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

September 30, 2014

Re: Preliminary Order Requiring Measuring Devices and Controlling Works for Diversions of Water from Sand Creek and tributaries, Administrative Basin No. 21

Dear Water User,

The Idaho Department of Water Resources ("Department" or "IDWR") has issued the enclosed order requiring installation of measuring devices and controlling works for certain water rights authorizing diversion of water from Sand Creek and tributaries. Pursuant to Section 67-5243, Idaho Code, the preliminary order will become a final order without further action of the Department unless a party petitions for reconsideration or files an exception and/or brief as explained in the enclosed information sheet.

Please note that the Preliminary Order contains several important deadlines as follows:

1) Holders of water rights listed in Attachment A of the Preliminary Order shall install measuring devices, and controlling works by April 15, 2015; and
2) Holders of water rights listed in Attachment A of the Final Order shall submit measurement plans to the Department by December 15, 2014.

Please refer to the enclosed document *"Minimum Acceptable Standards for Open Channel and Closed Conduit Measuring Devices"* for information on types of measuring devices acceptable to IDWR. This document and other information on the topic are available on IDWR's website at the following address: http://www.idwr.idaho.gov/WaterManagement/WaterMeasurement/water_measurement.htm

Owners of surface water diversions who propose to install open channel measuring devices should submit plans to IDWR that describe the type of device to be installed, including drawings and dimensions. Information must also be included regarding the type of controlling works that are planned to be installed.

If you have questions concerning the Preliminary Order or the Department's water measurement standards, please contact Tim Luke, IDWR, at 208-287-4959 or the IDWR Eastern Regional office in Idaho Falls at 208-525-7161.

Respectfully,

Tim Luke
Chief, Water Compliance Bureau

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

Cc: IDWR Eastern Region
Ann Vonde, Deputy Attorney General, IDFG

BEFORE THE DEPARTMENT OF WATER RESOURCES

OF THE

STATE OF IDAHO

IN THE MATTER OF REQUIRING MEASURING DEVICES AND CONTROLLING WORKS ON WATER DIVERSIONS FROM SAND CREEK, ADMINISTRATIVE BASIN NO. 21	)))))	**PRELIMINARY ORDER**

On March 25, 2014, The Idaho Department of Water Resources ("Department") conducted a meeting of holders of water rights authorizing diversion of water from Sand Creek and certain tributary sources, including Blue Creek, Upper Sand Creek, Sharp Springs and Arcadia Reservoir, all located within the Department's Administrative Basin No. 21. The meeting was held to facilitate discussion and potential resolution of water right administration issues involving these sources of water. Department staff and water users at this meeting discussed needs and options for installation of proper measuring devices and lockable controlling works on diversions, as well as options for administration of water rights on Sand Creek and tributaries by a water district watermaster. The Sand Creek drainage is included within the Henrys Fork drainage which is included in Water District No. 01 ("WD01"). However, WD01 has not historically administered or regulated water rights in the Sand Creek drainage.

The Department is evaluating options for including Sand Creek and other unregulated streams in the Henrys Fork drainage in WD01 or sub-districts of WD01, and/or creation of one or more new water districts. In the interim, water users on Sand Creek should install devices to measure and control diversions to provide ability for the proper and equitable delivery of water in accordance with authorized water rights.

Section 42-701, Idaho Code, provides in pertinent part:

42-701. INSTALLATION AND MAINTENANCE OF CONTROLLING WORKS AND MEASURING DEVICES BY WATER APPROPRIATORS – PROCEDURE UPON FAILURE TO INSTALL AND MAINTAIN – MEASURING AND REPORTING OF DIVERSIONS – PENALTY FOR FAILURE TO COMPLY – REPORT FILING FEE.

1. The appropriators or users of any public waters of the state of Idaho shall maintain to the satisfaction of the director of the department of water resources suitable headgates and controlling works at the point where the water is diverted. Each device shall be of such construction that it can be locked and kept closed by the watermaster or other officer in charge, and shall also be of such construction as to regulate the flow of water at the diversion point. Each such appropriator shall construct and maintain, when required by the director of the department of water resources, a rating flume or other measuring device at such point as is most practical in such canal, ditch, wellhead or pipeline for the purpose of assisting the watermaster or department in determining the amount of water that may be diverted into said canal, ditch, wellhead or pipeline from the stream, well or other source of public water. Plans for such

headgates, rating flumes or other measuring devices shall be approved by the department of water resources.

