



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 • Web Site: www.idwr.idaho.gov

C. L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Interim Director

September 21, 2011

RE: Preliminary Order Creating a Water Measurement District for Ground Water Rights in the Upper Big Wood and Little Wood River Basins

Dear Ground Water Right Holder,

Enclosed please find a copy of the Preliminary Order regarding the above referenced matter. This order creates a new water measurement district for measurement and reporting of ground water diversions located within the Upper Big Wood and Little Wood River basins as shown on the map in Attachment A of the Preliminary Order. The records of the Idaho Department of Water Resources ("Department" or "IDWR") show that you own or have an interest in a ground water right that describes one or more points of diversion within the new water measurement district.

Also enclosed is an informational sheet that explains options for responding to preliminary orders. Please note that any party subject to the order may file a petition for reconsideration within fourteen (14) days of the service date of the order, which is the date of this letter. The Department will act upon petitions within twenty-one (21) days of their receipt.

The first annual meeting of the water measurement district is scheduled for **November 7, 2011**. A separate notice will be sent to water users that will specify the time and location for the November 7th meeting. The water users present at the meeting must approve a budget and elect a district hydrographer. IDWR will organize a steering committee of representative ground water users within the measurement district to assist with preparation for the annual meeting. IDWR anticipates scheduling at least two steering committee meetings prior to the November 7th meeting. Several users who attended the IDWR hearing last month have already expressed interest in committee participation. If you are interested in participating on the committee, please contact Tim Luke, IDWR at 208-287-4059 or by e-mail at tim.luke@idwr.idaho.gov

Please note that the Preliminary Order establishes several deadlines for the submittal of water measurement plans and installation of measuring devices. Please also find attached a copy of IDWR's *Minimum Acceptable Standards for Open Channel and Closed Conduit Measuring Devices*. IDWR will coordinate with the measurement district to schedule one or more measuring device workshops in the area over the next year. Please contact this office or the IDWR regional office in Twin Falls (208-736-3033) if you have any questions concerning the attached order.

Sincerely,

Tim Luke
Water Distribution Section

Enclosures: *Preliminary Order*
Responding to Preliminary Orders issued by IDWR
Minimum Acceptable Standards for Open Channel and Closed Conduit Measuring Devices

Cc: IDWR Southern Region

**BEFORE THE DEPARTMENT OF WATER RESOURCES
OF THE STATE OF IDAHO**

IN THE MATTER OF THE CREATION OF A)
WATER MEASUREMENT DISTRICT FOR)
THE MEASUREMENT AND REPORTING)
OF GROUND WATER RIGHTS IN THE)
UPPER BIG AND LITTLE WOOD RIVER)
BASINS IN ADMINISTRATIVE BASIN 37)
_____)

PRELIMINARY ORDER

The Director of the Idaho Department of Water Resources (“Director” or “Department”) is authorized to create water measurement districts and have direction and control of the measurement of water diverted from all public water sources, including ground water. Idaho Code § 42-706, provides authority for the Director to create a water measurement district provided that any appropriation or use included in a water district created pursuant to chapter 6, title 42, Idaho Code, shall not be included in a water measurement district.

PROCEDURAL HISTORY

On March 16, 2011, the Department conducted a public information meeting in Hailey, Idaho regarding the potential creation of a water measurement district to measure and report ground water diversions in the Upper Big and Little Wood River basins.

On July 25, 2011, the Interim Director signed a notice proposing to create a water measurement district pursuant to the provisions of Idaho Code § 42-706(2). Specifically, the notice proposed creating a district for the purpose of measuring and reporting ground water right diversions located within the Upper Big and Little Wood River basins as shown on the map in Attachment A of this order.

On July 27, 2011, the Interim Director sent notice of the proposed action by regular U. S. Mail to each affected ground water right holder within the proposed water measurement district area. The notice described the proposed measurement district area, reasons for considering the proposed district, the rights proposed to be included in the district, and the time and place for a hearing to be held on August 16, 2011 concerning the proposed creation of the district. A separate notice was also published in two local newspapers of general circulation within the proposed measurement district area, the Times News (Twin Falls) and the Mountain Express (Ketchum), once per week for two consecutive weeks between July 27 and August 4, 2011.

The individual mailed notice explained that several factors had focused the Department’s attention on the need to begin measurement and reporting of ground water withdrawals in the area including:

- Senior surface water rights owners within the Big and Little Wood River basins have requested the Department to implement conjunctive administration of ground water and surface water resources, including the initiation of measurement and reporting of ground water withdrawals;
- A 2007 technical study by the United States Geological Survey indicates that flows in the Big Wood River and ground water levels in associated aquifers are declining over time;
- Population in the area has grown over time and has stretched finite water supplies;
- Surface water rights in the area are already measured and reported by existing water districts and ground water rights diversions in the lower portions of the Big and Little Wood River basins overlying the Eastern Snake Plain Aquifer (ESPA) are also measured and administered by a water district;
- The Snake River Basin Adjudication (SRBA) is nearing completion in the Upper Wood River basins.

On August 16, 2011, the hearing officer conducted the hearing at the Wood River Middle School in Hailey, Idaho. The hearing officer initiated the meeting by explaining the hearing process. A Department representative described the proposed district area, the features of a water measurement district, the reasons for creation of the district, and the rights and uses proposed to be included in the district. Following the presentation, the hearing officer provided time for hearing participants to ask questions of Department representatives. Approximately 50 people attended the hearing.

