such as pipes or culverts are also used to convey surface water. Ground water is more commonly diverted into pipes (closed conduits) which convey water from the well to system discharge points such as irrigation sprinkler systems. Ground water may also discharge from a well through a short section of pipe to open channels, ditches or ponds. When required by IDWR, measuring devices must be installed at or very near the point of diversion to ensure the watermaster can accurately determine the amount of water diverted from the public water source. The standards below are intended to qualify measuring devices that are "acceptable to the Department", and to assist water users and watermasters in the proper selection and installation of such devices when required pursuant to Section 42-701, Idaho Code.

I. MEASUREMENT IN OPEN CHANNELS

The following requirements are applicable to diversions from surface water sources. Measurement of a ground water diversion with an open channel measuring device must be specifically approved by IDWR.

A. Industry Standard Open Channel Measuring Devices

All open channel surface water diversions must be measured using one of the following industry standard (standard) open channel flow measuring devices:

- **Weirs:** contracted or suppressed rectangular weirs, Cipolletti weir, 90 degree V-notch weir
- **Submerged Orifices:** submerged rectangular orifice, constant head orifice
- **Flumes:** Parshall flume, trapezoidal flume, ramped flume (ramped, broad-crested weir)
- **Current Meter/Acoustic Profiler:** acoustic Doppler flow meter (ADFM), acoustic Doppler current profiler

Construction, installation and operation of these devices must be consistent with water measurement guidelines, published by the United States Bureau of Reclamation[1] or the United Stated Geological Survey[2]. Measuring devices, associated rating tables and specifications contained in these publications are considered by IDWR to be industry standard.

B. Non-Standard Open Channel Devices Including Rated Structures or Rated Sections

Any weir, flume or other measuring device that has not been constructed, installed or maintained to measure flow consistent with industry standard rating tables or curves shall be considered non-standard. IDWR may authorize the use of non-standard devices or rated channel sections on a case by case basis, upon the submittal and approval of a measurement plan. A measurement plan must contain an acceptable proposal, using industry standard procedures for developing a rating curve, or document that a rating curve has been fully developed for the device or section. Proposed rating plans must include provisions for periodic re-measurement and maintenance of the rating. The established rating must achieve the desired accuracy standard of plus or minus ten percent (±10%), the equivalent accuracy of a standard open channel device. All rating measurements must be conducted by a qualified individual (eg. engineer, hydrologist, certified examiner), using a standard portable open channel measuring device. If a measurement plan is not approved by IDWR, a standard device must be installed and maintained.

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[1] The BOR guidelines can be found at: https://idwr.idaho.gov/files/water-measurement/2001-Bureau-of-Reclamation-Water-Measurement-Manual.pdf

[2] The USGS guidelines can be found at: https://pubs.er.usgs.gov/

II. Closed Conduit Measuring Devices

The following requirements are applicable to measurement of diversions from any water source that conveys water through a full pipe or conduit. Full pipe means that water within the pipe is under at least some positive pressure and contains insignificant amounts of air or gas.

A. Standard Closed Conduit Measuring Devices

Standard closed conduit measuring devices are flow meters that have been approved for use by IDWR based on independent third party testing. IDWR has developed and published a list of meters that have been tested and approved for use[3]. Tests were conducted for both accuracy and repeatability on all submitted models. The lab tested accuracy standard for flow rate is plus or minus two percent (± 2%). The *IDWR List of Approved Closed Conduit Flow Meters* (approved list) may be found at: https://idwr.idaho.gov/files/water-measurement/approved-flow-meter-list.pdf

Approved full profile magnetic flow meters and spooled ultrasonic flow meters must be installed with a minimum straight pipe length equivalent of three (3) pipe diameters upstream and two (2) pipe diameters downstream measured from the center of the meter spool. Approved clamp-on and wetted ultrasonic flow meter transducers must be located with a minimum straight pipe equivalent of ten (10) pipe diameters upstream and five (5) pipe diameters downstream of the nearest transducer. All other manufacturer installation specifications (excepting up and down spacing) must be met. *Installation of an approved meter inconsistent with the requirements noted above, may be cause for IDWR to require reinstallation of the meter*.

B. Requests for Variance to Use Power Consumption, Hour Meter or Existing Meter

Requests for variance will be considered for qualifying diversions on a case by case basis only upon submittal of the appropriate "Request for Variance" form. If a water user can demonstrate that an existing flow meter or other method of measurement meets an equal standard of accuracy when compared to meters on the approved list, a variance may be granted. If a variance request is not granted, an approved meter will be required.

The following alternate measurement methods may be considered:

- Development of a Power Consumption Coefficient (PCC), which is a ratio of power usage to water withdrawal,
- Use of an hour meter (time clock), or
- Use of a flow meter that was *installed prior* to the date a measurement order was issued and *is not* on the IDWR approved list.

Any alternate measurement method will require field testing using a portable ultrasonic flow meter or other meter tested and accepted by IDWR (testing meter). Field testing may be performed by any of the following:

- IDWR staff,
- a water district watermaster,
- a ground water district hydrographer,
- an irrigation district hydrographer,
- a certified field examiner, or
- as otherwise approved by IDWR

Existing flow meters must be operational and installed consistent with applicable specifications. If the testing margin of error of an installed meter when compared to the testing meter exceeds plus or minus ten percent (±10%) for mechanical type meters, or plus or minus five percent (±5%) for magnetic or ultrasonic type meters, the installed meter must be replaced with a new meter from the approved list. The owner or operator of any diversion system which requires a field measurement must provide a testing section of unobstructed straight pipe 15 pipe diameters in length.

[3] Testing was conducted at the Utah Water Research Laboratory (UWRL), a National Institute of Standards and Technology (NIST) traceable lab in Logan, Utah.

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.

* NIST - National Institute of Standards and Technology

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	2" to 12"	See note 1, page 4
Krohne	Enviromag 2100 C	AC	3/8" to 80"	See note 1, page 4
Krohne	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

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

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.