2. If an appropriator determines that installation and maintenance of a measuring device required by the director would be burdensome for his diversion, the appropriator may, upon approval of the director, execute an agreement with the director and submit to the director such information and technical data concerning the diversion and pumping facilities as the director determines necessary to establish the relationship of power usage to water withdrawal by any pump use to divert public water.

3. Any appropriator or user of the public waters of the state of Idaho that neglects or refuses to construct or maintain such headgates, controlling works, or measuring devices..., upon receiving ten (10) days' notice from the director of the department of water resources within which to begin and diligently pursue to completion the construction or installation of the required device or devices or to begin and diligently pursue to completion a remedy to such defects as exist in accordance with said notice, then the director of the department of water resources may order the duly qualified and acting watermaster of the water district to shut off and refuse to deliver at the point of diversion, the water owned by such appropriator or user until the user does construct and maintain such headgates, controlling works or measuring devices or remedy the defects which exist or the director may take action pursuant to section 42-1701B, Idaho Code, to enforce the requirement to construct, install or maintain such devices.

4. The appropriators or users of the public waters of the state of Idaho shall be given a reasonable time within which to complete construction of such headgates, controlling works or measuring devices, depending upon the size and extent thereof, when due diligence has been used in the prosecution of such work.

ORDER

IT IS HEREBY ORDERED AS FOLLOWS:

1. The holders of those water rights identified in Attachment A of this order that divert from Sand Creek, Blue Creek, Upper Sand Creek and Sharp Springs shall install on each point of diversion a measuring device of a type acceptable to the Department by July 1, 2015.

2. The holders of those water rights in Attachment A shall install lockable controlling works of a type acceptable to the Department that will allow the watermaster to control the delivery of water from the respective sources. Controlling works shall be installed by July 1, 2015.

3. Those water right holders identified in Attachment A of this order must submit written plans for measuring devices, and controlling works to the Department no later than December 1, 2014. Plans shall be reviewed by the Department to determine whether proposed measuring devices and controlling works are of a type acceptable to the Department. If measuring devices and/or controlling works are already in place, a written description of the devices or works shall be submitted to the Department by December 15, 2014.

4. Measuring devices that are acceptable to IDWR are listed in IDWR's *Minimum Acceptable Standards for Open Channel and Closed Conduit Measuring Devices* (copy attached). These specifications apply to both irrigation and non-irrigation water uses.

5. In some situations, IDWR may exempt a diversion from the requirements of this order or may allow deferred compliance for a diversion. IDWR will consider each request for exemption or deferral on a case-by-case basis. Conditions that may result in exemption or deferral include, but are not limited to, the following:

- Abandonment, non-use, or consolidation of diversions that results in a diversion being unused.
- Delays caused by requirements of other government entities.