Five (5) individuals made oral statements for the record at the hearing. Four of the five individuals who testified supported creation of the measurement district but two of the four expressed concerns about potential exemption of certain ground water rights proposed by the Department as well as water spreading from domestic wells in beyond the one-half acre ground water right exemption provided by Idaho law. A fifth individual expressed neither support nor opposition to creation of the district but also stated a concern about exemptions of certain ground water rights from the proposed district, the costs of flow meter installations, water spreading, and use of junior priority ground water rights when senior priority surface water rights are curtailed or limited.

The Department received four (4) written comments prior to the close of the written comment period deadline of August 26, 2011. The written comments were submitted by affected water users or interested parties who did not testify at the hearing. One of the persons submitting written comments stated support for creation of the district. A second water user submitted comments supporting creation of the district but suggested that ground water rights used to supplement senior surface water rights should not be measured or included in the measurement district. The two remaining written comments were from water users who did not support or oppose creation of the district but expressed concerns about the Department's proposed exemption of certain ground water rights, costs of measuring devices, water spreading from ground water wells, and conjunctive administration of surface and ground water rights.

FINDINGS OF FACT

1. The Director of the Department has responsibility for the measurement of water diverted from all public water sources, including ground water sources, and is authorized to create water measurement districts to accomplish that purpose.

2. Ground water rights and diversions from aquifers in the Upper Big Wood River basin above Magic Reservoir including ground water diversions in the Camas Prairie, and ground water diversions in the Upper Little Wood River basin including the Bellevue-Silver Creek triangle area, are currently not measured except for certain ground water rights that have been required to be administered and measured by the watermaster of Water District 37 (Big Wood River and tributaries), Water District 37M (Silver Creek and Little Wood River below Silver Creek and tributaries). About 60 ground water rights located within the proposed measurement district are currently measured, administered and assessed by Water Districts 37 or 37M.

3. Surface water rights and diversions in the Big Wood River and Little Wood River basins are administered and measured by existing water districts, primarily Water Districts 37 (Big Wood River), 37-M (Silver Creek and Little Wood River below Silver Creek and tributaries), 37-N (Little Wood River above Silver Creek), 37-O (Muldoon Creek), and 37-U (Fish Creek).

4. Ground water rights and diversions in the Big Wood River and Little Wood River basins overlying the ESPA are currently administered and measured by Water District 130. These rights are generally downstream of Magic Reservoir, Picabo and Carey as shown in the map in Attachment A.

5. Idaho Code § 42-1417 provides that the district court having jurisdiction over a general water rights adjudication may authorize the interim administration of water rights pursuant to chapter 6, title 42, Idaho Code, prior to the entry of a final decree, in accordance with Director's Reports filed with the court, with or without modification by the court, or in accordance with partial decrees that have superseded the Director's Reports.

6. No party to the SRBA has petitioned the SRBA district court for interim administration of water rights within the Upper Big and Little Wood River basins as shown in the map on Attachment A. Ground water rights cannot be included within a water district for administration purposes prior to the entry of a final decree without interim administration authorization from the district court. As of August 2011, there were 345 unresolved objections to 113 water right recommendations within the Upper Big Wood River basin pending before the SRBA district court.

7. On June 28, 1991, the Big Wood River Ground Water Management Area (GWMA) was designated by Order of the Director to provide for increased management of ground water resources in the Upper Big Wood River basin above Magic Reservoir, including the Camas Prairie area. The Order specifically concluded that "the construction and use of additional wells in the area must be monitored and controlled." A management policy was adopted by the Director on June 28, 1991 that limited new appropriations of ground water within the Big Wood GWMA.

8. Notice of the August 16, 2011 hearing regarding the proposed creation of the water measurement district was sent to all holders of ground water rights within the area shown on Attachment A, excluding ground water rights used solely for domestic and/or stock water purposes as defined by Idaho Code § 42-111 and 42-1401A (11), and excluding ground water rights for non-irrigation uses with rates of diversion less than or equal to 0.24 cubic feet per second (cfs)¹. Notice was sent to holders of all ground water rights having an irrigation use of one-half acre or more and all non-irrigation use rights greater than 0.24 cfs (including municipal, commercial and all other non-irrigation uses). Domestic use rights defined by Idaho Code § 42-111 and rights used for non-irrigation purposes only with diversion rates of 0.24 cfs or less were excluded from the notice.

Notice was not provided to certain ground water rights less than 0.24 cfs and these rights are not being considered for inclusion in the district. These rights fall into one of three categories:

- Domestic ground water rights with an irrigation component of up to one-half acre. These rights are exempt from the ground water appropriation and water right permit requirements of Idaho law (Idaho Code § 42-111 and 42-1401A (11));
- Domestic ground water rights without an irrigation component. These rights are also exempt from the used for domestic purposes as defined by Idaho Code § 42-111 are exempt from the measurement and reporting requirements of a water measurement district;
- Less than 70 ground water rights other than irrigation or domestic and are not exempt from regulation Idaho Code § 42-111 and 42-1401A (11) nor are they exempt from ground water appropriation and water right permit requirements. However the combined authorized rate of diversion under these rights is about 7.4 cfs or less than one percent of the total cumulative rate of diversion of all other rights proposed to be included in the measurement district;

9. Inclusion of all the domestic and other non-irrigation use ground water rights in the proposed measurement district area having diversion rates of 0.24 cfs or less would add more than 1,700 water rights and nearly as many wells to the district. Measurement of an additional 1,700 wells, nearly all of which are for domestic purposes, would be difficult and time consuming. Locating such small use wells and access to conveyances from small use wells for measurement and reporting purposes would create significant burdens on the water measurement district.