Dated this 25 day of SEPTEMBER, 2014

MAT WEAVER
DEPUTY DIRECTOR

Attachment A

Water Rights and Points of Diversion, Sand Creek and Tributaries

Owner	Water Right No.	Priority Date	Div Rate (cfs)	Source	Tributary	Usage	Div Type	Town	Range	Sec	QQQ	QQ	Qrtr	Gov Lot
ARCADIA RESERVOIR & CANAL CO LTD	21-8	5/15/1890	6.7	UPPER SAND CREEK	SINKS	IRRIGATION, IRRIGATION STORAGE, IRRIGATION FROM STORAGE	R	09N	41E	2		NE	SW	
ARCADIA RESERVOIR & CANAL CO LTD	21-8	5/15/1890	6.7	UPPER SAND CREEK	SINKS	IRRIGATION, IRRIGATION STORAGE, IRRIGATION FROM STORAGE	R	09N	41E	24	SW	SE	SW	
ARCADIA RESERVOIR & CANAL CO LTD	21-8	5/15/1890	6.7	UPPER SAND CREEK	SINKS	IRRIGATION, IRRIGATION STORAGE, IRRIGATION FROM STORAGE	I	09N	41E	2	SE	SW	NW	
ARCADIA RESERVOIR & CANAL CO LTD	21-8	5/15/1890	6.7	UPPER SAND CREEK	SINKS	IRRIGATION, IRRIGATION STORAGE, IRRIGATION FROM STORAGE	R	09N	41E	14	SE	NW	SE	
ARCADIA RESERVOIR & CANAL CO LTD	21-8	5/15/1890	6.7	UPPER SAND CREEK	SINKS	IRRIGATION, IRRIGATION STORAGE, IRRIGATION FROM STORAGE		09N	41E	2	SW	NW	NW	4
ARCADIA RESERVOIR & CANAL CO LTD	21-13009	5/18/1890	4	UPPER SAND CREEK	SINKS	STOCKWATER, STOCKWATER STORAGE, STOCKWATER FROM STORAGE	R	09N	41E	2	SW	NW	NW	4
ARCADIA RESERVOIR & CANAL CO LTD	21-13009	5/18/1890	4	UPPER SAND CREEK	SINKS	STOCKWATER, STOCKWATER STORAGE, STOCKWATER FROM STORAGE	R	09N	41E	2	SW	NE	SW	
ARCADIA RESERVOIR & CANAL CO LTD	21-13009	5/18/1890	4	UPPER SAND CREEK	SINKS	STOCKWATER, STOCKWATER STORAGE, STOCKWATER FROM STORAGE	I	09N	41E	2	SW	NE	SW	
ARCADIA RESERVOIR & CANAL CO LTD	21-13009	5/18/1890	4	UPPER SAND CREEK	SINKS	STOCKWATER, STOCKWATER STORAGE, STOCKWATER FROM STORAGE	R	09N	41E	14	SE	NW	SE	
ARCADIA RESERVOIR & CANAL CO LTD	21-13009	5/18/1890	4	UPPER SAND CREEK	SINKS	STOCKWATER, STOCKWATER STORAGE, STOCKWATER FROM STORAGE	R	09N	41E	24	SW	SE	SW	
DALLING, GLEN W	21-10A	5/15/1888	1.7	SAND CREEK	HENRYS FORK	IRRIGATION		10N	41E	15	NW	SE	NW	
DALLING, GLEN W	21-12	5/15/1899	0.6	SHARP SPRINGS	SAND CREEK	IRRIGATION		10N	41E	15	NW	SW	NW	
DALLING, GLEN W	21-16	5/15/1900	0.5	SAND CREEK	HENRYS FORK	IRRIGATION		10N	41E	15	NW	SW	NW	
DALLING, GLEN W	21-2022	6/11/1906	2.7	SAND CREEK	HENRYS FORK	IRRIGATION		10N	41E	10	NW	SW	SW	
DALLING, GLEN W	21-2022	6/11/1906	2.7	SAND CREEK	HENRYS FORK	IRRIGATION		10N	41E	9		SE	SE	
DALLING, GLEN W	21-12969	5/15/1888	0.933	SAND CREEK	HENRYS FORK	IRRIGATION		10N	41E	22	SE	NW	SW	
GARLOCK, THOMAS	21-7155	6/29/1978	1.48	SAND CREEK	SINKS	IRRIGATION, IRRIGATION STORAGE, IRRIGATION FROM STORAGE, STOCKWATER		08N	41E	1	NE	NW	SE	
GARLOCK, THOMAS	21-7155	6/29/1978	1.48	SAND CREEK	SINKS	IRRIGATION, IRRIGATION STORAGE, IRRIGATION FROM STORAGE, STOCKWATER		08N	41E	1	NE	NW	SE	