10. The Department has previously excluded from water measurement districts ground water rights used for domestic purposes defined by Idaho Code § 42-111 and other non-irrigation use ground water rights with diversion rates less than or equal to 0.24 cfs (*Recommended Order Creating Water Measurement Districts for the Eastern Snake Plain Aquifer, September 16, 1996*).

¹ A rate of 0.24 cfs is equivalent to approximately 108 gallons per minute. Notice was sent to all holders of ground water rights in the proposed district that include an irrigation use component, regardless of the number of acres under each right.

11. Testimony provided at the hearing and one of the submitted written comments suggested that the Department proposed to exclude municipal ground water rights and diversions from the proposed measurement district. The Department did not propose, either in the notice of hearing or at the hearing, to exclude municipal ground water rights or municipal wells from the measurement district.

12. Testimony provided at the hearing and several submitted written comments suggested that the Department had proposed to exclude from the measurement district irrigation rights of five (5) acres or less. Department representatives proposed at the hearing that ground water irrigation rights of 5 acres or less should be included in the measurement district and assessed by the measurement district, but the Department also proposed waiving measurement and reporting requirements on wells limited to irrigation of 5 acres or less. Notice of the hearing was sent to all holders of ground water irrigation rights located within the proposed measurement district area having an irrigation use component of 5 acres or less.

CONCLUSIONS OF LAW

1. Idaho Code § 42-706 states in part:

1) The director of the department of water resources is authorized to divide the state into water measurement districts in such manner that each public water source or sources or part thereof shall constitute a water measurement district; provided, that any appropriation or use included in a water district created pursuant to chapter 6, title 42, Idaho Code, shall not be included in a water measurement district.

...

Copies of the order and notice of the first meeting of the water measurement district shall be sent by regular mail to all holders of rights to the waters affected by the order.

2. Idaho Code § 42-701 states in part:

(1) ...Each...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 used to divert public water.

...

(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.*

...
(7) *All domestic uses, as defined in section 42-111, Idaho Code, and all stock watering uses, as defined in Idaho Code § 42-1401A, shall be exempt from the measuring device installation and maintenance, measuring and reporting requirements of this section.*

3. Idaho Code § 42-111 states in part:

(1) *For purposes of Idaho Code §§ 42-221, 42-227, 42-230, 42-235, 42-237a, 42-242, 42-243 and 42-1401A, ...the phrase “domestic purposes” or “domestic uses” means:*

- (a) *The use of water for homes, organization camps, public campgrounds, livestock and for any other purpose in connection therewith, including irrigation of up to one-half (1/2) acre of land, if the total use is not in excess of thirteen thousand (13,000) gallons per day, or*
- (b) *Any other uses, if the total use does not exceed a diversion rate of four one-hundredths (0.04) cubic feet per second and a diversion volume of twenty-five hundred (2,500) gallons per day.*

(2) *For purposes of the sections listed in subsection (1) of this section, domestic purposes or domestic uses shall not include water for multiple ownership subdivisions, mobile home parks, or commercial or business establishments, unless the use meets the diversion rate and volume limitations set forth in subsection (1)(b) of this section.*

4. Idaho Code § 42-229 states in part:

The right to the use of ground water of this state may be acquired only by appropriation. Such appropriation may be perfected by means of the application permit and license procedure as provided in this act; ... But the administration of all rights to the use of ground water, whenever or however acquired or to be acquired, shall, unless specifically excepted herefrom, be governed by the provisions of this act.

5. Idaho Code § 42-227 states in part:

The excavation and opening of wells and the withdrawal of water therefrom for domestic purposes shall not be subject to the permit requirement under section 42-229... Rights to ground water for such domestic purposes may be acquired by withdrawal and use.

6. Idaho Code § 42-226 states in part:

The traditional policy of the state of Idaho, requiring the water resources of this state to be devoted to beneficial use in reasonable amounts through appropriation, is affirmed with respect to the ground water resources of this state as said term is

hereinafter defined, and while the doctrine of "first in time is first in right" is recognized, a reasonable exercise of this right shall not block full economic development of underground water resources. Prior appropriators of underground water shall be protected in the maintenance of reasonable ground water pumping levels as may be established by the director of the department of water resources

7. Idaho Code § 42-709 states in part:

(1) It shall be the duty of the district hydrographer to:

(a) Measure the diversion from the water supply within the district by each appropriator or water user, or as the director of the department of water resources may otherwise require, and report the results as provided in section 42-708, Idaho Code.

...

(c) Monitor the ground water levels at ground water diversions, as required by the director of the department of water resources, ... and report the results as provided in section 42-708, Idaho Code.

...

(f) Immediately report to the director of the department of water resources the diversion of any water appearing to be diverted without a water right or in violation of a water right.

...

(4) Appropriators or water users [diverting water within a water measurement district] may be required by the director, pursuant to subsections (1) through (4) of section 42-701, Idaho Code, or section 42-702 or 42-703, Idaho Code, to install measuring devices to facilitate the measurement of water required in this section.

8. Idaho Code § 42-707 states in part:

(1) There shall be held, except as provided in subsection (2) of this section, on the first Monday in November in each year commencing at two o'clock P.M., a meeting of all persons owning or having the use of a water right in the waters of the stream or water supply comprising such district.