Diversion Type: I = Injection; R = Rediversion; Blank = Point of diversion

Attachment A

Water Rights and Points of Diversion, Sand Creek and Tributaries

Owner	Water Right No.	Priority Date	Div Rate (cfs)	Source	Tributary	Usage	Div Type	Town	Range	Sec	QQQ	QQ	Qrtr	Gov Lot
KUHN, DAVID	21-2012	6/1/1973	1.9	BLUE CREEK	HENRYS FORK	IRRIGATION		09N	43E	15	NE	SW	NW	
KUHN, DAVID	21-2034	1/18/1909	1.6	BLUE CREEK	HENRYS FORK	IRRIGATION		09N	43E	15	NE	SW	NW	
KUHN, DAVID	21-7148	2/27/1978	0	BLUE CREEK	HENRYS FORK	IRRIGATION STORAGE, IRRIGATION FROM STORAGE		09N	43E	15	NE	SW	NW	
NORTH FORK HIGHLANDS PROPERTY OWNERS ASSN INC	21-2045	12/3/1911	1	BLUE CREEK	HENRYS FORK	IRRIGATION		09N	43E	10	NW	NE	NE	
NORTH FORK HIGHLANDS PROPERTY OWNERS ASSN INC	21-2102	9/20/1949	0.2	BLUE CREEK	HENRYS FORK	IRRIGATION		09N	43E	10	NW	NE	NE	
NORTH FORK HIGHLANDS PROPERTY OWNERS ASSN INC	21-4025	10/31/1960	1.83	BLUE CREEK	HENRYS FORK	IRRIGATION		09N	43E	10	NW	NE	NE	
NORTH FORK HIGHLANDS PROPERTY OWNERS ASSN INC	21-7075	8/8/1975	2.41	BLUE CREEK	HENRYS FORK	IRRIGATION		09N	43E	10	NW	NE	NE	
NORTH FORK HIGHLANDS PROPERTY OWNERS ASSN INC	21-12539	7/8/1982	0.35	BLUE CREEK	HENRYS FORK	IRRIGATION		09N	43E	10	NW	NE	NE	
PINNOCK, JOHN H	21-17	7/1/1896	0.5	SAND CREEK	HENRYS FORK	IRRIGATION		10N	41E	10		SE	NW	
STATE OF IDAHO	21-14	5/15/1896	1	UNNAMED STREAM	SAND CREEK	FISH PROPAGATION		10N	41E	10		NW	SW	
STATE OF IDAHO	21-15	5/15/1896	0.2	UNNAMED STREAM	SAND CREEK	FISH PROPAGATION		10N	41E	10		NW	SW	
STATE OF IDAHO	21-2039	7/30/1910	8	BLUE CREEK	SINKS	WATER QUALITY IMPROVEMENT	R	10N	41E	10		NW	NW	
STATE OF IDAHO	21-2039	7/30/1910	8	BLUE CREEK	SINKS	WATER QUALITY IMPROVEMENT	R	10N	41E	10		NW	NW	
STATE OF IDAHO	21-2039	7/30/1910	8	BLUE CREEK	SINKS	WATER QUALITY IMPROVEMENT		10N	41E	3		NW	SW	
STATE OF IDAHO	21-2039	7/30/1910	8	BLUE CREEK	SINKS	WATER QUALITY IMPROVEMENT	I	10N	41E	3		NW	SW	
STATE OF IDAHO	21-2153	10/16/1919	0	BLUE CREEK	SINKS	FISH PROPAGATION STORAGE		10N	41E	3		NW	SW	
STATE OF IDAHO	21-2153	10/16/1919	0	BLUE CREEK	SAND CREEK	RECREATION STORAGE		10N	41E	3	NE	NW	SW	
STATE OF IDAHO	21-2159	5/13/1960	0	BLUE CREEK	SAND CREEK	RECREATION STORAGE		10N	41E	9		SE	SE	
STATE OF IDAHO	21-2170	10/16/1919	5.8	BLUE CREEK	SINKS	WATER QUALITY IMPROVEMENT	I	10N	41E	3		NW	SW	
STATE OF IDAHO	21-2170	10/16/1919	5.8	BLUE CREEK	SINKS	WATER QUALITY IMPROVEMENT	R	10N	41E	10		NW	NW	
STATE OF IDAHO	21-2170	10/16/1919	5.8	BLUE CREEK	SINKS	WATER QUALITY IMPROVEMENT	R	10N	41E	10		NW	NW	
STATE OF IDAHO	21-2170	10/16/1919	5.8	BLUE CREEK	SINKS	WATER QUALITY IMPROVEMENT		10N	41E	3		NW	SW	
STATE OF IDAHO	21-4006	4/1/1962	0.332	UNNAMED STREAM	SAND CREEK	FISH PROPAGATION STORAGE, DIVERSION TO STORAGE		10N	41E	10		NW	SW	

Diversion Type: I = Injection; R = Rediversion; Blank = Point of diversion

Attachment A

Water Rights and Points of Diversion, Sand Creek and Tributaries

Owner	Water Right No.	Priority Date	Div Rate (cfs)	Source	Tributary	Usage	Div Type	Town	Range	Sec	QQQ	QQ	Qrtr	Gov Lot
STATE OF IDAHO	21-4007	11/1/1965	0	BLUE CREEK	SAND CREEK	RECREATION STORAGE		10N	41E	9		NE	SE	
STATE OF IDAHO	21-4007	11/1/1965	0	BLUE CREEK	SAND CREEK	RECREATION STORAGE		10N	41E	3	NE	NW	SW	
STATE OF IDAHO	21-4008	4/30/1969	0	BLUE CREEK	SINKS	FISH PROPAGATION STORAGE		10N	41E	10		NW	NW	
STATE OF IDAHO	21-7151	5/16/1978	0	BLUE CREEK	SINKS	FISH PROPAGATION STORAGE		10N	41E	10		NW	NW	
STONE, ROXINE	21-12968	5/15/1888	0.67	SAND CREEK	HENRYS FORK	IRRIGATION, STOCKWATER		10N	41E	22	SE	NW	SW	