...

(3) At the meeting of the appropriators or water users of a district there shall be elected a qualified district hydrographer for such water measurement district, ... who, upon qualification and appointment by the director of the department of water resources, shall be responsible for measurement of water ... within the water measurement district, and the appropriators or water users shall, prior to the election of such district hydrographer ... fix the compensation to be paid ... during the time actually engaged in the performance of (the hydrographer's) duties. (parentheses added)

9. Idaho Code § 42-711(3) states in part:

(3) The expenses of the district shall be a charge against the water users in the district. The expenses of the district shall be apportioned among all water users included within

the district in the following manner:

- (a) A charge of twenty-five dollars (\$25.00) per year for each diversion measured, provided the charge may be up to fifty dollars (\$50.00) per year if adopted by resolution approved by vote of the water users at a meeting conducted in accordance with section 42-707, Idaho Code; and*
- (b) A pro rata share of the total expense of the district, minus the total amount charged for all diversions in the district from paragraph (a) of this subsection determined by the fraction the recorded diversion rate for each water right is to the total recorded diversion rate of all water rights being measured by the district.*
- (c) Except, if the total charge for all diversions measured in the district from paragraph (a) of this subsection is more than the total expense of the district, the individual charge for each diversion will be the total expense of the district divided by the number of diversions in the district and the pro rata share from paragraph (b) of this subsection will be zero (0).*
- ...*

10. Idaho Code § 42-713 states in part:

At any annual meeting the appropriators or water users must adopt a budget covering the estimated expenses of water measurements and data collection ... of the district for the ensuing year...

11. Idaho Code § 42-714 states in part:

- (1) The budget, when approved, shall be filed with the secretary of the meeting and the district treasurer and thereupon the district hydrographer shall immediately prepare and file a certified copy thereof with the director of the department of water resources. The budget so approved shall be due and payable on the first day of April of each year unless a different due date is specified by resolution of the appropriators or water users at the annual meeting. Any assessments not paid by the due date shall bear interest from the due date until paid at the rate of eight percent (8%) per annum.*
- (2) The district hydrographer is authorized to collect his compensation and that of his assistants, and other expenses of the district, directly from the appropriators or water users, canal companies, and irrigation districts. The district hydrographer shall collect such compensation and expenses directly from the appropriators or water users and shall turn the collected funds over to the water measurement district treasurer for deposit and disbursement in accordance with section 42-715, Idaho Code.*
- (3) The district hydrographer is authorized to cause the delivery of water to be withheld or to cause diversions of water to cease by those users who have not paid their pro rata share of the cost of operating the district as levied until such time as the pro rata share of the cost is paid.*

(4) The water measurement district shall have the right to collect any charges due and unpaid, by civil action, the action to be brought in any court of competent jurisdiction, in the name of the district hydrographer to whom such charges are payable, and in addition to the amount found due, together with interest and costs, may also recover such sum as the court may adjudge reasonable as attorney's fees in the action.

(5) The appropriators or water users may by resolution request the department of water resources to prepare and mail the billings for the collections authorized in this section. The resolution will agree to reimburse to the department the actual cost incurred by the department in preparing and mailing the billings.

12. Idaho Code § 42-233b states in part:

"Ground water management area" is defined as any ground water basin or designated part thereof which the director of the department of water resources has determined may be approaching the conditions of a critical ground water area.

...

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.

11. The creation of a water measurement district in the Upper Big Wood and Little River basins as shown on Attachment A will facilitate the measurement and reporting of both ground water diversions and ground water levels within those areas, including the Big Wood River GWMA.

12. The creation of a water measurement district in the Upper Big Wood and Little Wood River basins will complement existing ground water measurement efforts already occurring in the Lower Big and Little Wood River basins overlying the ESPA.

13. Immediate creation of a water measurement district within the Upper Big Wood and Little Wood River basins provides a means in which to begin inventory and measurement of ground water diversions and ground water levels prior to the inclusion of area ground water rights in a water district.

14. Creation of a water measurement district within the Upper Big Wood and Little Wood River basins will provide for a local elected hydrographer who can immediately report to the Department the diversion of any water appearing to be diverted without a water right or in violation of a water right.

15. Uses of ground water for domestic purposes as defined by Idaho Code § 42-111 are exempt from the ground water appropriation requirement of Idaho § 42-229 and the mandatory application and permit process for developing a right to the use of water pursuant to chapter 2, title 42, Idaho Code.

16. Pursuant to Idaho Code § 42-701(7), uses of ground water for domestic purposes as defined by Idaho Code § 42-111 are exempt from the measurement and reporting requirements of a water measurement district.

17. Many ground water uses meeting the definition of Idaho Code § 42-111(1)(a) were claimed, recommended and decreed in the SRBA with rates of diversion up to 0.24 cfs. Additionally, the Department has issued ground water permits or licenses with rates of diversion up to 0.24 cfs for uses meeting the definition of Idaho Code § 42-111(1)(a). About 97 percent (all but about 70) of the total ground water rights in the proposed water measurement district area with diversion rates equal to or less than 0.24 cfs meet the domestic use definition of Idaho Code § 42-111 and are therefore statutorily exempt from the water measurement and reporting requirements of a water measurement district in accordance with Idaho Code § 42-701(7).

18. The Director should create a water measurement district in the Upper Big Wood and Little River basins as show in Attachment A for all irrigation rights, including irrigation rights for 5 acres or less, and all non-irrigation rights with an authorized rate of diversion greater than 0.24 cfs. Ground water rights that are already administered, measured and assessed by Water District 37, Water District 37-M or other established water districts should be excluded from the measurement district.

ORDER

IT IS HEREBY ORDERED that:

1. The Upper Wood Rivers Water Measurement District is created pursuant to this order. The water measurement district shall include all ground water rights within the boundaries of the district as depicted on the attached map, labeled as Attachment A, except the following:

- a. Domestic and stock water uses as defined by Idaho Code § 42-111;
- b. Ground water rights limited to non-irrigation uses where the total authorized water right rate of diversion is equal to or less than 0.24 cfs;
- c. Ground water rights that are already administered, measured and assessed by any established water district including Water District 37 or Water District 37M.

2. The annual meeting of the water measurement district shall be conducted November 7, 2011 as provided by Idaho Code § 42-707 at a time and place to be specified in a notice that will be mailed to each right holder within the water measurement district.

3. A budget for the water measurement district must be developed for consideration at the annual meeting scheduled for November 7, 2011, and the water users must elect a district hydrographer.

4. The water measurement district budget shall be collected in accordance with Idaho Code § 42-714 and charges against the water users in the district shall be made in

accordance with Idaho Code § 42-711(3). The holders of all ground water rights included in the measurement district pursuant to this order shall be assessed the first year and each year thereafter.

5. The holders of all ground water rights in the water measurement district, excluding those ground water rights described in item 1 a. through 1 c. above, shall install on each point of diversion or well, a measuring device of a type acceptable to the Department for the purpose of assisting the water measurement district hydrographer in reporting the amount of water withdrawn from each well.

6. **Measuring devices shall be installed on wells used solely for non-irrigation purposes by January 1, 2013.**

7. **Measuring devices shall be installed on wells used for irrigation of more than five (5) acres by March 15, 2013, or prior to the diversion of water for the 2013 irrigation season.**

8. **Measuring devices shall be installed on wells used for irrigation of five (5) acres or less by March 15, 2014, or prior to the diversion of water for the 2014 irrigation season.**

9. **The owner of each well described in item 6 and 7 of this section that is required to be measured shall submit a measurement plan to the district hydrographer by May 1, 2012.** The measurement plan shall be reviewed by the district hydrographer to determine whether proposed measuring devices are of a type acceptable to the Department, and that the device(s) will be installed according to specifications.

10. **The owner of each well described in item 8 of this section that is required to be measured shall submit a measurement plan to the district hydrographer by April 1, 2013.** The measurement plan shall be reviewed by the district hydrographer to determine whether proposed measuring devices are of a type acceptable to the Department, and that the device(s) will be installed according to specifications.

11. Measuring devices that are acceptable to the Department for wells that are required to be measured shall be magnetic flow meters meeting the specifications listed in the Department'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.

12. Under limited circumstances, a variance of the magnetic flow meter requirement may be considered upon submittal of a written justification and plan to the water measurement district hydrographer. Acceptable variances may include the following methods or devices:

- 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 non-magnetic flow meter that was installed *prior to the date of this order*;

- *For irrigation diversions only*, use of an acceptable non-magnetic flow meter where it can be shown that installation of the standard magnetic flow meter would be burdensome.

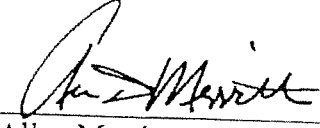
Requests for variance of the measurement method must be received no later than the applicable plan due dates shown in items 9 and 10 of this section, and will be considered by the district hydrographer, on a case-by-case basis. Variances proposing use of an existing flow meter must meet Department criteria and accuracy tests. Existing meters which do not meet standards, or which fail to meet Department standards, will be required to be replaced with a magnetic flow meter unless another variance is obtained. The suitability of any pumping station for an hour meter or the PCC method of measurement will be based on criteria found in the *IDWR ESPA Water Measurement and Reporting Guidelines* (copy available upon request or online at http://www.idwr.idaho.gov/WaterManagement/WaterMeasurement/water_measurement.htm.) The Department may provide guidance to the district hydrographer with respect to variance requests and approvals.

13. The water measurement district shall measure ground water levels within the district boundaries to the satisfaction of the Director. The measurement district shall coordinate with the Department and the United States Geological Survey to develop a proposal for a network of monitoring wells, and a proposal for the frequency of measurement. Adequacy of the plan will be determined by the Director.

14. In preparation for the measurement district annual meeting scheduled for November 7, 2011, the Department will assist the water users with the formation of an organizational steering committee and conduct one or more advance meetings.