Diversion Type: I = Injection; R = Rediversion; Blank = Point of diversion

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 FOR OPEN CHANNEL AND CLOSED CONDUIT MEASURING DEVICES

The source and means of diversion of water, whether surface or ground water, generally affects the selection of a measuring device. Surface water sources such as streams, springs and waste channels are normally diverted into open channels (ditches or canals), but closed conduits (pipes or culverts) are also used. Ground water is usually diverted into pipes (which may also discharge into open channels).

Measuring devices when required by IDWR are to be installed at or near the point of diversion from the public water source.

I. MEASUREMENTS IN OPEN CHANNELS

The following discussion is applicable only to diversions from surface water sources. Measurement of a ground water diversion with an open channel measuring device must be pre-approved by the IDWR.

A. Standard Open Channel Measuring Devices

All open channel surface water diversions should be measured using one of the following standard open channel flow measuring devices commonly used in Idaho:

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

The installed flow rate accuracy of open channel measurement devices must be +/- 10.0% as compared to an acceptable open channel current meter or other standard portable measuring devices such as an acoustic Doppler flow meter or acoustic Doppler current profiler.

Construction, installation and operation of these devices should follow published guidelines, such as those published by the United States Bureau of Reclamation[1]

B. Non-standard open channel devices: Rated Structures or Rated Sections

Any weir, flume, or other measuring device that has not been constructed, installed, or maintained correctly and therefore does not measure flow in the standard manner consistent with standard rating tables or curves is considered to be a non-standard device. IDWR may authorize the use of non-standard devices and rated sections provided the device or section is rated or calibrated against a set of flow measurements using an acceptable open channel current meter or standard portable open channel measuring device. Examples of standard portable open channel measuring devices include the acoustic Doppler flow meter, the acoustic Doppler current profiler, or a portable flume. These devices are acceptable provided they are installed and operated according to all relevant manufacturer recommendations.

Further information and requirements are available from IDWR upon request.

---

[1] The Bureau of Reclamation measurement guidelines can be found at;
http://www.idwr.idaho.gov/WaterManagement/WaterMeasurement/PDFs/BoR_WMM_%202001revision.pdf

II. CLOSED CONDUIT MEASURING DEVICES

The following discussion is applicable to measurement of diversions from any water source that diverts via a full-flowing, closed conduit.

A. Standard Closed Conduit Measuring Devices

A certified meter is required on new installations of measuring devices for closed conduit or pipe line diversions. A certified meter is a model of flow meter that has participated in independent third party testing and has been approved by IDWR for use. IDWR has published a list of meters that have participated in independent third party testing[2] and have been certified for use where the installation configuration and application meet manufacturer's requirements. Tests were conducted for both accuracy and repeatability on all submitted models, and a pass/fail rating awarded. A list of these meters may be found at:

http://www.idwr.idaho.gov/WaterManagement/WaterMeasurement/PDFs/Approved_flow_meter_list.pdf.

Owners or operators who install a certified meter without the minimum manufacturer spacing requirements, or otherwise inconsistent with manufacturer's specifications, may need to provide an adequate testing section of straight pipe located somewhere on the diversion system either upstream or downstream of the installed flow meter. This testing section can be excavated pipeline as long as the section of pipe carries all water being measured through the installed flow meter. Water users choosing to expose pipe will be required to excavate the pipe at their expense at the request of the district hydrographer, watermaster and/or IDWR staff.

B. Non-standard Closed Conduit Measuring Devices: Requests for Variance

In some cases, site conditions preclude use of a certified meter, and another meter or method of measurement will produce similarly accurate results. In cases where the user can show that a proposed alternative meter or method would be as accurate as, or otherwise is better suited to an application than any of the meters on the approved list, a user can propose using an alternative meter or method by submitting a Request for Variance Form, available from IDWR. If a request is submitted and granted, the water user bears the risk that the alternative meter or method will perform as expected.