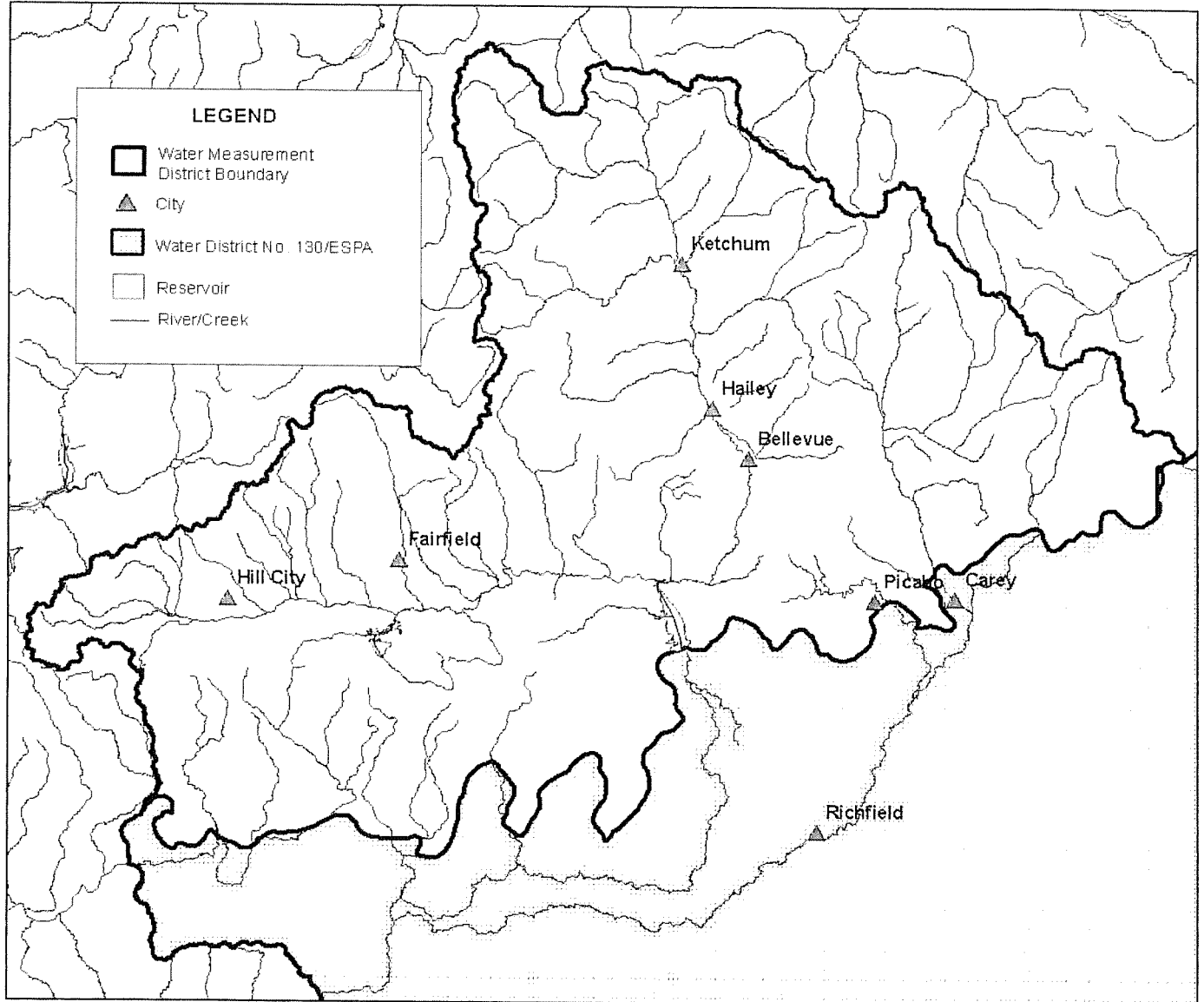
15. Holders of ground water rights within the water measurement district with diversion rates up to 0.24 cfs that do not meet the definition of Idaho Code § 42-111 and that have not been included in the water measurement district pursuant to this order may be added to the measurement district or may be required to measure and report water use at a future date upon notification by the Department.

DATED this 21st day of September, 2011.


Allen Merritt
Hearing Officer

ATTACHMENT A

UPPER WOOD RIVERS WATER MEASUREMENT DISTRICT



CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on this 21 day of September, 2011, 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 posted on the Department's website: 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.

A handwritten signature in cursive script that reads "Christine Roberts". The signature is written in black ink and is positioned above the printed name.

Christine Roberts
Office Records Specialist
Idaho Department of Water Resources

EXPLANATORY INFORMATION TO ACCOMPANY A PRELIMINARY ORDER

(To be used in connection with actions when a hearing was held)

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

PETITION FOR RECONSIDERATION

Any party may file a petition for reconsideration of a preliminary order with the hearing officer within fourteen (14) days of the service date of the order as shown on the certificate of service. **Note: the petition must be received by the Department within this fourteen (14) day period.** The hearing officer 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 to the Director. Otherwise, this preliminary order will become a final order of the agency.

If any party appeals or takes exceptions to this preliminary order, opposing parties shall have fourteen (14) days to respond to any party's appeal. Written briefs in support of or taking exceptions to the preliminary order shall be filed with the Director. The Director retains the right to review the preliminary order on his own motion.

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, request 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 Rules of Procedure 302 and 303.

FINAL ORDER

The Department 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:

- contracted rectangular weir
- suppressed rectangular weir
- Cipolletti weir
- 90 degree V-notch weir
- Parshall flume
- trapezoidal flume
- submerged rectangular orifice
- constant head orifice
- ramped broad crested weir (or ramped flume)
- 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 Reclamation¹

¹ The Bureau of Reclamation measurement guidelines can be found at;
http://www.idwr.idaho.gov/WaterManagement/WaterMeasurement/PDFs/BoR_WMM_202001revision.pdf

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. Examples of standard portable open channel 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.

II. CLOSED CONDUIT MEASURING DEVICES

New installations for closed conduit or pipe line diversions require installation of a full profile magnetic type flow meter that meets or exceeds the specifications in this document. IDWR has published a list of approved full profile magnetic flow meters that have participated in independent third party testing at an NIST² traceable lab in Logan Utah. 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. Many of the magnetic meters on the market have an accuracy rating which meets IDWR's criteria, but did not participate in the above test. Installation of a non-approved magnetic meter (full profile or insertion) which meets all the specifications below may be permitted through a **Request for Variance** but the water user bears the risk that the meter will perform within the manufacturer's stated accuracy. If a non-approved magnetic meter is installed and does not pass a field check, IDWR may require the water user to replace the meter with an approved meter at the water user's expense. IDWR recommends that water users select a meter from the approved list.

A. Flow Meter Specifications

Currently two types of magnetic flow meters are available.

- **Full profile** magnetic type flow meters are flanged into the piping system and measure across the velocity profile.
- **Insertion** type magnetic meters are installed through a small diameter hole in the piping system to measure an average velocity (determined by pipe diameter) in the flow profile. Insertion magnetic meters can generally be approved for larger diameter pipes (12 inches or greater) if installed according to manufacturer specifications and where range of flow and turbulence conditions do not vary widely.

² National Institute of Standards and Technology (NIST)

Listed below are the flow meter requirements and specifications for full-flowing closed conduits or pipes. Water users may apply to IDWR for a variance to these specifications in accordance with Criteria for Request for Variance of measuring Device Requirements of Section II C. of this document.

Meters shall be full profile magnetic flow meters meeting the following minimum specifications:

- 1) Flow range of 0.1 to 33 feet per second (fps).
- 2) Listed manufacturer accuracy of $\pm 2\%$ of flow rate from 0.1 to 33 feet per second (fps), with a repeatability of $\pm 0.5\%$ of reading.
- 3) The register or display unit shall:
 - a) Have a waterproof and tamperproof seal.
 - b) Have an LCD backlit display showing instantaneous flow rate and totalized volume.
 - c) Have a minimum of six (6) digits for flow rate.
 - d) Have a minimum of eight (8) digits for totalized volume display or a sufficient number of digits so that "rolling over" will not occur within two years operation, based on the maximum rate of flow and annual volume elements of the authorizing water rights. IDWR recommends using Table 1 to aid in selecting appropriate volume totalizing multipliers for the intended use.
 - e) Have password or similar protection of all settings and data to protect against unauthorized change or accidental loss of data.
 - f) Contain a back up battery (according to manufacturers specifications) to prevent loss of data in the case of primary power failure.
 - g) The display unit must contain programmable features that allow the selection of flow units. Available flow units must include gallons per minute (gpm) or cubic feet per second (cfs). The meter flow rate display must also allow decimal display formatting of up to three (3) places when using cubic feet per second units.
 - h) The volume totalizer display must contain programmable features that allow the selection of volumetric units and must include either gallons or acre feet. The meter must also allow decimal display formatting of up to four places, and the application of unit multipliers ranging from 0.0001 to 10,000. See Table 1 for examples of appropriate meter multipliers based on expected annual volume use.
- 4) Signal Output when Data Logger is Required

Data loggers may be required by specific water right conditions of approval in some locations or circumstances.

Scaled pulse frequency output (or pulse counting) is required for continuous recording of totalized volume data on data loggers. Output signals must be compatible with data logger inputs. Analog output signal for flow rate (usually 4-20mA) is optional (most magnetic flow meters provide both analog and pulse frequency as standard output signals).

B. Meter Installation and Diversion System Requirements

Meters installed on closed conduit systems shall meet the following installation requirements:

- 1) The minimum and maximum system operating flows and pressures must be fully within the range of measurable flows and pressures identified in the meter specifications.
- 2) Pipes must be full flowing.
- 3) The installed flow rate accuracy of *magnetic flow meters* must be $\pm 5.0\%$ as compared to a second, standard flow meter. ***IDWR, the water district watermaster, or measurement district hydrographer will apply a calibration factor to flow meters whenever the field-test measurement is greater than $\pm 1.0\%$ of the value indicated by the installed meter.***
- 4) Flow meters must be installed according to the manufacturer's specifications. Most manufacturers recommend that meters be installed a certain distance from turbulence-causing bends and fittings such as discharge heads, single elbows, and valves. Typical industry standards for such distances are listed below, but larger distances may be required if the turbulence is severe.
 - a. Full profile magnetic flow meters typically require three (3) pipe diameters upstream of the meter and two (2) pipe diameters downstream.
 - b. Insertion magnetic, ultrasonic and mechanical flow meters require (10) pipe diameters upstream of the meter and five (5) pipe diameters downstream. (Ex. A 12 inch pipe would require a minimum of 120 inches of unobstructed pipe upstream and 60 inches of unobstructed pipe downstream to meet this requirement). Piping requirements for these meters may be in excess of 15 total diameters in more turbulent flow environments for accurate flow measurement.

Owners or operators who install meters without the minimum manufacturer spacing requirements 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.

Table 1: Meter multiplier selection based on water right volume.

Volume Acre Feet (AF)	Multiplier X gallons (gal)	Multiplier X Acre Feet (AF)
0-150	1, 10, 100	.0001, .001
150-1000	10, 100, 1000	.001, .01
>1000	100, 1000	.001, .01

C. Requests for Variance of Closed Conduit Measuring Device Requirements

Owners of closed conduit diversions may request a variance from the standard full profile magnetic flow meter requirements for the following reasons:

- a) An operable flow meter is already installed.
- b) Installation and maintenance of the standard meter would be burdensome
- c) Other conditions of the diversion system preclude the use of a magnetic meter

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 non-magnetic flow meter that was installed *prior to the date of the measurement order*;
- *For irrigation diversions only*, use of an acceptable non-magnetic flow meter where it can be shown that installation of the standard magnetic 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 certified standard flow meter and upon a determination that the meter is installed properly and accurate to within $\pm 10\%$ of actual rate of flow and volume. 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.