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. Acceptance of the PCC method may be provided *for qualifying irrigation diversions only*;
- Use of an hour meter (time clock) *for qualifying diversions only*;
- Use of an acceptable flow meter that was installed *prior to the date of the measurement order*;
- *For irrigation diversions only,* use of an acceptable non-certified flow meter where it can be shown that installation of a certified flow meter would be burdensome or ineffective.

If a meter is already installed, that meter may be used if the meter is field-tested by IDWR staff, the water district watermaster, or a district hydrographer using a portable standard flow meter and upon a determination that the meter is installed properly and accurate to within ±10% of actual rate of flow and volume. If a non-certified meter is approved and installed but does not pass a field check, IDWR may require the water user to replace the meter with a certified meter at the water user's expense.

If an alternative method is approved and that method is later found to be insufficient, the variance will be withdrawn and a certified meter will be required to be installed. The suitability of any pumping station for an hour meter or the PCC method of measurement will be based on criteria found in this document and in the document entitled *IDWR ESPA Water Measurement and Reporting Guidelines*[3].

---

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

[3] This document can be found at: http://www.idwr.idaho.gov/WaterManagement/WaterMeasurement/PDFs/IDWRESPA_WaterMeasurement_ReportingGuidlines.pdf

Version 2.5

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

The table below lists flow meters **that have been tested and approved by IDWR for use in closed conduit measurement applications where the installation configuration and application meet manufacturer's requirements for the selected model.** These approved flow meters were subject to testing requirements outlined by IDWR and conducted by staff from Utah State's NIST[1] traceable lab in Logan Utah and performed at or above IDWR minimum acceptable standards for accuracy when installed in piping distances that met or exceeded minimum straight run piping requirements specified by IDWR. The approved list is current as of this printing, but may change as additional models and manufacturers undergo testing and approval. The current version of these standards, including this list, is posted on the IDWR Internet site at the following URL:

http://www.idwr.idaho.gov/WaterManagement/WaterMeasurement/PDFs/Approved_flow_meter_list.pdf

Note that not all models are appropriate for every application. Pipe size, available straight pipe lengths, water chemistry, pressure, velocity, environmental exposure, and power requirements are among the factors affecting whether a given meter will perform for a given application. Prior to selecting a meter, consult the manufacturer's installation requirements to assure they can be met.

Manufacturer	Model/Specifications	Type	IDWR-accepted Pipe Applications (Nominal Pipe Size)
Siemens	CLAMP-ON ULTRASONIC -SITRANS FUS 1010 w/ HIGH PRECISION TRANSDUCERS	Clamp-On Ultrasonic	>12"
Siemens	SITRANS F M MAGFLO MAG 5100W w/ 5000 converter	Full profile Electro-Magnetic	1" to 78"
Siemens	SITRANS FM, MAGFLO 8000, model 7ME6880	Full profile Electro-Magnetic	1" to 48"
Fuji	Time Delta C w/ 1MHz transducers	Clamp-On Ultrasonic	>12"
Seametrics*	AG 2000*	Full profile Electro-Magnetic*	4" to 10"
GE Panametrics	AT868 w/ 1MHz transducers	Clamp-On Ultrasonic or Wetted Transducer	>12"
McCrometer	Ultra Mag w/ M-Series Converter	Full profile Electro-Magnetic	2" to 48"

[1] NIST - National Institute of Standards and Technology.

*Seametrics AG2000 must be installed with AC power supply

Manufacturer	Model/Specifications	Type	IDWR-accepted Pipe Applications (Nominal Pipe Size)
Badger	M2000 Amplifier w/ M2000 Detector	Full profile Electro-Magnetic	1/4" to 54"
Khrone	Enviromag 2000 w/ Optiflux 2000 F/G	Full profile Electro-Magnetic	3/8" to 80"
Rosemount	8705 w/ 8732E transmitter	Full profile Electro-Magnetic	1/2" to 36"
Burkert	8054/8055 w/ Magflow transmitter	Full profile Electro-Magnetic	1" to 80"
Sparling	Tiger Mag W/FM6561051110 Converter	Full profile Electro-Magnetic	3/8" to 48"
Sensus	IPerl	Full profile Electro-Magnetic	5/8"-1"
Master Meter	Octave	Full Profile Ultrasonic	2"-10"
Badger	E-Series	Full Profile Ultrasonic	3/4"-2"
Netafim	Octave	Full Profile Ultrasonic	2"-12"