1. Use of Power Records as an Alternative Measurement Method

An alternative to installing flow meters is the use of power records and other information to estimate the annual diversion from a pump. Estimating total water diversion from power records requires the derivation of a relationship between power demand and flow under normal operating conditions. This relationship, called a power consumption coefficient (PCC), is a ratio of the number of kilowatt-hours needed to pump an acre-foot of water. This number is unique to each well or pumping plant due to the physical attributes of the system and can be applied to the year-end power records to estimate the total acre-feet pumped.

Total power consumption at individual irrigation pumping plants is supplied to the Department by electric utilities. To determine the rate of flow, a portable measuring device, such as a non-invasive ultrasonic flow meter can be used. Simultaneous with the flow measurement, power is measured using the utility's kilowatt-hour meter. A qualified individual with the necessary equipment will be required to perform these measurements.

Some complex systems cannot use the PCC relationship due to the potential for large errors. The PCC method is reliable on simple diversion systems having fairly static pumping levels and must

³ This document can be found at:

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

be reviewed for acceptability by the Department on a case by case basis. See the discussion in the following section to see if this method can be used.

Because systems wear and water levels change, it is necessary to occasionally verify the flow to power ratio. Therefore, the PCC must be re-calibrated at least once every three years.

2. Can Power Records be used to Estimate My Diversion?

Only irrigation water users may use power records to estimate their diversion because the utilities will only provide consumption information for irrigation uses. Irrigators wishing to use the PCC method must be able to show that it will yield reliable results. If you are not an irrigation user, but want to use power records, you must propose a method of reporting your power consumption data. The PCC method cannot be used on surface water diversions in most cases because such diversions are typically regulated by water right diversion rates and priority dates.

Owners of **ground water diversions** can either install a totalizing flow meter or ask the Department to use power records to estimate annual withdrawals. The total water diverted can be accurately estimated from the PCC method if the system configuration or operation is not complex. Unfortunately, the PCC or power records will not always yield acceptable results, and it will be necessary to install a flow meter. **Flow meters must be installed if any of the following conditions exist:**

- The well flows (artesian) so that water can be diverted when the pump is off.
- The energy consumption meter that records power used by the pump also records power used by other devices not integral to the irrigation system. For example, if the meter also records power used by a home, shop, cellar, re-lift pumps from surface water sources etc., a flow meter must be installed because power used by the pump cannot be isolated from the other devices. However, if the meter also records power used by center pivots, booster pumps, or other devices which operate as part of the well pumping system, the alternate method may be acceptable.
- The electrical meter records the power used by more than one well pump. If a deep well pump which discharges to an open pond or ditch and a re-lift pump are both connected to the same electrical meter, the discharge from the well pump can be measured, and a time clock can be installed to record the total number of hours of pump operation which can be multiplied by the flow rate to determine the total volume of water diverted.
- Variable frequency drives (VFD) operate the pumping plant. This includes both drives for the well motor and the booster system. Variable frequency drives generally indicate that multiple operating conditions exist in the system where large kilowatt and pressure changes are present.
- The energy supplied to the pump cannot be accurately and reliably measured. For example, most diesel and propane driven pumps do not have provisions to measure the fuel used by the engine.
- The flow rate from the pump varies significantly due to changes in demand or operation. For example, pumps that discharge into a pressurized system some times and then open

discharge at other times, or pumps that supply multiple pivots and/or other discharge points, would likely have flow rates that change considerably. These changes generally alter the flow to power ratio, causing inaccurate estimates of diversions. The alternate method of estimating water withdrawals with power records may only be used if the water user can propose an acceptable method of tracking these changes in operation.

- Changing water levels that cause the flow to vary more than 25% (or pressures to vary more than 15%) over the irrigation season.

2. Use of an Hour Meter as an Alternative Measurement Method

In some cases pumped volume can be estimated by recording the operating hours of the diversion pump with a time clock. This method shall only be used on systems with a known constant discharge such as pumps with open discharge which are not subject to throttling, have minimal water level fluctuations, and where PCC method cannot be used for accurate volume estimation. The time clock shall record operation hours of the diversion pump to at least one-hour precision. An approved examiner using a standard meter shall measure flow rate at least once every three years.

3. Types of Non-magnetic Flow Meters

See table 2 below for information on non-magnetic type flow meters.

Table 2: Types of Alternative Measuring Devices for Closed Conduits

Types	Pipe Sizes	Maintenance Required	Relative Purchase Price
Differential Head • Orifice • Venturi • Annubar	small to large	Low to high. Sand wears on sharp edges, and particles can plug small orifices and tubes.	low to medium
Force Velocity • Turbine • Propeller • Impeller	small to large	Typically moderate to high. Often problematic when exposed to sand, moss or mineralized (hard) water. Some cannot measure low velocities.	low to medium
Ultrasonic or Acoustic Doppler	small to large	Low. Typically non-invasive with no moving parts to wear.	medium to high
Vortex	small to medium (about 12 to 14 inch maximum pipe diameter)	Low. Few or no moving parts to wear.	high

